Contents

ΠΑΡΑΡΤΗΜΑ I.a.
ΒΙΒΛΙΟΓΡΑΦΙΑ ΤΗΣ ΕΠΙΣΤΟΛΗΣ

ΕΙΣΑΓΩΓΙΚΟ ΣΗΜΕΙΩΜΑ

Παρατίθενται βιβλιογραφικές αναφορές, ανά θεματική ενότητα.

Σκόπιμα περιλαμβάνονται άρθρα που καταλήγουν στο συμπέρασμα ότι τα εμβόλια είναι «αποτελεσματικά» και/ή «ασφαλή», γιατί στους έμπειρους αναγνώστες με το κατάλληλο επιστημονικό υπόβαθρο, γίνεται αντιληπτό ότι χρησιμοποιήθηκε μεθοδολογία επισφαλής και ότι τα συμπεράσματα δεν συνάδουν με τα αποτελέσματα.

Υπάρχουν μάλιστα άρθρα, που ενώ δεν αποσιωπούν ανεπιθύμητες ενέργειες ή αναποτελεσματικότητα των COVID εμβολίων, καταλήγουν με τη φράση «Το όφελος του εμβολιασμού όμως, υπερτερεί των κινδύνων»!

Δυστυχώς την τελευταία τετραετία, έχουν τελείως ανατραπεί βασικοί κανόνες που ίσχυαν για να γίνει αποδεκτή για δημοσίευση μία επιστημονική εργασία, ακόμη και στα περιοδικά που στην προ-COVID εποχή θεωρούνταν απολύτως έγκυρα!

Υπάρχει φίμωση επιστημόνων και λογοκρισία σε απίστευτο βαθμό!
Βλέπουμε να απορρίπτονται εξαρχής -ή να περνάνε μόνο το στάδιο της προδημοσίευσης- σημαντικά άρθρα που καταρρίπτουν το δόγμα ότι «τα εμβόλια είναι αποτελεσματικά και ασφαλή». Αντιθέτως, δημοσιεύονται ταχύτατα μελέτες που σχεδιάστηκαν με σκοπό να μην φαίνεται τυχόν συσχέτιση των εμβολίων με σοβαρές παρενέργειες. Απτό παράδειγμα, η μελέτη από το Montefiore Health System Bronx, Νέας Υόρκης, που συνέκρινε τη συχνότητα καρδιαγγειακών διαταραχών σε περίπου 56.400 άτομα με μοριακή διάγνωση COVID-19, με περισσότερο από 1 εκατομμύριο άτομα χωρίς COVID. Η παρακολούθηση για εμφάνιση σημαντικών καρδιαγγειακών διαταραχών διήρκεσε έως 3,5 χρόνια, ενώ έγινε και σύγκριση με 64.541 άτομα με παρόμοιο διάστημα παρακολούθησης προ της ανακήρυξης της πανδημίας. Δυστυχώς, ο εμβολιασμός **δεν** περιλαμβανόταν στις παραμέτρους με τις οποίες έγινε συσχέτιση, με το σαθρό επιχείρημα ότι δεν υπήρχαν αξιόπιστα δεδομένα!

Lu, J.Y., Lu, J.Y., Wang, S.H. *et al.* New-onset cardiovascular diseases post SARS-CoV-2 infection in an urban population in the Bronx. *Sci Rep* **14**, 31451 (2024). https://doi.org/10.1038/s41598-024-82983-7

Αξίζει επίσης να επισημανθεί το απαράδεκτο φαινόμενο απόσυρσης άρθρων που είχαν δημοσιευθεί κατόπιν κριτικής αξιολόγησης από ειδικούς στο αντικείμενο κριτές (peer reviewers), όταν γίνει αντιληπτό ότι τα αποτελέσματα/συμπεράσματά τους δεν εξυπηρετουν το πολιτικό αφήγημα περί ασφαλείας και αποτελεσματικότητας των εμβολίων. Έτσι ευρίσκονται άρθρα ως «**retracted**», δηλαδή «αποσυρθέντα» είτε από τους εκδότες, είτε από τους ίδιους τους συγγραφείς τους, κατόπιν ισχυρών πιέσεων που τους ασκήθηκαν.

- https://retractionwatch.com/retracted-coronavirus-covid-19-papers/
- https://www.google.com/search?q=COVID+19+VACCINES+RETRACTED

Το φαινόμενο των «**fact checkers**», δηλαδή των αδειοδοτημένων ή αυτοαποκαλούμενων «ελεγκτών αληθινών γεγονότων στο διαδίκτυο», περιπλέκει ακόμη περισσότερο τα πράγματα, αφού πολύ συχνά εμφανίζουν αλήθειες ως ψεύδη και το αντίστροφο!

Είναι τόσο συχνές, τόσο πολυάριθμες, τόσο αξιοθρήνητες οι ψευδείς διαψεύσεις, ώστε δεν υπάρχει χώρος για αυτές σε αυτό το πόνημα, παρά μόνο εν είδει παραδείγματος…

Οι ακόλουθες δύο δημοσιεύσεις, ελκύουν την προσοχή σε “παγίδες” στην ιατρική βιβλιογραφία:

Appraising Important Medical Literature Biases: Uncorrected Statistical Mistakes and Conflicts of Interest. Orlando FA, Governale KM, Estores IM. Front Med (Lausanne). 2022 Jul 22;9:925643. doi: 10.3389/fmed.2022.925643. eCollection 2022. PMID: 35935772 Free PMC article. No abstract available.

ChatGPT and Corporations of Mega-journals Jeopardize the Norms That Underpin Academic Publishing. Rahimi F, Talebi Bezmin Abadi A. Arch Iran Med. 2024 Feb 1;27(2):110-112. doi: 10.34172/aim.2024.17. PMID: 38619035 Free PMC article.

ΣΥΜΠΕΡΑΣΜΑ

Χρειάζεται θάρρος, κόπο, γνώση, υπομονή και μεγάλη προσοχή στις μέρες μας το κυνήγι της αλήθειας...

Ευτυχώς όλα αυτά διαθέτουν οι ακούραστες κυρίες και οι κύριοι της συντακτικής επιτροπής της επιστολής, μέλη της Ομάδας ΣΚΕΠΤΟΜΕΝΟΙ ΓΟΝΕΙΣ ΚΑΙ ΕΝΕΡΓΟΙ ΠΟΛΙΤΕΣ, που μου εμπιστεύτηκαν την επιμέλεια της βιβλιογραφίας, και οι συνεργαζόμενοι μαζί τους ιατροί.

Σχετικά σύντομα θα ακολουθήσει παράρτημα Ιβ. για δημιουργία σφαιρικότερης και περισσότερο ολοκληρωμένης εικόνας τόσο για τον ιό SARS-CoV-2, όσο και για την πανδημία COVID-19, και για τα εμβόλια.

Έως τότε εύχομαι ολόψυχα να έχουν αρχίσει να βρίσκουν ανταπόκριση τα αιτήματα της επιστολής…

Ιατρός Ελένη Χασαποπούλου-Ματάμη

ΕΠΙΣΤΗΜΟΝΕΣ ΠΟΥ ΠΡΟΒΛΕΨΑΝ ΣΟΒΑΡΕΣ ΑΝΕΠΙΘΥΜΗΤΕΣ ΕΝΕΡΓΕΙΕΣ ΤΩΝ COVID ΕΜΒΟΛΙΩΝ ΚΑΙ ΑΠΑΞΙΩΘΗΚΑΝ

1. LUC MONTAGNIER (1932-2022)

Ο σημαντικός αυτός επιστήμονας, και κάτοχος βραβείου Nobel -που δυστυχώς απαξιώθηκε και λοιδωρήθηκε τόσο άδικα και βάναυσα- διαθέτοντας αναμφίβολα σημαντικές γνώσεις ιολογίας, **προείδε και προειδοποίησε έγκαιρα για** :

Α. την φύση του ιού SARS-CoV-2, τα σημάδια ανθρώπινης παρέμβασης Luc Montagnier, Nobel Prize winner, said that he believed the coronavirus was created in a Chinese lab.

Β. την ανάγκη χρήσης αντιβιοτικών κατά την έναρξη COVID λοίμωξης, προκειμένου να μην πολλαπλασιάζεται ο υπεύθυνος ιός στο μικροβίωμα του εντέρου, οδηγώντας σε χρονιότητα, πράγμα που μόλις τελευταία αρχίζει να αναγνωρίζεται από κάποιους «ειδικούς»...

Azalbert X, Duhamel MJL. *The end of a myth : "If it's a virus, no antibiotic, really ?" Dr. Claude Escarguel*. November , 2022 Webpage https://www.francesoir.fr/entretiens/end-myth-if-it-s-virus-no-antibiotic-really-dr-claude-escarguel

Γ. τους κινδύνους από τη χρήση των mRNA εμβολίων, με έμφαση στην επίδρασή τους στο ανοσοποιητικό σύστημα και στην εμφάνιση νευρολογικών διαταραχών. Είχε μιλήσει εις ώτα μη ακουόντων, για αλληλουχίες με δομή **prions** στην πρωτείνη S (spike protein).

Δ. την επίπτωση στην επιβίωση
Ο Luc Montagnier είχε προβλέψει αύξηση των θανάτων με υπαιτιότητα των εμβολίων εντός μερικών ετών.

Montagnier L. *Nobel Prize Winner Prof. Dr. Luc Montagnier – COVID Vaccines Are Creating the Variants and Deaths*. May , 2021 Webpage https://www.bitchute.com/video/TciZzrFDpMxf/

Montagnier L. *Pr Luc Montagnier : "Au vu des effets secondaires, dans le doute, on s'abstient"*. November , 2021 Webpage SUDRADIO https://www.dailymotion.com/video/x85mc32

Montagnier L. *Luc Montagnier affirme que le coronavirus Sars-CoV-2 est un virus manipulé en laboratoire*. April , 2020 Webpage CNEWS https://www.dailymotion.com/video/x7tcp7a

Montagnier L. *Luc Montagnier: "They are not vaccines, they are poisons" – Speech to the Luxembourg Parliament*. January , 2022 https://p2p.media/images/LucMontagnier.pdf

LUC MONTAGNIER Statements:

- on the origins of the coronavirus
  The virus is man-made, the result of an attempt to manufacture a vaccine against HIV in a Chinese lab.

'It was produced by a laboratory. It is what is known as a recombinant, perhaps produced by a Chinese laboratory. It was a job for molecular biologists. It's a very meticulous job. You could say a clockwork of sequences. There is enormous pressure for everything that is at the origin of the virus to be hidden'.

- COVID-19 vaccines cause antibody dependent enhancement (ADE) – in other words, they cause worse disease than before.
- This coronavirus genome contained sequences of another virus […] the HIV virus (AIDS virus)
  Montagnier alleged the presence of elements of HIV and germ of malaria in the genome of coronavirus is "highly suspect" and it "could not have arisen naturally". The French researcher also alleged an "industrial accident" to have taken place in the Wuhan National Biosafety Laboratory, which specializes in coronaviruses since the 2000s.
- Mass vaccination against the coronavirus during the pandemic is "unthinkable" and a historical blunder that is "creating the variants" and leading to deaths from the disease "It's an enormous mistake, isn't it? A scientific error as well as a medical error. It is an unacceptable mistake,"

  "The history books will show that, because it is the vaccination that is creating the variants. "The new variants are a production and result from the vaccination. You see it in each country, it's the same: in every country deaths follow vaccination,"

  "It is the antibodies produced by the virus that enable an infection to become stronger," he said in an interview with Pierre Barnerias of Hold-Up Media.

Perez, J. (2020, May 30). Jean Claude Perez § Luc Montagnier - COVID-19, SARS and Bats Coronaviruses Genomes Unexpected Exogenous RNA Sequences.
https://doi.org/10.31219/osf.io/tgw2d
https://osf.io/preprints/osf/tgw2d_v1

ΚΑΙ Η ΔΙΚΑΙΩΣΗ ΜΕΤΑ ΘΑΝΑΤΟΝ …

Le Média en 4-4-2. *Origine du Covid-19 : La CIA privilégie la fuite d'un laboratoire de Wuhan, Fauci accusé de dissimulation*. January , 2025 Webpage
https://lemediaen442.fr/origine-du-covid-19-la-cia-privilegie-la-fuite-dun-laboratoire-de-wuhan-fauci-accuse-de-dissimulation/

Carisio FGC. *CIA Report: "SARS-Cov-2 by Bio-Lab". But US Intel HIDES an IDENTICAL VIRUS built by Pentagon on 2017*. February , 2025 Webpage
https://vtforeignpolicy.com/2025/01/cia-report-sars-cov-2-by-bio-lab-but-us-intel-hides-an-identical-virus-built-by-pentagon-on-2017/

Tuckwell HC. In the Australian state of Victoria the rate of infection of COVID-19 has increased 126-fold since vaccination started and 1500-fold since vaccination levels rose from low to high: support for Luc Montagnier's claim? July 2022
DOI:10.13140/RG.2.2.18276.04486 link to pdf

> Cases of COVID-19 infection first appeared in many countries early in 2020. For the first year of the subsequent pandemic no vaccines were available. Vaccines began to

be employed around February 2021. Under exhortations from most Government Health agencies the rates of vaccination have steadily increased, reaching levels around 90% for first and second doses in many countries. The Nobel prize winning virologist Luc Montagnier warned that vaccination would lead to more transmissible mutations of the virus against which the vaccines were less effective. Data on case numbers and vaccination rates for the Australian state of Victoria have been examined and reveal that the average rate of infection is over 170 times greater in the time period from 22 February 2022 to 7 June 2022 when vaccines were employed than in the period preceding vaccination. It is certain that vaccination has not reduced the rate of infection and very likely that it has increased it. Furthermore, since vaccination commenced the transmissibility of new variants has risen sharply to 12 times its value at the beginning of the pandemic. These findings apparently support the claim of Luc Montagnier and others about the inadvisability of a massive worldwide vaccination agenda. Infection rates have eventually dropped because increasing case numbers have led to declines in the numbers of susceptibles by up to 50% in some countries. However, second and third infections would effectively increase the number of susceptibles.

T1 - In the Australian state of Victoria the rate of infection of COVID-19 has increased over 170-fold since vaccination started: support for Luc Montagnier's claim

2. SUCHARIT BAKDI

Ο σπουδαίος αυτός μικροβιολόγος-ερευνητής (με πεδία ενδιαφέροντος: Medical Microbiology, Mycology and Hygiene, Molecular Infection Biology, Immunology) από τους πλέον αρμόδιους να μιλάει για τον ιό SARS-CoV-2, έτυχε χειρίστης αντιμετώπισης από νεοφανείς αστέρες με πλήρη άγνοια ιολογίας, επιδημιολογίας, εμβολίων. Ορθώς πρόβλεπε και προειδοποιούσε για τους κινδύνους από τα COVID εμβόλια

Reiss K, Bhakdi S. *Corona, False Alarm?* White River Junction, Vermont: Chelsea Green Publishing; 2020 ISBN: 9781645020578 https://www.chelseagreen.com/product/corona-false-alarm/

Bhakdi S. *Perspectives on the Pandemic* | *"Blood Clots and Beyond"* | *Episode 15*. April , 2021 Video Video by Libby Handros & John Kirby https://youtu.be/pyPjAfNNA-U

Bhakdi S. *NOT-GUILTY-With-Sucharit-Bhakdi and Taylor-Hudak*. May , 2023 Podcast A historic battle faces a critical tipping point — Sucharit Bhakdi, M.D. found to be 'not guilty' after appearing in court with charges of "incitement of the masses" and "trivialization of the Holocaust." Dr. Bhakdi has been outspoken on matters of COVID vaccination and their impacts on society. https://creators.spotify.com/pod/show/financial-rebellion/episodes/NOT-GUILTY-With-Sucharit-Bhakdi–Taylor-Hudak-e24mtub/a-a9t8e4a

Bhakdi S. *Sucharit Bhakdi's research while affiliated with Kiel University and other places* ResearchGate https://www.researchgate.net/scientific-contributions/Sucharit-Bhakdi-2129142539 Accessed February 1, 2025

Bhakdi S. *Open Letter Prof. em. Sucharit Bhakdi on the Corona Crisis*. April , 2020 Webpage an open letter to the German Chancellor Angela Merkel. Unfortunately the link to the video

does not work anymore. https://news.save.ch/en/offener-brief-prof-em-sucharit-bhakdi-zur-corona-krise/ Accessed February 1, 2025

Dwyer O. *Debunked: Yes, coronavirus antibodies protect against 'infection of the lung'*. June , 2021 Webpage https://www.thejournal.ie/claims-about-vaccines-working-with-respiratory-illness-5468645-Jun2021/

Bhakdi S. November , 2023 X.com Twitter post with quotes from a speach of Sucharit Bhakdi https://x.com/LandOfEndeavors/status/1728993638166991339

Bhakdi S. *TO WHOM IT MAY CONCERN*. December , 2021 open letter https://www.eyewideopen.org/wp-content/uploads/2021/12/FINAL-END-OF-COVAXX-14.12.-signed1.pdf Accessed February 1, 2025

Bhakdi S. *Prof. Dr. Sucharit Bhakdi's emotional address to the AfD faction at the German Parliament - Nov 12, 2023*. November , 2023 Webpage Original video with transcript https://www.aussie17.com/p/prof-dr-sucharit-bhakdis-emotional

Bhakdi S. *Must-Watch Unlocking COVID-19 Game Changer: Insights Corona Symposium 11.11.23 Prof. Sucharit Bhakdi*. November , 2023 Youtube FREIGEIST channel https://www.youtube.com/watch?v=-l0FTXmcYg0 Accessed February 1, 2025

Bhakdi S. *Effects Of The Covid-19 Jab: Microbiologist Dr. Sucharit Bhakdi Interviewed by Dr. Joseph Mercola*. August , 2021 Webpage video by Joseph Mercola https://www.bitchute.com/video/Cf1LCMoMuEV0/ Accessed February 1, 2025

Vogel H. *The Persecution of Sucharit Bhakdi*. May , 2023 Webpage In early November, the regional state prosecutor in Schleswig-Holstein, who had opened a case against Bhakdi, decided to close it for lack of merit. However, three weeks later, upon the insistence of two Jewish organizations, it was decided to reopen the case. https://arktos.com/2023/05/11/the-persecution-of-sucharit-bhakdi/ Accessed February 1, 2025

Bhakdi S. *Video: Dr. Sucharit Bhakdi at the German Parliament. "The vaccination turned out to be the greatest blessing for the money and world's elites, for the pharmaceutical industry and politics."November 12, 2023*. November , 2023 Webpage Posted by Global Research on March 27, 2024 https://www.globalresearch.ca/video-dr-sucharit-bhakdi-german-parliament-vaccination-turned-out-greatest-blessing-money-world-elites-pharmaceutical-industry-politics/5853314 Accessed February 1, 2025

Hudak T. *The Trial of Prof. Sucharit Bhakdi: Who is Trying to Silence the Leading Scientific Voice Warning us About mRNA Technology?* May , 2023 Webpage https://childrenshealthdefense.eu/eu-affairs/the-trial-of-prof-sucharit-bhakdi-who-is-trying-to-silence-the-leading-scientific-voice-warning-us-about-mrna-technology/ Accessed February 1, 2025

OffGuardian. *UPDATE: Sucharit Bhakdi Found NOT GUILTY*. May , 2023 Webpage https://off-guardian.org/2023/05/23/update-sucharit-bhakdi-found-not-guilty/

doctors4covidethics. *Timeline: Prof. Sucharit Bhakdi Case* Webpage Most recent and complete storyline. On February 27-28, 2025 Prof. Bhakdi's appeal hearing is scheduled at

the regional court (Landgericht) Kiel, Germany https://doctors4covidethics.org/timeline-of-the-events/ Accessed February 1, 2025

Roguski J. *Not Safe And Not Effective*. December , 2024 Webpage This free online resource provides EVIDENCE that the mRNA platform is a biological weapon delivery system and its ongoing and expanded use constitutes a grievous crime against humanity. https://jamesroguski.substack.com/p/not-safe-and-not-effective Accessed February 1, 2025

Τα ελληνικά hoaxes αποδίδουν στον μεγάλο επιστήμονα ψευδείς ισχυρισμούς.

Κουτρουμπέλης Α. *Ψευδείς ισχυρισμοί από το μικροβιολόγο Sucharit Bhakdi για τη χρήση τεστ και εμβολίων για την COVID-19*. June , 2021 Webpage https://www.ellinikahoaxes.gr/2021/06/08/sucharit-bhakdi-misinformation/

O Soucharit Bhakdi μιλάει στον Μάκη Τριανταφυλλόπουλο για όλους και για όλα. September , 2021 Youtube Zouglagr https://www.youtube.com/watch?v=xACwurkCQoAfile:///C:/Users/Eleni/Documents/ΒΙΒΛΙΟΓΡΑΦΙΑ_επιστολή/O Soucharit Bhakdi μιλάει στον Μάκη Τριανταφυλλόπουλο για ...YouTubehttps:/www.youtube.com › watch

3. ROBERT MALONE

Προειδοποίησε για τους κινδύνους από τα mRNA εμβόλια

Dr. Robert Malone | 19 Narrative-Changing Highlights from His 3-Hour Interview w/ Joe Rogan. June , 2022 Webpage Highlights from the 3-hour interview with Dr Robert Malone by Joe Rogan https://www.brighteon.com/e211fee8-4c58-454c-ac1a-39839fa03eff Accessed February 1, 2025

Σύμφωνα με τον Dr Robert Malone, https://x.com/RWMaloneMD/status/1451613579501703172, ο κίνδυνος μυοκαρδίτιδας στα παιδιά, θα φανεί στο πέρασμα των χρόνων και οι συνέπειες ανεπιθύμητων ενεργειών, όπως η μυοκαρδιοπάθεια, θα είναι αθροιστικές… Οι εμβολιασμοί, πιθανώς θα επαναλαμβάνονται δύο φορές σε κάθε σχολική χρονιά, με μεσοδιαστήματα περίπου 6 μηνών…

…the harms of myocarditis from these vaccines will likely unfold over the course of years… the risks of "adverse events such as cardiomyopathy will be cumulative."

…They will likely have to be repeated twice for each school year, at approx. six-month intervals.

22 Οκτωβρίου 2021

4. PHILIPPE MCMILLAN

Ηταν ο πρώτος που ανέπτυξε τη θεωρία του σημαντικού ρόλου της αυτοανοσίας στην λοίμωξη COVID https://www.convenzis.co.uk/speakers/dr-philip-mcmillan και από τους κύριους εκφραστές της αποψης οτι τα εμβολια νέας τεχνολογίας θα προκαλέσουν αυτοαντισώματα/αυτοάνοσες διαταραχές.

Συγκεκριμένα τον Απρίλιο 2020 υποστήριξε ότι για βλάβες σε ιστούς/όργανα (π.χ. πνεύμονες, εγκέφαλος) ευθύνεται η αλληλεπίδραση μεταξύ της πρωτεϊνης S (spike) του ιού SARS-CoV-2 και διαλυτής ACE-2 στο πλάσμα. Αυτή οδηγεί σε αλλαγές του σχήματος και των δύο πρωτεϊνών, με συνέπεια το συμπλεγμα να φαγοκυτταρώνεται από αντιγονο-παρουσιαστικά κύτταρα και να εμφανίζονται νέοι επίτοποι που αποτελούν στόχο για δημιουργία αυτοαντισωμάτων. Πράγματι μετέπειτα έρευνες έδειξαν αυτοαντισώματα έναντι ACE-2 στο πλάσμα ασθενών με σοβαρή λοίμωξη COVID.

Αντισώματα έναντι ACE-2 προκαλούν την έκλυση αντιδράσεων υπερευαισθησίας τύπου 2 και 3. Επίσης, δημιουργείται κυτταρική αντίδραση τύπου 4 όταν τα αντιγονο-παρουσιαστικά κύτταρα αποδομούν τα συμπλέγματα των σωματιδίων του ιού με την προσκολλημένη σε αυτά διαλυτή ACE-2. Ενεργοποιούνται CD8 λεμφοκύτταρα που έχουν ως στόχο κύτταρα μολυσμένα με τον ιό.

Πιθανότατα τα ίδια ισχύουν και προκειμένου για είσοδο ελεύθερης πρωτεϊνης S (spike) στην κυκλοφορία (μετά εμβολιασμό).

Οι διαφορές στην ποσότητα διαλυτής στο πλάμα ACE-2 μεταξύ νέων και ηλικιωμένων, εξηγούν και την παρατηρούμενη διαφορά στην βαρύτητα της COVID λοίμωξης μεταξύ παιδιών/νέων και ηλικιωμένων.

McMillan P, Dexhiemer T, Neubig RR, Uhal BD. COVID-19—A Theory of Autoimmunity Against ACE-2 Explained. *Frontiers in Immunology*. March 2021;12:582166 ISSN: 1664-3224 DOI:10.3389/fimmu.2021.582166
https://www.frontiersin.org/journals/immunology/articles/10.3389/fimmu.2021.582166/full

Understanding Autoimmunity in COVID 19 with Dr Philip McMillan. March , 2021 Youtube Interview with Dr Philip McMillan, lead COVID-19 autoimmune researcher - Hosted by Jacqueline Allison PhD - Executive Director, McMillan Research
https://www.youtube.com/watch?v=3SfiUiGUgz4 Accessed February 1, 2025

https://www.scribd.com/document/719912320/Dr-Philip-McMillan-COVID-19-Foundation-360-eBook-Final-v1-20211129

5. JOHN IOANNIDIS

Professor of Medicine/Health Research & Policy/Biomedical Data Science/Statistics, Stanford Univ.
Holds the CF Rehnborg Chair in Disease Prevention at Stanford University.
Επισήμανε εξαρχής λάθη και παγίδες στην εκτίμηση της θνητότητας από λοίμωξη COVID-19, τις διαφορές ανάλογα με την ηλικία, την αδυναμία επίτευξης ανοσίας αγέλης, την εξώθηση του ιού σε μεταλλάξεις λόγω εμβολιασμών εν μέσω πανδημίας

Ioannidis JPA. Transparency, bias, and reproducibility across science: a meta-research view. *Journal of Clinical Investigation*. November 2024;134 ISSN: 1558-8238 DOI:10.1172/jci181923

Ioannidis JPA, Axfors C, Contopoulos-Ioannidis DG. Population-level COVID-19 mortality risk for non-elderly individuals overall and for non-elderly individuals without underlying

diseases in pandemic epicenters. *Environmental research*. September 2020;188:109890 ISSN: 1096-0953 DOI:10.1016/j.envres.2020.109890

Ioannidis JPA. Infection fatality rate of COVID-19 inferred from seroprevalence data. *Bulletin of the World Health Organization*. January 2021;99(1):19–33F ISSN: 1564-0604 DOI:10.2471/BLT.20.265892

Ioannidis JPA. Inverse publication reporting bias favouring null, negative results. *BMJ evidence-based medicine*. January 2024;29(1):6–9 ISSN: 2515-4478 DOI:10.1136/bmjebm-2023-112292

Ioannidis JPA, Pezzullo AM, Boccia S. The Rapid Growth of Mega-Journals: Threats and Opportunities. *JAMA*. April 2023;329(15):1253–1254 ISSN: 1538-3598 DOI:10.1001/jama.2023.3212

Ioannidis JPA, Bendavid E, Salholz-Hillel M, Boyack KW, Baas J. Massive covidization of research citations and the citation elite. *Proceedings of the National Academy of Sciences of the United States of America*. July 2022;119(28):e2204074119 ISSN: 1091-6490 DOI:10.1073/pnas.2204074119

Ioannidis JPA, Salholz-Hillel M, Boyack KW, Baas J. The rapid, massive growth of COVID-19 authors in the scientific literature. *Royal Society open science*. September 2021;8(9):210389 ISSN: 2054-5703 DOI:10.1098/rsos.210389

Ioannidis JPA. Hundreds of thousands of zombie randomised trials circulate among us. *Anaesthesia*. April 2021;76(4):444–447 ISSN: 1365-2044 DOI:10.1111/anae.15297

Ioannidis JPA, Berkwits M, Flanagin A, Bloom T. Peer Review and Scientific Publication at a Crossroads: Call for Research for the 10th International Congress on Peer Review and Scientific Publication. *JAMA*. October 2023;330(13):1232–1235 ISSN: 1538-3598 DOI:10.1001/jama.2023.17607

Ioannidis JPA. Precision shielding for COVID-19: metrics of assessment and feasibility of deployment. *BMJ global health*. January 2021;6(1) ISSN: 2059-7908 DOI:10.1136/bmjgh-2020-004614

6. MICHAEL YEADON

Πρώην στέλεχος της Pfizer (αντιπρόεδρος του τομέα φαρμάκων της εταιρείας)

O Michael Yeadon (Until 2011, he served as the chief scientist and vice-president of the allergy and respiratory research division of the drug company Pfizer, and is the co-founder and former CEO of the biotechnology company Ziarco)[

Αξίζει να διαβάσουν όλοι την επιστολή του **Dr. Michael Yeadon,** με τίτλο :**A message to a trusted friend who is struggling to accept that what is happening is intentional**

Yeadon M. *Dr. Michael Yeadon: A Message to a Trusted Friend, Who Is Struggling To Accept That What Is Happening Is Intentional*. September , 2023 Webpage https://lionessofjudah.substack.com/p/dr-michael-yeadon-a-message-to-a

ΕΡΕΥΝΕΣ - ΜΕΛΕΤΕΣ ΠΑΡΑΤΗΡΗΣΗΣ – ΣΤΑΤΙΣΤΙΚΑ ΣΤΟΙΧΕΙΑ ΠΟΥ ΔΕΙΧΝΟΥΝ ΚΙΝΔΥΝΟΥΣ ΓΙΑ ΤΗΝ ΖΩΗ ΚΑΙ ΤΗΝ ΥΓΕΙΑ ΑΠΟ COVID ΕΜΒΟΛΙΑ : ΒΛΑΒΕΣ (INJURIES), ΑΝΑΠΗΡΙΕΣ (DISABILITIES), ΘΑΝΑΤΟΥΣ (DEATHS)

ΑΝΕΠΙΘΥΜΗΤΕΣ ΕΝΕΡΓΕΙΕΣ ΙΔΙΑΙΤΕΡΟΥ ΕΝΔΙΑΦΕΡΟΝΤΟΣ ΠΡΟΚΑΘΟΡΙΣΜΕΝΕΣ ΓΙΑ ΠΑΡΑΚΟΛΟΥΘΗΣΗ

ADVERSE EVENTS OF SPECIAL INTEREST (AESI)

Ενόσω αδειοδοτούνταν και έβγαιναν στην κυκλοφορία COVID-19 εμβόλια, προκαθορίστηκαν 16 ανεπιθύμητες ενέργειες ιδιαίτερου ενδιαφέροντος για παρακολούθηση από τις Ρυθμιστικές Αρχές Φαρμάκων.

Οι 16 προκαθορισμένες ανεπιθύμητες ενέργειες ειδικού ενδιαφέροντος ήταν:

Οξύ έμφραγμα μυοκαρδίου, αναφυλαξία, σκωληκοειδίτις, παράλυση προσωπικού νεύρου, εν τω βάθει φλεβοθρόμβωση, διάχυτη ενδαγγγειακή πήξη, εγκεφαλίτιδα/νωτιαία μυελίτιδα, σύνδρομο Guillain- Barré, αιμορραγικό εγκεφαλικό επεισόδιο, μη αιμορραγικό (ισχαιμικό) επεισόδιο, θρομβοπενία ανοσολογικού τύπου, μυοκαρδίτις/περικαρδίτις, ναρκοληψία, πνευμονική εμβολή, εγκάρσια μυελίτιδα, θρόμβωση με θρομβοπενία.

Προκειμένου να διαλευκανθεί αν κάποιες από αυτές θα μπορούσε να οφείλονται στην νόσο **COVID-19 και όχι σε COVID εμβόλιο, οργανώθηκε από την διεθνή εταιρεία Observational Health Data Sciences and Informatics (OHDSI), μία μελέτη δικτύου 11 χωρών με 26 βάσεις δεδομένων, με σκοπό να υπολογιστεί η συχνότητα κάθε ανεπιθύμητης ενέργειας μεταξύ ασθενών με COVID-19 σε σύγκριση με την συχνότητά τους στον γενικό πληθυσμό προ της πανδημίας.**

Voss EA, Shoaibi A, Yin Hui Lai L, et al. Contextualising adverse events of special interest to characterise the baseline incidence rates in 24 million patients with COVID-19 across 26 databases: a multinational retrospective cohort study. *eClinicalMedicine*. April 2023;58:101932 ISSN: 2589-5370 DOI:10.1016/j.eclinm.2023.101932

Li X, Lai LY, Ostropolets A, et al. Bias, Precision and Timeliness of Historical (Background) Rate Comparison Methods for Vaccine Safety Monitoring: An Empirical Multi-Database Analysis. *Frontiers in pharmacology*. 2021;12:773875 ISSN: 1663-9812 DOI:10.3389/fphar.2021.773875

Li X, Ostropolets A, Makadia R, et al. Characterising the background incidence rates of adverse events of special interest for covid-19 vaccines in eight countries: multinational network cohort study. *BMJ (Clinical research ed.)*. June 2021;373:n1435 ISSN: 1756-1833 DOI:10.1136/bmj.n1435

Joseph Fraiman, Juan Erviti, Mark Jones, Sander Greenland, Patrick Whelan, Robert M.

Kaplan, Peter Doshi. Serious adverse events of special interest following mRNA COVID-19 vaccination in randomized trials in adults. Vaccine,Volume 40, Issue 40, 2022, Pages 5798-5805, ISSN 0264-410X, https://doi.org/10.1016/j.vaccine.2022.08.036. (https://www.sciencedirect.com/science/article/pii/S0264410X22010283

Woo EJ, Mba-Jonas A, Dimova RB, Alimchandani M, Zinderman CE, Nair N. Association of receipt of the Ad26.COV2.S COVID-19 vaccine with presumptive guillain-barré syndrome, february-July 2021. JAMA. 2021;326(16):1606–1613.

Greinacher A, Thiele T, Warkentin TE, Weisser K, Kyrle PA, Eichinger S. Thrombotic Thrombocytopenia after ChAdOx1 nCov-19 Vaccination. *The New England journal of medicine*. June 2021;384(22):2092–2101 ISSN: 1533-4406 DOI:10.1056/NEJMoa2104840

FDA - Center for Biologics Evaluation and Research Office of Biostatistics and Epidemiology. *Background Rates of Adverse Events of Special Interest for COVID-19 VaccineSafety Monitoring*. January , 2021 https://bestinitiative.org/wp-content/uploads/2021/02/C19-Vaccine-Safety-AESI-Background-Rate-Protocol-FINAL-2020.pdf

Barda N, Dagan N, Ben-Shlomo Y, et al. Safety of the BNT162b2 mRNA Covid-19 Vaccine in a Nationwide Setting. *The New England journal of medicine*. September 2021;385(12):1078–1090 ISSN: 1533-4406 DOI:10.1056/NEJMoa2110475

Patone M, Handunnetthi L, Saatci D, et al. Neurological complications after first dose of COVID-19 vaccines and SARS-CoV-2 infection. *Nature Medicine*. December 2021;27(12):2144–2153 ISSN: 1546-170X DOI:10.1038/s41591-021-01556-7

Wong HL, Hu M, Zhou CK, et al. Risk of myocarditis and pericarditis after the COVID-19 mRNA vaccination in the USA: a cohort study in claims databases. *Lancet (London, England)*. June 2022;399(10342):2191–2199 ISSN: 1474-547X DOI:10.1016/S0140-6736(22)00791-7

U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION - CDC. *Interim Clinical Considerations for Use of COVID-19 Vaccines in the United States*. October , 2024 https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim- considerations-us.html Accessed February 1, 2025

Redshaw M. *Exclusive: Son Describes Mother's Death After Moderna Shot*. April , 2022 Webpage https://childrenshealthdefense.org/defender/exclusive-son-describes-mothers-death-moderna-shot/

Block JP, Boehmer TK, Forrest CB, et al. Cardiac Complications After SARS-CoV-2 Infection and mRNA COVID-19 Vaccination — PCORnet, United States, January 2021–January 2022. *MMWR. Morbidity and Mortality Weekly Report*. April 2022;71:517–523 ISSN: 1545-861X DOI:10.15585/mmwr.mm7114e1

Patone M, Mei XW, Handunnetthi L, et al. Risks of myocarditis, pericarditis, and cardiac arrhythmias associated with COVID-19 vaccination or SARS-CoV-2 infection. *Nature Medicine*. February 2022;28(2):410–422 ISSN: 1546-170X DOI:10.1038/s41591-021-01630-0

Shoaibi A, Rao GA, Voss EA, et al. Phenotype Algorithms for the Identification and Characterization of Vaccine-Induced Thrombotic Thrombocytopenia in Real World Data: A

Multinational Network Cohort Study. *Drug safety*. June 2022;45(6):685–698 ISSN: 1179-1942 DOI:10.1007/s40264-022-01187-y

Santiago D. A Partial Answer to the Question Posed by David A. Hughes, PhD, in the Article: “What is in the so-called COVID-19 ‘Vaccines’? Part 1: Evidence of a Global Crime Against Humanity”. *International Journal of Vaccine Theory, Practice, and Research*. September 2022;2:587–594 ISSN: 2766-5852 DOI:10.56098/ijvtpr.v2i2.56

Santiago, D. (2022b). Playing Russian Roulette with every COVID-19 injection: The deadly global game. International Journal of Vaccine Theory, Practice, and Research, 2(2), 619–650. https://doi.org/10.56098/ijvtpr.v2i2.36

Nassar MK, Salem KM, Elgamal M, Abdel-Gawad SM, Tharwat S. COVID-19 Vaccination Trends and Side Effects among Egyptian Hemodialysis Patients: A Multicenter Survey Study. *Vaccines*. October 2022;10(10) ISSN: 2076-393X DOI:10.3390/vaccines10101771

Faksova K, Walsh D, Jiang Y, et al. COVID-19 vaccines and adverse events of special interest: A multinational Global Vaccine Data Network (GVDN) cohort study of 99 million vaccinated individuals. *Vaccine*. April 2024;42:2200–2211 ISSN: 0264-410X DOI:10.1016/j.vaccine.2024.01.100
https://www.sciencedirect.com/science/article/pii/S0264410X24001270

Global Vaccine Data Network. *GVDN Observed vs. expected analyses of COVID-19 vaccine adverse events of special interest study protocol*. October , 2022 Webpage https://globalvaccinedatanetwork.org/Data-Dashboards/Observed-vs-Expected-Rates-Dashboard/Observed-vs-Expected-Rates full pdf

Wong CKH, Lau KTK, Xiong X, et al. Adverse events of special interest and mortality following vaccination with mRNA (BNT162b2) and inactivated (CoronaVac) SARS-CoV-2 vaccines in Hong Kong: A retrospective study. *PLoS medicine*. June 2022;19(6):e1004018 ISSN: 1549-1676 DOI:10.1371/journal.pmed.1004018

Center for Biologics Evaluation and Research - CBER - Office of Biostatistics and Epidemiology. *COVID-19 Vaccine Safety Surveillance:Active Monitoring Master Protocol*. February , 2021 https://bestinitiative.org/wp-content/uploads/2021/02/C19-Vaccine-Safety-Protocol-2021.pdf

Naveed Z, Li J, Spencer M, et al. Observed versus expected rates of myocarditis after SARS-CoV-2 vaccination: a population-based cohort study. *CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne*. November 2022;194(45):E1529–E1536 ISSN: 1488-2329 DOI:10.1503/cmaj.220676 PubMed

Jabagi M.J., Botton J., Bertrand M., et al. Myocardial infarction, stroke, and pulmonary embolism after BNT162b2 mRNA COVID-19 vaccine in people aged 75 years or older. JAMA. 2022;327(1):80–82. ISSN: 1538-3598 DOI:10.1001/jama.2021.21699 - PMC - PubMed

Chui CSL, Fan M, Wan EYF, et al. Thromboembolic events and hemorrhagic stroke after mRNA (BNT162b2) and inactivated (CoronaVac) covid-19 vaccination: A self-controlled case series study. *EClinicalMedicine*. August 2022;50:101504 ISSN: 2589-5370 DOI:10.1016/j.eclinm.2022.101504 PMC - PubMed

ΕΠΑΓΡΥΠΝΗΣΗ-ΠΑΡΑΚΟΛΟΥΘΗΣΗ ΤΗΣ ΑΣΦΑΛΕΙΑΣ ΤΩΝ ΕΜΒΟΛΙΩΝ

Harpaz R., DuMouchel W., Van Manen R., Nip A., Bright S., Szarfman A., et al. (2022). Signaling COVID-19 vaccine adverse events. Drug Saf. 45 (7), 765–780. 10.1007/s40264-022-01186-z [DOI] [PMC free article] [PubMed] [Google Scholar]

Caplanusi I, Szmigiel A, van der Elst M, Schougaard Christiansen ML, Thirstrup S, Zaccaria C, Cappelli B, Genov G, Straus S. The Role of the European Medicines Agency in the Safety Monitoring of COVID-19 Vaccines and Future Directions in Enhancing Vaccine Safety Globally. Drug Saf. 2024 May;47(5):405-418. doi: 10.1007/s40264-024-01405-9. Epub 2024 Feb 23. PMID: 38396269; PMCID: PMC11018685.

Shimabukuro TT. *Update on COVID-19 and influenza vaccine safety - Advisory Committee on Immunization Practices (ACIP) meetingOctober 25, 2023*. October , 2023 Webpage https://www.cdc.gov/acip/downloads/slides-2023-10-25-26/01-vaxsafety-shimabukuro-508.pdf

Shimabukuro T. *COVID-19 Vaccine safety updates - Advisory Committee on Immunization Practices(ACIP)*. June , 2021 Original link at the cdc.gov website was moved or taken down. https://www.infovac.ch/docs/public/coronavirus/03-covid-shimabukuro-508.pdf

Barda N, Dagan N, Ben-Shlomo Y, et al. Safety of the BNT162b2 mRNA Covid-19 Vaccine in a Nationwide Setting. *New England Journal of Medicine*. September 2021;385:1078–1090 ISSN: 1533-4406 DOI:10.1056/nejmoa2110475

Klein NP, Lewis N, Goddard K, et al. Surveillance for Adverse Events αfter COVID-19 mRNA Vaccination. JAMA 2021;326:1390-9. doi:10.1001/jama.2021.15072

Klein NP, Lewis N, Goddard K, et al. Surveillance for Adverse Events After COVID-19 mRNA Vaccination. *JAMA*. October 2021;326:1390 ISSN: 0098-7484 DOI:10.1001/jama.2021.15072 Available online: https://stacks.cdc.gov/view/cdc/109493.

Seneff S, Nigh G. Worse Than the Disease? Reviewing Some Possible Unintended Consequences of the mRNA Vaccines Against COVID-19. *International Journal of Vaccine Theory, Practice, and Research*. June 2021;2:38–79 ISSN: 2766-5852 DOI:10.56098/ijvtpr.v2i1.23https://doi.org/10.56098/ijvtpr.v2i1.23

Andreoli L, Lini D, Schreiber K, et al. COVID-19 vaccine safety during pregnancy and breastfeeding in women with autoimmune diseases: results from the COVAD study. *Rheumatology*. July 2023;63:1341–1351 ISSN: 1462-0332 DOI:10.1093/rheumatology/kead382

Montano D. Frequency and Associations of Adverse Reactions of COVID-19 Vaccines Reported to Pharmacovigilance Systems in the European Union and the United States.

Frontiers in public health. 2021;9:756633 ISSN: 2296-2565 DOI:10.3389/fpubh.2021.756633

Benkebil M, Gautier S, Gras-Champel V, Massy N, Micallef J, Valnet Rabier MB. COVID-19 vaccines surveillance in France: a global response to a major national challenge. *Anaesthesia, critical care & pain medicine*. June 2021;40(3):100866 ISSN: 2352-5568 DOI:10.1016/j.accpm.2021.100866 - PubMed

Jonville-Bera AP, Gautier S, Micallef J, et al. Monitoring the safety of drugs and COVID-19 vaccines by the French Pharmacovigilance Centers during the pandemic: A win-win bet with Health Authorities! *Therapie*. 2023;78(5):467–475 ISSN: 1958-5578 DOI:10.1016/j.therap.2023.03.002

Haute Autorité de Santé HAS. *Stratégie de vaccination contre la Covid-19 - Place du vaccin à ARNm SPIKEVAX*. Saint-Denis La Plaine 2021. Tech. rep. https://www.has-sante.fr/jcms/p_3297315/fr/strategie-de-vaccination-contre-la-covid-19-place-du-vaccin-a-arnm-spikevax

Pfizer. 5.3.6 Cumulative Analysis of Post-Authorization of Adverse Event Reports of PF-07302048 (BNT162B2) Received through 28-Feb-2021. FDA-CBER-2021-5683-0000054. Public Health and Medical Professionals for Transparency (PHMPT) [(accessed on 14 July 2023)]. Available online: https://phmpt.org/pfizer-16-plus-documents/

Kaur, R.J.; Dutta, S.; Bhardwaj, P.; Charan, J.; Dhingra, S.; Mitra, P.; Singh, K.; Yadav, D.; Sharma, P.; Misra, S. Adverse Events Reported From COVID-19 Vaccine Trials: A Systematic Review. Indian J. Clin. Biochem. **2021**, 36, 427–439. [Google Scholar] [CrossRef] [PubMed]

ΜΕΛΕΤΕΣ ΓΙΑ ΑΝΕΠΙΘΥΜΗΤΕΣ ΕΝΕΡΓΕΙΕΣ ΜΕ ΑΝΑΣΚΟΠΗΣΗ ΠΑΛΑΙΟΤΕΡΩΝ ΜΕΛΕΤΩΝ (ADVERSE EVENTS OVERVIEW, REVIEW)

Dobrek Ł. Overview of COVID-19 vaccine adverse events. *Acta Poloniae Pharmaceutica - Drug Research*. December 2024;81:577–601 ISSN: 0001-6837 DOI:10.32383/appdr/195110 https://ptfarm.pl/download/?file=File/Acta_Poloniae/2024/4/577.pdf

Wu Q, Dudley MZ, Chen X, et al. Evaluation of the safety profile of COVID-19 vaccines: a rapid review. *BMC Medicine*. July 2021;19 ISSN: 1741-7015 DOI:10.1186/s12916-021-02059-5

Hajjo R, Sabbah DA, Tropsha A. Analyzing the Systems Biology Effects of COVID-19 mRNA Vaccines to Assess Their Safety and Putative Side Effects. Pathogens. 2022 Jun 29;11(7):743. doi: 10.3390/pathogens11070743. PMID: 35889989; PMCID: PMC9320269.

Corey KB, Koo G, Phillips EJ. Adverse Events and safety of SARS-CoV-2 vaccines: What's new and what's next. J Allergy Clin Immunol Pract. 2022; 10(9): 2254–2266. doi:10.1016/j.jaip.2022.04.035.

Kälkner KM, Sundström A, Nurminen ML, Larsson M, Ljung R, Arthurson V. Optimizing Safety Surveillance for COVID-19 Vaccines at the Swedish Medical Products Agency. Drug

Saf. 2023 Mar;46(3):319-321. doi: 10.1007/s40264-023-01275-7. Epub 2023 Feb 14. PMID: 36786959; PMCID: PMC9926420.

Lu X, Masuda S, Horlad H, Katoh T. Safety and adverse effects of the coronavirus disease 2019 vaccine among the general Japanese adult population. Vaccine. 2023;41(35):5090–6. https://doi.org/10.1016/j.vaccine.2023.04.053

Yan MM, Zhao H, Li ZR, Chow JW, Zhang Q, Qi YP, Wu SS, Zhong MK, Qiu XY. Serious adverse reaction associated with the COVID-19 vaccines of BNT162b2, Ad26.COV2.S, and mRNA-1273: Gaining insight through the VAERS. Front Pharmacol. 2022 Nov 7;13:921760. doi: 10.3389/fphar.2022.921760. PMID: 36419624; PMCID: PMC9676979.

Dziedzic A, Riad A, Attia S, Klugar M, Tanasiewicz M. Self-reported adverse events of COVID-19 vaccines in Polish healthcare workers and medical students. Cross-sectional study and pooled analysis of Co-VaST project results in central Europe. JClinMed.2021;10(22):5338. https://doi. org/10.3390/jcm10225338

Kim MS, Jung SY, Ahn JG, Park SJ, Shoenfeld Y, Kronbichler A, Koyanagi A, Dragioti E, Tizaoui K, Hong SH, Jacob L, Salem JE, Yon DK, Lee SW, Ogino S, Kim H, Kim JH, Excler JL, Marks F, Clemens JD, Eisenhut M, Barnett Y, Butler L, Ilie CP, Shin EC, Il Shin J, Smith L. Comparative safety of mRNA COVID-19 vaccines to influenza vaccines: A pharmacovigilance analysis using WHO international database. J Med Virol. 2022 Mar;94(3):1085-1095. doi: 10.1002/jmv.27424. Epub 2021 Nov 8. PMID: 34709664; PMCID: PMC8662238.

Meo SA, Bukhari IA, Akram J, Meo AS, Klonoff DC. COVID-19 vaccines: comparison of biological, pharmacological characteristics and adverse effects of Pfizer/BioNTech and Moderna Vaccines. Eur Rev Med Pharmacol Sci. 2021 Feb;25(3):1663-1669. doi: 10.26355/eurrev_202102_24877. PMID: 33629336.

Harris E. Symptoms After COVID-19 Vaccination Tied to Higher Antibody Levels. *JAMA.* 2024;332(5):362. doi:10.1001/jama.2024.12231

Riad A, Hocková B, Kantorová L, Slávik R,Spurná L, Stebel A, et al. Side effects of mRNA-based COVID-19 vaccine: nation-wide phase IV study among healthcare workers in Slovakia. Pharmaceuticals. 2021;1 4 (9) : 8 7 3 . h t t p s :/ / d o i . o r g / 1 0 . 3 3 9 0 /ph14090873

Klugar M, Riad A, Mekhemar M, Conrad J, Buchbender M, Howaldt HP, et al. Side effects of mRNA-based and viral vector-based COVID-19 vaccines among German healthcare workers. Biology. 2021;10(8):752. https://doi.org/10.3390/biology10080752

Riad A, Sağıroğlu D, Üstün B, Pokorná A, Klugarová J, Attia S, et al. Prevalence and risk factors of CoronaVac side effects: anindependent cross-sectional study among healthcare workers in Turkey. J Clin Med.2021;10(12):2629. https://doi.org/10.3390/ jcm10122629

Trougakos IP, Terpos E, Alexopoulos H, Politou M, Paraskevis D, Scorilas A, et al. Adverse effects of COVID-19 mRNA vaccines: the spike hypothesis. Trends Mol Med. 2022;28(7):542–54. https://doi.org/10.1016/j.molmed.2022.04.007

Klein NP, Lewis N, Goddard K, et al. Surveillance for Adverse Events After COVID-19 mRNA Vaccination. *JAMA*. October 2021;326(14):1390–1399 ISSN: 1538-3598 DOI:10.1001/jama.2021.15072 PMID: 34477808 | PMCID: PMC8511971 Free full text in Europe PMC

Sadat Larijani M, Doroud D, Banifazl M, Karami A, Bavand A, Ashrafian F, Ramezani A. A landscape on disorders following different COVID-19 vaccination: a systematic review of Iranian case reports. Eur J Med Res. 2023 Nov 26;28(1):542. doi: 10.1186/s40001-023-01531-7. PMID: 38008729; PMCID: PMC10676592.

Black S, Evans S. Serious adverse events following mRNA vaccination in randomized trials in adults. Vaccine. 2023 May 26;41(23):3473-3474. doi: 10.1016/j.vaccine.2023.04.040. Epub 2023 Apr 28. PMID: 37121802.

ΘΑΝΑΤΟΙ/ΑΥΞΗΜΕΝΗ ΘΝΗΣΙΜΟΤΗΤΑ ΠΟΥ ΕΧΟΥΝ ΑΠΟΔΟΘΕΙ ΣΤΑ COVID ΕΜΒΟΛΙΑ

Pomara C, Sessa F, Ciaccio M, Dieli F, Esposito M, Giammanco GM, et al. COVID-19 vaccine and death: causality algorithm according to the WHO eligibility diagnosis. Diagnostics (Basel) 2021;11:955. doi: 10.3390/diagnostics11060955. [DOI] [PMC free article] [PubMed] [Google Scholar]

Torjesen I. Covid-19: Norway investigates 23 deaths in frail elderly patients after vaccination. *BMJ (Clinical research ed.)*. January 2021;372:n149 ISSN: 1756-1833 DOI:10.1136/bmj.n149 PubMed

Torjesen I. Covid-19: Pfizer-BioNTech vaccine is "likely" responsible for deaths of some elderly patients, Norwegian review finds. *BMJ (Clinical research ed.)*. May 2021;373:n1372 ISSN: 1756-1833 DOI:10.1136/bmj.n1372 https://www.bmj.com/content/373/bmj.n1372

Roncati L, Manenti A, Corsi L. A Three-Case Series of Thrombotic Deaths in Patients over 50 with Comorbidities Temporally after modRNA COVID-19 Vaccination. *Pathogens (Basel, Switzerland)*. April 2022;11(4) ISSN: 2076-0817 DOI:10.3390/pathogens11040435

Xu S, Sy LS, Hong V, et al. Mortality risk after COVID-19 vaccination: A self-controlled case series study. *Vaccine*. March 2024;42:1731–1737 ISSN: 0264-410X DOI:10.1016/j.vaccine.2024.02.032 https://www.sciencedirect.com/science/article/pii/S0264410X24001919

Xu S, Huang R, Sy LS, et al. A safety study evaluating non-COVID-19 mortality risk following COVID-19 vaccination. *Vaccine*. January 2023;41:844–854 ISSN: 0264-410X DOI:10.1016/j.vaccine.2022.12.036 https://www.sciencedirect.com/science/article/pii/S0264410X22015614

Skerritt J. *Norwegian investigation of COVID-19 vaccination risks for elderly, very frail patients*. January , 2021 Webpage Deputy Secretary for Health Products RegulationDepartment of Health(The Health Products Regulation Group comprises the Therapeutic Goods Administration and theOffice of Drug Control) https://www.tga.gov.au/news/media-releases/norwegian-investigation-covid-19-vaccination-risks-elderly-very-frail-patients

Global Vaccine Safety Blueprint 2. 0 (GVSB2. 0) 2021-2023. 1st ed. ed. Geneva: World Health Organization; 2021 ISBN: 9789240036963 https://www.who.int/publications/i/item/9789240036963

Office for National Statistics (ONS). *Deaths involving COVID-19 by vaccination status, England: deaths occurring between 1 April 2021 and 31 May 2023*. August , 2023 Webpage Age-standardised mortality rates for deaths involving coronavirus (COVID-19) by vaccination status, broken down by age group. Deaths occurring between 1 April 2021 and 31 May 2023 in England. https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsinvolvingcovid19byvaccinationstatusengland/deathsoccurringbetween1april2021and31may2023

Office for National Statistics (ONS). *Risk of death following COVID-19 vaccination or positive SARS-CoV-2 test in young people, England: 8 December 2020 to 25 May 2022*. March , 2023 Webpage Estimates of the risk of all-cause and cardiac death in the 12 weeks after vaccination or positive SARS-CoV-2 test compared with subsequent weeks for people aged 12 to 29 years in England using two sources of mortality data: ONS death registrations and deaths recorded in Hospital Episode Statistics. Experimental Statistics. https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/riskofdeathfollowingcovid19vaccinationorpositivesarscov2testinyoungpeopleengland/8december2020to25may2022

Grange Z, Buelo A, Sullivan C, et al. Characteristics and risk of COVID-19-related death in fully vaccinated people in Scotland. *The Lancet*. November 2021;398:1799–1800 ISSN: 0140-6736 DOI:10.1016/s0140-6736(21)02316-3

Hirschbühl, K., Schaller, T., Märkl, B. *et al.* High viral loads: what drives fatal cases of COVID-19 in vaccinees? – an autopsy study. *Mod Pathol* **35**, 1013–1021 (2022). https://doi.org/10.1038/s41379-022-01069-9

Hulscher N, Hodkinson R, Makis W, McCullough PA. Autopsy findings in cases of fatal COVID-19 vaccine-induced myocarditis. *ESC Heart Failure*. January 2024 ISSN: 2055-5822 DOI:10.1002/ehf2.14680 PMID: 38221509. https://doi.org/10.1002/ehf2.14680

Butt AA, Guerrero MD, Canlas EB, et al. Evaluation of mortality attributable to SARS-CoV-2 vaccine administration using national level data from Qatar. *Nature Communications*. January 2023;14 ISSN: 2041-1723 DOI:10.1038/s41467-022-35653-z

Payne JR, Bose S, Kubiak RW, Nolen LD. Evaluation of mortality risk after COVID-19 vaccination, Utah 2021. *Vaccine*. May 2023;41(18):2996–3002 ISSN: 1873-2518 DOI:10.1016/j.vaccine.2023.03.072

Ladapo JA. *Guidance for mRNA COVID-19 Vaccines*. October , 2022 Webpage The Florida Department of Health https://www.floridahealth.gov/diseases-and-conditions/respiratory-illness/COVID-19/_documents/news/2022/10/20221007-guidance-mrna-covid19-vaccines-doc.pdf

McDonald J. *Florida's COVID-19 Vaccination Analysis Is Flawed, Experts Say*. October , 2022 https://www.factcheck.org/2022/10/scicheck-floridas-covid-19-vaccination-analysis-is-flawed-experts-say/

Xu S, Huang R, Sy LS, et al. COVID-19 Vaccination and Non–COVID-19 Mortality Risk — Seven Integrated Health Care Organizations, United States, December 14, 2020–July 31, 2021. *MMWR. Morbidity and Mortality Weekly Report*. October 2021;70:1520–1524 ISSN: 1545-861X DOI:10.15585/mmwr.mm7043e2 https://www.scopus.com/record/display.uri?eid=2-s2.0-85119352379&origin=inward&txGid=7f5991ba3679577cea2510a4b34144cc

Nafilyan V, Bermingham CR, Ward IL, et al. Risk of death following COVID-19 vaccination or positive SARS-CoV-2 test in young people in England. *Nature communications*. March 2023;14(1):1541 ISSN: 2041-1723 DOI:10.1038/s41467-023-36494-0

Ghebremichael-Weldeselassie Y, Jabagi MJ, Botton J, et al. A modified self-controlled case series method for event-dependent exposures and high event-related mortality, with application to COVID-19 vaccine safety. *Statistics in Medicine*. January 2022;41:1735–1750 ISSN: 1097-0258 DOI:10.1002/sim.9325

Laemmle-Ruff I, Fryk JJ, Shenton P, et al. Detailed review of mortality reported following COVID-19 vaccination in Victoria, Australia: 2021-2023. *Vaccine*. December 2024;42:126368 ISSN: 0264-410X DOI:10.1016/j.vaccine.2024.126368 https://www.sciencedirect.com/science/article/abs/pii/S0264410X24010508

Sessa F, Salerno M, Esposito M, Di Nunno N, Zamboni P, Pomara C. Autopsy Findings and Causality Relationship between Death and COVID-19 Vaccination: A Systematic Review. J Clin Med. 2021 Dec 15;10(24):5876. doi: 10.3390/jcm10245876. PMID: 34945172; PMCID: PMC8709364.

Yan MM, Zhao H, Li ZR, Chow JW, Zhang Q, Qi YP, Wu SS, Zhong MK, Qiu XY. Serious adverse reaction associated with the COVID-19 vaccines of BNT162b2, Ad26.COV2.S, and mRNA-1273: Gaining insight through the VAERS. Front Pharmacol. 2022 Nov 7;13:921760. doi: 10.3389/fphar.2022.921760. PMID: 36419624; PMCID: PMC9676979.

Carlson T. *Uncensored: The Vaccine Interview*. March , 2024 Webpage How many people died from the COVID shot? Do vaccines actually cause autism? Steve Kirsch has looked at the data. https://tuckercarlson.com/uncensored-the-vaccine-interview

Zuckerberg M. *Zuckerberg: "People In The Biden Administration" Told Us To Censor True Information About Vaccine Side-Effects*. January , 2025 Mark Zuckerberg interview by Joe Rogan https://www.realclearpolitics.com/video/2025/01/10/zuckerberg_people_in_the_biden_administraiton_told_us_to_censor_true_information_about_vaccine_side-effects.html

White House CONFIRMS Wuhan Lab Leak! Instagram. https://www.instagram.com/deborahmurtagh/reel/DFgWBpZzh6V/

Nushida H, Ito A, Kurata H, et al. A case of fatal multi-organ inflammation following COVID-19 vaccination. *Legal medicine (Tokyo, Japan)*. July 2023;63:102244 ISSN: 1873-4162 DOI:10.1016/j.legalmed.2023.102244

ΜΕΛΕΤΕΣ ΠΟΥ ΑΝΑΦΕΡΟΥΝ ΑΠΟΥΣΙΑ ΑΥΞΗΣΗΣ Ή ΑΚΟΜΗ ΚΑΙ ΜΕΙΩΣΗ ΤΗΣ «NON–COVID-19» ΘΝΗΣΙΜΟΤΗΤΑΣ

S. Xu, R. Huang, L.S. Sy, *et al.*
COVID-19 Vaccination and Non–COVID-19 Mortality Risk—Seven Integrated Health Care Organizations, United States, December 14, 2020–July 31, 2021
Morb Mortal Wkly Rep, 70 (43) (2021), p. 1520
DOI: http://dx.doi.org/10.15585/mmwr.mm7043e2

Αναφέρουν : During December 2020–July 2021, COVID-19 vaccine recipients had lower rates of non–COVID-19 mortality than did unvaccinated persons after adjusting for age, sex, race and ethnicity, and study site.

Stanley Xu, Runxin Huang, Lina S. Sy, Vennis Hong, Sungching C. Glenn, Denison S. Ryan, Kerresa Morrissette, Gabriela Vazquez-Benitez, Jason M. Glanz, Nicola P. Klein, Bruce Fireman, David McClure, Elizabeth G. Liles, Eric S. Weintraub, Hung-Fu Tseng, Lei Qian, A safety study evaluating non-COVID-19 mortality risk following COVID-19 vaccination, Vaccine, Volume 41, Issue 3, 2023, Pages 844-854, ISSN 0264-410X, https://doi.org/10.1016/j.vaccine.2022.12.036.
(https://www.sciencedirect.com/science/article/pii/S0264410X22015614)

Αναφέρουν no increased risk was found for non-COVID-19 mortality among recipients of three COVID-19 vaccines used in the US.

Lv G, Yuan J, Xiong X, Li M. Mortality Rate and Characteristics of Deaths Following COVID-19 Vaccination. Front Med (Lausanne). 2021 May 14;8:670370. doi: 10.3389/fmed.2021.670370. PMID: 34055843; PMCID: PMC8160119.

Bruce Fireman, David McClure, Elizabeth G. Liles, Eric S. Weintraub, Hung-Fu Tseng, Lei Qian .A safety study evaluating non-COVID-19 mortality risk following COVID-19 vaccination. Vaccine,Volume 41, Issue 3, 2023, Pages 844-854, ISSN 0264-410X

ΜΕΛΕΤΕΣ ΘΝΗΣΙΜΟΤΗΤΑΣ ΣΕ ΕΜΒΟΛΙΑΣΜΕΝΟΥΣ/ ΠΡΟΓΝΩΣΤΙΚΑ ΣΤΟΙΧΕΙΑ ΘΑΝΑΤΟΥ ΑΠΟ COVID-19

Estiri H, Strasser ZH, Klann JG, Naseri P, Wagholikar KB, Murphy SN. Predicting COVID-19 mortality with electronic medical records. *npj Digital Medicine*. February 2021;4 ISSN: 2398-6352 DOI:10.1038/s41746-021-00383-x

Rastad H, Karim H, Ejtahed HS, et al. Risk and predictors of in-hospital mortality from COVID-19 in patients with diabetes and cardiovascular disease. *Diabetology & Metabolic Syndrome*. July 2020;12 ISSN: 1758-5996 DOI:10.1186/s13098-020-00565-9
https://www.scopus.com/record/display.uri?eid=2-s2.0-85088011066&origin=inward&txGid=10491c7ced811569b040ae1b9704aca1

Mehraeen E, Karimi A, Barzegary A, et al. Predictors of mortality in patients with COVID-19–a systematic review. *European Journal of Integrative Medicine*. December 2020;40:101226 ISSN: 1876-3820 DOI:10.1016/j.eujim.2020.101226
https://www.sciencedirect.com/science/article/pii/S1876382020314074

Mesas AE, Cavero-Redondo I, Álvarez-Bueno C, et al. Predictors of in-hospital COVID-19 mortality: A comprehensive systematic review and meta-analysis exploring differences by

age, sex and health conditions. *PLOS ONE*. November 2020;15:e0241742 ISSN: 1932-6203 DOI:10.1371/journal.pone.0241742
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0241742

Trecarichi EM, Mazzitelli M, Serapide F, et al. Clinical characteristics and predictors of mortality associated with COVID-19 in elderly patients from a long-term care facility. *Scientific Reports*. November 2020;10 ISSN: 2045-2322 DOI:10.1038/s41598-020-77641-7
https://www.nature.com/articles/s41598-020-77641-7

Tian W, Jiang W, Yao J, et al. Predictors of mortality in hospitalized COVID-19 patients: A systematic review and meta-analysis. *Journal of Medical Virology*. July 2020;92:1875–1883 ISSN: 1096-9071 DOI:10.1002/jmv.26050
https://onlinelibrary.wiley.com/doi/10.1002/jmv.26050

Fatima S, Zafar A, Afzal H, et al. COVID-19 infection among vaccinated and unvaccinated: Does it make any difference? *PLOS ONE*. July 2022;17:e0270485 ISSN: 1932-6203 DOI:10.1371/journal.pone.0270485

Busic N, Lucijanic T, Barsic B, et al. Vaccination provides protection from respiratory deterioration and death among hospitalized COVID-19 patients: Differences between vector and mRNA vaccines. *Journal of Medical Virology*. February 2022;94:2849–2854 ISSN: 1096-9071 DOI:10.1002/jmv.27666

Gholinataj Jelodar M, Mirzaei S, Saghafi F, et al. Impact of vaccination status on clinical outcomes of hospitalized COVID-19 patients. *BMC infectious diseases*. February 2024;24(1):254 ISSN: 1471-2334 DOI:10.1186/s12879-024-09139-w

Hrycek E, Walawska-Hrycek A, Milewski K, Nowakowski P, Buszman P, Żurakowski A. The Influence of SARS-CoV-2 Vaccination on the Mortality and Outcomes of Patients with Both Myocardial Infarction and COVID-19. *Vaccines*. August 2024;12(9) ISSN: 2076-393X DOI:10.3390/vaccines12090983

Selvaraju LPB, Praveen Kumar M. Mortality amongst covid 19 pateints in relation to their vaccination status. *Journal of the Indian Medical Association*. May 2024;122:24-27 ISSN: 0019-5847 https://ima-india.org/ima/pdfdata/JIMA-2024/05-JIMA-May-2024.pdf

Haas EJ, Angulo FJ, McLaughlin JM, et al. Impact and effectiveness of mRNA BNT162b2 vaccine against SARS-CoV-2 infections and COVID-19 cases, hospitalisations, and deaths following a nationwide vaccination campaign in Israel: an observational study using national surveillance data. *Lancet (London, England)*. May 2021;397(10287):1819–1829 ISSN: 1474-547X DOI:10.1016/S0140-6736(21)00947-8]

Korang SK, von Rohden E, Veroniki AA, et al. Vaccines to prevent COVID-19: A living systematic review with Trial Sequential Analysis and network meta-analysis of randomized clinical trials. *PLOS ONE*. January 2022;17:e0260733 ISSN: 1932-6203 DOI:10.1371/journal.pone.0260733 https://doi.org/10.1371/journal.pone.0260733

Viral vector vaccines decreased mortality (risk ratio, 0.25 [95% CI 0.09 to 0.67]; 67 563 participants; 3 trials, low certainty)   All the vaccines are effective in preventing COVID-19. The mRNA vaccines seem most effective in preventing COVID-19, but viral vector vaccines seem most effective in reducing mortality.

Vilches TN, Moghadas SM, Sah P, et al. Estimating COVID-19 Infections, Hospitalizations, and Deaths Following the US Vaccination Campaigns During the Pandemic. *JAMA network open*. January 2022;5(1):e2142725 ISSN: 2574-3805 DOI:10.1001/jamanetworkopen.2021.42725 PubMed

OurWorldinData.org. *United States: COVID-19 weekly death rate by vaccination status, All ages* Webpage https://ourworldindata.org/grapher/united-states-rates-of-covid-19-deaths-by-vaccination-status Accessed February 1, 2025

Huespe IA, Ferraris A, Lalueza A, et al. COVID-19 vaccines reduce mortality in hospitalized patients with oxygen requirements: Differences between vaccine subtypes. A multicontinental cohort study. *Journal of Medical Virology*. May 2023;95 ISSN: 1096-9071 DOI:10.1002/jmv.28786 https://onlinelibrary.wiley.com/doi/full/10.1002/jmv.28786

Bardenheier BH, Gravenstein S, Blackman C, et al. Adverse events following mRNA SARS-CoV-2 vaccination among U.S. nursing home residents. *Vaccine*. June 2021;39:3844–3851 ISSN: 0264-410X DOI:10.1016/j.vaccine.2021.05.088 https://www.sciencedirect.com/science/article/pii/S0264410X21006836

Li LL, Zheng C, La J, et al. Impact of prior SARS-CoV-2 infection on incidence of hospitalization and adverse events following mRNA SARS-CoV-2 vaccination: A nationwide, retrospective cohort study. *Vaccine*. February 2022;40(8):1082–1089 ISSN: 1873-2518 DOI:10.1016/j.vaccine.2022.01.026

Muthukrishnan J, Vardhan V, Mangalesh S, et al. Vaccination status and COVID-19 related mortality: A hospital based cross sectional study. *Medical Journal Armed Forces India*. July 2021;77:S278–S282 ISSN: 0377-1237 DOI:10.1016/j.mjafi.2021.06.034

Rossman H, Shilo S, Meir T, Gorfine M, Shalit U, Segal E. COVID-19 dynamics after a national immunization program in Israel. *Nature medicine*. June 2021;27(6):1055–1061 ISSN: 1546-170X DOI:10.1038/s41591-021-01337-2

E.J. Haas, F.J. Angulo, J.M. McLaughlin, *et al.*
Impact and effectiveness of mRNA BNT162b2 vaccine against SARS-CoV-2 infections and COVID-19 cases, hospitalisations, and deaths following a nationwide vaccination campaign in Israel: an observational study using national surveillance data
Lancet (London, England), 397 (10287) (2021 May 5), p. 1819
View PDFView articleView in ScopusGoogle Scholar

Mortality reduction was close to 100% in this primary vaccine efficacy study.

Brechje de Gier, Liselotte van Asten, Tjarda M. Boere, Annika van Roon, Caren van Roekel, Joyce Pijpers, C.H. Henri van Werkhoven, Caroline van den Ende, Susan J.M. Hahné, Hester E. de Melker, Mirjam J. Knol, Susan van den Hof. Effect of COVID-19 vaccination on mortality by COVID-19 and on mortality by other causes, the Netherlands, January 2021–January 2022, Vaccine, Volume 41, Issue 31, **2023,** Pages 4488-4496, ISSN 0264-410X, https://doi.org/10.1016/j.vaccine.2023.06.005.
(https://www.sciencedirect.com/science/article/pii/S0264410X23006606)

Butt AA, Guerrero MD, Canlas EB, et al. Evaluation of mortality attributable to SARS-CoV-2 vaccine administration using national level data from Qatar. *Nature Communications*. January 2023;14 ISSN: 2041-1723 DOI:10.1038/s41467-022-35653-z

by AA Butt · 2023 · Cited by 10 — Among 6,928,359 doses administered, *138 deaths occurred within 30 days of vaccination*; eight had a high probability (1.15/1,000,000 doses), 15 ...

ΜΕΛΕΤΕΣ ΓΙΑ ΜΗ-COVID-19 ΘΝΗΣΙΜΟΤΗΤΑ ΣΕ ΕΜΒΟΛΙΑΣΜΕΝΟΥΣ

Xu S, Huang R, Sy LS, et al. COVID-19 Vaccination and Non–COVID-19 Mortality Risk — Seven Integrated Health Care Organizations, United States, December 14, 2020–July 31, 2021. *MMWR. Morbidity and Mortality Weekly Report*. October 2021;70:1520–1524 ISSN: 1545-861X DOI:10.15585/mmwr.mm7043e2
https://www.scopus.com/record/display.uri?eid=2-s2.0-85119352379&origin=inward&txGid=7f5991ba3679577cea2510a4b34144cc

Stanley Xu, Runxin Huang, Lina S. Sy, Vennis Hong, Sungching C. Glenn, Denison S. Ryan, Kerresa Morrissette, Gabriela Vazquez-Benitez, Jason M. Glanz, Nicola P. Klein, Bruce Fireman, David McClure, Elizabeth G. Liles, Eric S. Weintraub, Hung-Fu Tseng, Lei Qian. A safety study evaluating non-COVID-19 mortality risk following COVID-19 vaccination. Vaccine, Volume 41, Issue 3, 2023, Pages 844-854, ISSN 0264-410X, https://doi.org/10.1016/j.vaccine.2022.12.036. (https://www.sciencedirect.com/science/article/pii/S0264410X22015614)
[PubMed] [Google Scholar

Stanley Xu, Lina S. Sy, Vennis Hong, Paddy Farrington, Sungching C. Glenn, Denison S. Ryan, Abraelle M. Shirley, Bruno J. Lewin, Hung-Fu Tseng, Gabriela Vazquez-Benitez, Jason M. Glanz, Bruce Fireman, David L. McClure, Laura P. Hurley, Onchee Yu, Michael Wernecke, Ning Smith, Eric S. Weintraub, Lei Qian
Mortality risk after COVID-19 vaccination: A self-controlled case series study, Vaccine, Volume 42, Issue 7, 2024, Pages 1731-1737, ISSN 0264-410X, https://doi.org/10.1016/j.vaccine.2024.02.032. (https://www.sciencedirect.com/science/article/pii/S0264410X240019

Using a modified SCCS design and adjusting for temporal trends, **no-increased risk** was found for non-COVID-19 mortality, all-cause mortality, and four cardiac-related death outcomes among recipients of the three COVID-19 vaccines used in the US.

Aaby P, Netea MG, Benn CS. Beneficial non-specific effects of live vaccines against COVID-19 and other unrelated infections. *The Lancet Infectious Diseases*. January 2023;23:e34–e42 ISSN: 1473-3099 DOI:10.1016/s1473-3099(22)00498-4

Pálinkás A, Sándor J. Effectiveness of COVID-19 Vaccination in Preventing All-Cause Mortality among Adults during the Third Wave of the Epidemic in Hungary: Nationwide Retrospective Cohort Study. *Vaccines*. June 2022;10:1009 ISSN: 2076-393X DOI:10.3390/vaccines10071009

Shapiro J, Dean NE, Madewell ZJ, Yang Y, Halloran ME, Longini I. Efficacy Estimates for Various COVID-19 Vaccines: What we Know from the Literature and Reports. May 2021 DOI:10.1101/2021.05.20.21257461

Horvath VJ, Békeffy M, Németh Z, et al. The effect of COVID-19 vaccination status on all-cause mortality in patients hospitalised with COVID-19 in Hungary during the delta wave of the pandemic. *GeroScience*. April 2024;46(2):1881–1894 ISSN: 2509-2723 DOI:10.1007/s11357-023-00931-1

Xu S., Huang R., Sy L.S., Glenn S.C., Ryan D.S., Morrissette K., et al. *COVID-19 vaccination and Non-COVID-19 mortality risk - seven integrated health care organizations, United States, December 14, 2020-July 31, 2021*. MMWR Morb Mortal Wkly Rep. 2021;70(43):1520–1524. doi: 10.15585/mmwr.mm7043e2. [DOI] [PMC free article] [PubMed] [Google Scholar]

Grasselli G, Zanella A, Carlesso E, et al. Association of COVID-19 Vaccinations With Intensive Care Unit Admissions and Outcome of Critically Ill Patients With COVID-19 Pneumonia in Lombardy, Italy. *JAMA network open*. October 2022;5(10):e2238871 ISSN: 2574-3805 DOI:10.1001/jamanetworkopen.2022.38871 PMID: 36301541; PMCID: PMC9614574.
Συμπέραναν ότι είναι παρόμοια η θνησιμότητα

COVID ΚΑΙ NON-COVID-19 ΘΝΗΣΙΜΟΤΗΤΑ ΜΕΤΑ COVID ΕΜΒΟΛΙΑΣΜΟ

Johnson AG, Amin AB, Ali AR, et al. COVID-19 Incidence and Death Rates Among Unvaccinated and Fully Vaccinated Adults with and Without Booster Doses During Periods of Delta and Omicron Variant Emergence — 25 U.S. Jurisdictions, April 4–December 25, 2021. *MMWR. Morbidity and Mortality Weekly Report*. January 2022;71:132–138 ISSN: 1545-861X DOI:10.15585/mmwr.mm7104e2

Nafilyan V, Bermingham C. *COVID-19 vaccination and mortality in young people during the coronavirus pandemic*: Office for National Statistics. March , 2022 Webpage An analysis of the mortality following COVID-19 vaccination and of excess death during the pandemic in young people https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/articles/covid19vaccinationandmortalityinyoungpeopleduringthecoronaviruspandemic/2022-03-22 Accessed February 1, 2025

Quiroga R, Gastellu S, Fernández B, et al. The impact of COVID-19 childhood and adolescent vaccination on mortality in Argentina. *Vaccine*. September 2024;42:126037 ISSN: 0264-410X DOI:10.1016/j.vaccine.2024.06.005 https://www.sciencedirect.com/science/article/abs/pii/S0264410X24006650

> The impact of COVID-19 childhood and adolescent ...
> The authors state that the 2022 COVID-19 *death rates* were 16–18 times lower for those with at least two *vaccine* doses compared to the unvaccinated.

mRNA ΕΜΒΟΛΙΑ - ΣΥΣΧΕΤΙΣΗ ΜΕ ΘΝΗΣΙΜΟΤΗΤΑ ΑΠΟ ΚΑΘΕ ΑΙΤΙΑ (COVID-19 mRNA-vaccination and all-cause mortality)

Dahl J, Tapia G, Bøås H, Landsjøåsen Bakken IJ, Løvdal Gulseth H. COVID-19 mRNA-vaccination and all-cause mortality in the adult population in Norway during 2021-2023: a population-based cohort study. December 2024 DOI:10.1101/2024.12.15.24319058 https://www.medrxiv.org/content/10.1101/2024.12.15.24319058v1.full.pdf

> 16 Dec 2024 — We estimate the risk of all-cause *mortality* by *vaccination* status in the total adult population in Norway during 2021-2023 and demonstrate a lower rate of all- ...

National Institute for Public Health and the Environment - RIVM. *Vaccination and excess mortality* Webpage Since 2009, RIVM has been monitoring how many people die in the Netherlands per week. The number of deaths (referred to as mortality) is monitored based on data from Statistics Netherlands (CBS). This enables RIVM to assess how mortality is affected by unique circumstances, such as an outbreak of an infectious disease. RIVM publishes these figures on its website on a weekly basis. https://www.rivm.nl/en/coronavirus-covid-19/vaccination/vaccination-excess-mortality

> The studies show that the risk of hospital admission and death due to COVID-19 is lower for *vaccinated* people than for unvaccinated people.

Xu S, Sy LS, Hong V, Farrington P, Glenn SC, Ryan DS, Shirley AM, Lewin BJ, Tseng HF, Vazquez-Benitez G, Glanz JM, Fireman B, McClure DL, Hurley LP, Yu O, Wernecke M, Smith N, Weintraub ES, Qian L. Mortality risk after COVID-19 vaccination: A self-controlled case series study. Vaccine. 2024 Mar 7;42(7):1731-1737. doi: 10.1016/j.vaccine.2024.02.032. Epub 2024 Feb 22. PMID: 38388239; PMCID: PMC11238073.

> It reported that males aged 18–39 years had an increased risk of cardiac-related *deaths* in the 28 days following the last dose of mRNA COVID-19 ...

Liko J, Cieslak PR. Assessment of Risk for Sudden Cardiac Death Among Adolescents and Young Adults After Receipt of COVID-19 Vaccine — Oregon, June 2021–December 2022. *MMWR. Morbidity and Mortality Weekly Report*. April 2024;73:317–320 ISSN: 1545-861X DOI:10.15585/mmwr.mm7314a5

> Studies have shown significant reductions in COVID-19–related *mortality* among *vaccinated* persons; during the first 2 years of COVID-19 *vaccine* ...

ΕΡΓΑΣΙΕΣ ΠΟΥ ΑΝΑΦΕΡΟΥΝ ΑΥΞΗΣΗ ΘΝΗΣΙΜΟΤΗΤΑ

Havaldar AA, Sheshala K, Kumar R, Chennabasappa A, Thomas RR, Selvam S. Non-COVID Admissions to the ICU After COVID Vaccination: A Multicenter Study. *Cureus*. October 2024;16(10):e71534 ISSN: 2168-8184 DOI:10.7759/cureus.71534 PMID: 39544616; PMCID: PMC11562690.

Abhilash KPP, Mathiyalagan P, Krishnaraj VRK, et al. Impact of prior vaccination with Covishield (TM)and Covaxin® on mortality among symptomatic COVID-19 patients during the second wave of the pandemic in South India during April and May 2021: a cohort study. *Vaccine*. March 2022;40(13):2107–2113 ISSN: 1873-2518 DOI:10.1016/j.vaccine.2022.02.023

Havaldar AA, Prakash J, Kumar S, Sheshala K, Chennabasappa A, Thomas RR, Sushmitha EC, Khan MS, Kumar R, Kindo S, Singh R, Kartik M, Swamy AHM, Raj JM, Thomas T, Selvam S. Demographics and Clinical Characteristics of COVID-19-vaccinated Patients Admitted to ICU: A Multicenter Cohort Study from India (PostCoVac Study-COVID Group). Indian J Crit Care Med. 2022 Nov;26(11):1184-1191. doi: 10.5005/jp-journals-10071-24349. PMID: 36873595; PMCID: PMC9983652.

Grasselli G, Zanella A, Carlesso E, Florio G, Canakoglu A, Bellani G, Bottino N, Cabrini L, Castelli GP, Catena E, Cecconi M, Cereda D, Chiumello D, Forastieri A, Foti G, Gemma M, Giudici R, Grazioli L, Lombardo A, Lorini FL, Madotto F, Mantovani A, Mistraletti G, Mojoli F, Mongodi S, Monti G, Muttini S, Piva S, Protti A, Rasulo F, Scandroglio AM, Severgnini P, Storti E, Fumagalli R, Pesenti A; COVID-19 Lombardy ICU Network. Association of COVID-19 Vaccinations With Intensive Care Unit Admissions and Outcome of Critically Ill Patients With COVID-19 Pneumonia in Lombardy, Italy. JAMA Netw Open. 2022 Oct 3;5(10):e2238871. doi: 10.1001/jamanetworkopen.2022.38871. PMID: 36301541; PMCID: PMC9614574.

NON-COVID-19 ΘΝΗΣΙΜΟΤΗΤΑ, ΘΝΗΣΙΜΟΤΗΤΑ ΑΠΟ ΚΑΘΕ ΑΙΤΙΑ

Nafilyan V, Bermingham CR, Ward IL, Morgan J, Zaccardi F, Khunti K, Stanborough J, Banerjee A, Doidge JC. *Risk of death following COVID-19 vaccination or positive SARS-CoV-2 test in young people in England.* Nat Commun. 2023 Mar 27;14(1):1541. PMID: 36973247; PMCID: PMC10043280. DOI: 10.1038/s41467-023-36494-0

> Αναφέρουν: **no significant increase in cardiac or all-cause mortality in the 12 weeks following COVID-19 vaccination compared to more than 12 weeks after any dose**
>
> **Αναφέρουν όμως επίσης: an increase in cardiac death in women after a first dose of non mRNA vaccines. A positive SARS-CoV-2 test is associated with increased cardiac and all-cause mortality among people vaccinated or unvaccinated at time of testing.**

Office for National Statistics (ONS). *Risk of death following COVID-19 vaccination or positive SARS-CoV-2 test in young people, England*. March , 2023 Dataset https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/riskofdeathfollowingcovid19vaccinationorpositivesarscov2testinyoungpeopleengland

Ghebremichael-Weldeselassie Y, Jabagi MJ, Botton J, Bertrand M, Baricault B, Drouin J, Weill A, Zureik M, Dray-Spira R, Farrington P. A modified self-controlled case series method for event-dependent exposures and high event-related mortality, with application to COVID-19 vaccine safety. Stat Med. 2022 May 10;41(10):1735-1750. doi: 10.1002/sim.9325. Epub 2022 Jan 28. PMID: 35092037; PMCID: PMC9303905.

Ingrid Laemmle-Ruff, Jesse J. Fryk, Priya Shenton, Hazel J. Clothier, Sarah Parsons, Linda Iles, Clare White, Michael Murray, Jim Buttery, Nigel W. Crawford. *Detailed review of mortality reported following COVID-19 vaccination in Victoria, Australia: 2021-2023*, Vaccine, Volume 42, Issue 26, 2024, 126368, ISSN 0264-410X, https://doi.org/10.1016/j.vaccine.2024.126368. (https://www.sciencedirect.com/science/article/pii/S0264410X24010508)

> Five deaths (0.03 per 100,000 doses administered), all publicly reported, were assessed by the national regulator as likely vaccine-associated.(Μόνο!)

Grady D, Mazzei P. *Doctor's Death After Covid Vaccine Is Being Investigated (Published 2021)*. January , 2021 Nytimes A Florida physician developed an unusual blood disorder shortly after he received the Pfizer vaccine. It is not yet known if the shot is linked to the illness. https://www.nytimes.com/2021/01/12/health/covid-vaccine-death.html

Seneff S, Nigh G. Worse than the disease? Reviewing some possible unintended consequences of the mRNA vaccines against COVID-19. *International Journal of Vaccine Theory Practice and Research*. 2021;2(1):38-79. doi:10.56098/ijvtpr.v2i1.23

ΣΥΓΚΑΛΥΨΗ ΑΠΟ FDA ΘΑΝΑΤΩΝ ΚΑΙ ΠΑΡΕΝΕΡΓΕΙΩΝ ΠΟΥ ΟΦΕΙΛΟΝΤΑΝ ΣΤΟ ΕΜΒΟΛΙΟ ΤΗΣ PFIZER (FDA COVER-UP OF VACCINE DEATHS)

https://phmpt.org/ **Σε αυτόν τον ιστότοπο της ομάδας** PHMPT (Public Health and Medical Professionals for Transparency), ευρίσκεται πληθώρα εμπιστευτικών εγγράφων της Pfizer που δείχνουν ότι έγινε συγκάλυψη θανάτων από τα εμβόλια, γνωστών από τις αρχές του 2021, όπως επίσης αυτομάτων διακοπών κύησης σε εμβολιασμένες εγκύους και σοβαρών βλαβών με τριπλάσια συχνότητα σε εμβολιασμένες γυναίκες **(disproportionate, gender-specific damage profile)**

Ένα από τα εμπιστευτικά έγγραφα ήρθε στο φώς μετά από δικαστική εντολή στην FDA που δεν ήθελε να τα παραδώσει με το πρόσχημα ότι έπρεπε να παρέλθουν 55 χρόνια πριν δοθούν αυτές οι πληροφορίες. Ο δικαστής διέταξε να απελευθερώνονται 500 αρχεία κάθε μήνα, και στην πρώτη παρτίδα εγγράφων που δόθηκαν, υπήρχε το έγγραφο "Cumulative Analysis of Post-Authorization Adverse Event Reports."

https://phmpt.org/wp-content/uploads/2021/11/5.3.6-postmarketing-experience.pdf

https://www.naturalnews.com/files/536-postmarketing-experience.pdf

Το έγγραφο αποκαλύπτει ότι εντός των πρώτων 90 ημερών από την έκδοση αδείας κυκλοφορίας EUA, το εμβόλιο ευθυνόταν για **1,223 θανάτους** και υπήρχαν περισσότερες από **42,000 αναφορές** για συνολικά **158,893 ανεπιθύμητες αντιδράσεις καθώς και ότι πλήττονταν τριπλάσιες γυναίκες από άνδρες** . Επίσης, υπήρχαν αναφορές σε πολλές αυτόματες διακοπές κύησης .Οι αναφορές προέρχονταν από τις Ηνωμένες Πολιτείες, το Ηνωμένο Βασίλειο, την Ιταλία, Γερμανία, Γαλλία, Πορτογαλία, Ισπανία, και άλλες χώρες.

Επιπλέον των "γενικών διαταραχών" το έγγραφο ανέφερε ότι συχνότερες ήσαν "νευρολογικές" διαταραχές **Nervous system disorders**, **25,957 αναφορές έως τότε.**

Στο ίδιο έγγραφο φαίνεται ότι η **Pfizer πληροφόρησε την FDA ότι τα mRNA εμβόλιά της μπορούν να προκαλέσουν σοβαρότερη νόσο ("enhanced disease").**

"Safety concerns" (section 3.1.2) "Vaccine-Associated Enhanced Disease (VAED), including Vaccine-associated Enhanced Respiratory Disease (VAERD)."

Αυτό σημαίνει ότι η **FDA είχε ενημερωθεί ότι θα ήταν χειρότερη η λοίμωξη COVID στους εμβολιασμένους!**

Υπό τον τίτλο "missing information," η Pfizer ενημέρωνε την FDA ότι δεν υπήρχε πληροφόρηση για "Use in Pregnancy and lactation" ούτε ασφάλεια για "Use in Paediatric Individuals < 12 Years of Age."

Η αποτελεσματικότητα του εμβολίου "Vaccine Effectiveness" είχε επίσης καταχωρηθεί υπό τον τίτλο "Missing information" από την Pfizer.

Παρ'όλα αυτά, η FDA προώθησε το εμβόλιο ως "safe and effective" !

Υπό τον τίτλο "Use in Pregnancy and lactation," γίνεται αναφορά σε :*αυτόματες διακοπές κύησης (23), εκκρεμεί η έκβαση(5), πρόωρος τοκετός με θάνατο του νεογνού (2), ενδομήτριος θάνατος (2) . Ωστόσο το εμβόλιο προωθήκε ως ασφαλές για εγκύους!*

Απάντηση του Office for National Statistics (ONS) του Ηνωμένου Βασιλείου σε ένα αίτημα για παροχή στοιχείων σχετικά με θανάτους και αναπηρίες εξαιτίας των COVID εμβολίων

Απάντηση στο αίτημα FOI REF: FOI-2023-1460

Οι θάνατοι λόγω εμβολίου COVID-19 στην Αγγλία και Ουαλία μέχρι τον Ιούλιο 2023 είναι δημοσιευμένα εδώ :Monthly mortality analysis, England and Wales
Στην Αγγλία 55 και στην Ουαλία 1.

Η απάντηση σχετικά με αναπηρίες λόγω των εν λόγω εμβολίων ήταν:

Δεν διατηρούμε δεδομένα από ανεπιθύμητες αντιδράσεις που δεν καταλήγουν σε θάνατο (We do not hold data regarding adverse reactions to the COVID-19 vaccination that do not result in death).

ΣΤΟΙΧΕΙΑ ΑΠΟ MHRA

The Medicines and Healthcare products Regulatory Agency (MHRA). *Coronavirus Yellow Card reporting site* Report suspected side effects to medicines, vaccines, medical device and test kit incidents used in coronavirus testing and treatment to the Medicines and Healthcare products Regulatory Agency to ensure safe and effective use https://coronavirus-yellowcard.mhra.gov.uk/

Η MHRA, υπεύθυνη για τη συνεχή παρακολούθηση της ασφάλειας φαρμάκων και εμβολίων μετά την αδειοδότησή τους, δημοσίευσε την 5-2-2021 μια έκθεση, summarising information received via the Yellow Card scheme προαναγγέλλοντας τακτική επικαιροποίηση με δεδομένα από δικές τους έρευνες βάσει της υιοθετημένης στρατηγικής COVID-19 Vaccine Surveillance Strategy. Η τελευταια έκθεση ήταν την 8-3-2023

The Medicines and Healthcare products Regulatory Agency (MHRA). *Coronavirus (COVID-19) vaccines adverse reactions*. March , 2023 Report A report covering adverse reactions to approved COVID-19 vaccines https://www.gov.uk/government/publications/coronavirus-covid-19-vaccine-adverse-reactions

Εκθέσεις για κάθε εμβόλιο ξεχωριστά.

- **COVID-19 Vaccine Pfizer/BioNTech monovalent**
- **COVID-19 Vaccine Pfizer/BioNTech bivalent**
- **COVID-19 Vaccine AstraZeneca**
- **COVID-19 Vaccine Moderna monovalent**
- **COVID-19 Vaccine Moderna bivalent**
- **COVID-19 Vaccine - brand unspecified or not in routine use in the UK**
- **COVID-19 Vaccine Novavax**

Για περισσότερες πληροφορίες σχετικά με ανεπιθύμητες ενέργειες των εμβολίων, παραπέμπουν στο NHS website και στο summary of Yellow Card reporting.

ΑΝΕΠΙΘΥΜΗΤΕΣ ΕΝΕΡΓΕΙΕΣ ΤΩΝ ΕΜΒΟΛΙΩΝ COVID - ΕΠΙΚΙΝΔΥΝΟΤΗΤΑ ΤΩΝ ΕΜΒΟΛΙΩΝ

Στοιχεία από τον ΕΟΦ για την Ελλάδα

ΕΘΝΙΚΟΣ ΟΡΓΑΝΙΣΜΟΣ ΦΑΡΜΑΚΩΝ - ΕΟΦ. *ΣΥΓΚΕΝΤΡΩΤΙΚΑ ΣΤΟΙΧΕΙΑ Ε.Ο.Φ. ΓΙΑ ΑΝΑΦΟΡΕΣ ΣΤΗΝ ΕΛΛΑΔΑ ΕΙΚΑΖΟΜΕΝΩΝ ΑΝΕΠΙΘΥΜΗΤΩΝ ΕΝΕΡΓΕΙΩΝ ΕΜΒΟΛΙΩΝ ΕΝΑΝΤΙ ΤΗΣ COVID-19 ΓΙΑ ΤΟ ΕΤΟΣ 2022*. April , 2023 Webpage https://www.eof.gr/c/document_library/get_file?uuid=a977a1c3-e15c-4425-ae4b-fa413335655a&groupId=12225

***Weller S.C.**, Porterfield L., Davis J., Wilkinson G.S., Chen L., Baillargeon J. Incidence of venous thrombotic events and events of special interest in a retrospective cohort of commercially insured US patients. BMJ Open. 2022;12:e054669. doi: 10.1136/bmjopen-2021-054669.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Halma M.T.**, Rose J., Lawrie T. The novelty of mRNA viral vaccines and potential harms: A scoping review. J. 2023;6:220–235. doi: 10.3390/j6020017.* [DOI] [Google Scholar]

Yamamoto K. *Adverse effects of Covid-19 vaccines and measures to prevent them. Virol. J. 2022;19:100. doi: 10.1186/s12985-022-01831-0.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Liu J., *Wang J., Xu J., Xia H., Wang Y., Zhang C., Chen W., Zhang H., Liu Q., Zhu R., et al. Comprehensive investigations revealed consistent pathophysiological alterations after vaccination with COVID-19 vaccines. Cell Discov. 2021;7:99. doi: 10.1038/s41421-021-00329-3.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Burkhardt A. *Reutlingen Autopsy/Histology Study: Side-Effects from Corona Vaccinations. PowerPoint Conference Presentation (in German). Corona-blog.net. 2022. [(accessed on 7 April 2023)]. Available online: https://corona-blog.net/2022/03/10/reutlinger-autopsie-histologie-studie-nebenwirkungen-und-todesfaelle-durch-die-corona-impfungen/*

Burkhardt A. *Pathology Conference: Vaccine-Induced Spike Protein Production in the Brain, Organs etc., now Proven. Report24.news. 2022. [(accessed on 7 April 2023)]. Available online: https://report24.news/pathologie-konferenz-impfinduzierte-spike-produktion-in-gehirn-u-a-organen-nun-erwiesen/*

Dopp K., *Seneff S. COVID-19 and all-cause mortality data by age group reveals risk of COVID vaccine-induced fatality is equal to or greater than the risk of a COVID death for all age groups under 80 years old as of 6 February 2022. Vixra.org. 2022;21:preprint.* [Google Scholar]

ΑΝΑΣΚΟΠΗΣΕΙΣ

OVERVIEW OF COVID-19 VACCINE ADVERSE EVENTS

2024, Acta Poloniae Pharmaceutica - Drug Research

Voss EA, Shoaibi A, Ostropolets A, et al. *Adverse Events of Special Interest within COVID-19 Subjects*. April , 2022 Research Protocol We aim to quantify how often adverse events of special interest (AESI) occur in subjects post COVID-19 disease overall and across specific age and sex groups. https://ohdsi-studies.github.io/Covid19SubjectsAesiIncidenceRate/Protocol.html

Rosenblum HG, Gee J, Liu R, Marquez PL, Zhang B, Strid P, Abara WE, McNeil MM, Myers TR, Hause AM, Su JR, Markowitz LE, Shimabukuro TT, Shay DK. *Safety of mRNA vaccines administered during the initial 6 months of the US COVID-19 vaccination programme: an observational study of reports to the Vaccine Adverse Event Reporting System and v-safe*. Lancet Infect Dis. 2022 Jun;22(6):802-812. doi: 10.1016/S1473-3099(22)00054-8. Epub 2022 Mar 7. PMID: 35271805; PMCID: PMC8901181.

Li X, Ostropolets A, Makadia R, et al. Characterising the background incidence rates of adverse events of special interest for covid-19 vaccines in eight countries: multinational network cohort study. *BMJ (Clinical research ed.)*. June 2021;373:n1435 ISSN: 1756-1833 DOI:10.1136/bmj.n1435

Fraiman J., Erviti J., Jones M., Greenland S., Whelan P., Kaplan R.M., Doshi P. *Serious adverse events of special interest following mRNA COVID-19 vaccination in randomized* *trials in adults.* Vaccine. 2022;40:5798–5805. doi: 10.1016/j.vaccine.2022.08.036. - DOI - PMC - PubMed

Thacker P.D. COVID-19: *Researcher blows the whistle on data integrity issues in Pfizer's vaccine trial.* BMJ. 2021;375:n2635. doi: 10.1136/bmj.n2635. - DOI - PubMed

Barda N, Dagan N, Ben-Shlomo Y, et al. *Safety of the BNT162b2 mRNA Covid-19 vaccine in a nationwide setting.* N Engl J Med. 2021;385(12):1078-1090. doi: 10.1056/NEJMoa2110475 [DOI] [PMC free article] [PubMed] [Google Scholar]

US Food and Drug Administration. *COVID-19 Vaccine Safety Surveillance*. January , 2025 Webpage https://www.fda.gov/vaccines-blood-biologics/safety-availability-biologics/covid-19-vaccine-safety-surveillance

Klein NP, *Lewis N, Goddard K, et al. Surveillance for adverse events after COVID-19 mRNA vaccination. JAMA. 2021;326(14):1390-1399. doi: 10.1001/jama.2021.15072* [DOI] [PMC free article] [PubMed] [Google Scholar]

Beatty AL, Peyser ND, Butcher XE, et al. Analysis of COVID-19 Vaccine Type and Adverse Effects Following Vaccination. *JAMA Network Open*. December 2021;4:e2140364 ISSN: 2574-3805 DOI:10.1001/jamanetworkopen.2021.40364

Xiong X, Yuan J, Li M, Jiang B, Lu ZK. Age and Gender Disparities in Adverse Events Following COVID-19 Vaccination: Real-World Evidence Based on Big Data for Risk Management. *Frontiers in medicine*. 2021;8:700014 ISSN: 2296-858X DOI:10.3389/fmed.2021.700014

Pillay J, Gaudet L, Wingert A, et al. Incidence, risk factors, natural history, and hypothesised mechanisms of myocarditis and pericarditis following covid-19 vaccination: living evidence syntheses and review. *BMJ (Clinical research ed.)*. July 2022;378:e069445 ISSN: 1756-1833 DOI:10.1136/bmj-2021-069445

Pillay J, Gaudet L, Wingert A, Bialy L, Mackie AS, Paterson DI, Hartling L. BMJ. 2022 Jul 13;378:e069445. doi: 10.1136/bmj-2021-069445. PMID: 35830976 Free PMC article. Review.

Janzic U, Janzic A, Agbarya A, et al. Prospective Observational Study of COVID-19 Vaccination in Patients with Thoracic Malignancies: Adverse Events, Breakthrough Infections and Survival Outcomes. *Biomedicines*. February 2024;12(3) ISSN: 2227-9059 DOI:10.3390/biomedicines12030535

Janzic U, Janzic A, Agbarya A, Bidovec-Stojkovic U, Mohorcic K, Caks M, Korosec P, Rijavec M, Skof E. Biomedicines. 2024 Feb 27;12(3):535. doi: 10.3390/biomedicines12030535. PMID: 38540148 Free PMC article.

Knoll MD, Wonodi C. Oxford-AstraZeneca COVID-19 vaccine efficacy. *Lancet (London, England)*. January 2021;397(10269):72–74 ISSN: 1474-547X DOI:10.1016/S0140-6736(20)32623-4

Vogel G, Kupferschmidt K. New problems erode confidence in AstraZeneca's vaccine. *Science (New York, N.Y.)*. March 2021;371(6536):1294–1295 ISSN: 1095-9203 DOI:10.1126/science.371.6536.1294

Vogel G, Kupferschmidt K. Side effect worry grows for AstraZeneca vaccine. *Science (New York, N.Y.)*. April 2021;372(6537):14–15 ISSN: 1095-9203 DOI:10.1126/science.372.6537.14

(VAERS) VAERS. *Vaccine Adverse Event Reporting System (VAERS)* The Vaccine Adverse Event Reporting System (VAERS) is a national early warning system to detect possible safety problems in U.S.-licensed vaccines https://vaers.hhs.gov/

Kim SH, Wi YM, Yun SY, Ryu JS, Shin JM, Lee EH, et al. *Adverse events in healthcare workers after the first dose of ChAdOx1 nCoV-19 or BNT162b2 mRNA COVID-19 vaccination: a single center experience*. J Korean Med Sci. 2021;36(14):e107. https://doi.org/10.3346/jkms.2021.36.e107. [DOI] [PMC free article] [PubMed] [Google Scholar]

Serrano-Arias B, Ferrara F, Zavaleta E, et al. Adverse Events Following mRNA COVID-19 Vaccine in 2021 and 2022: A Retrospective Analysis in Costa Rica and Italy. *Cureus*. October 2023;15(10):e47834 ISSN: 2168-8184 DOI:10.7759/cureus.47834.

Janekrongtham C, Salazar M, Doung-Ngern P. Sex Differences in Serious Adverse Events Reported Following Booster Doses of COVID-19 Vaccination in Thailand: A Countrywide Nested Unmatched Case-Control Study. *Vaccines*. November 2023;11(12) ISSN: 2076-393X DOI:10.3390/vaccines11121772

Gallo, K.; Goede, A.; Mura, C.; Abel, R.; Moahamed, B.; Preissner,S.; Nahles, S.; Heiland, M.; Bourne, P.E.; Preissner, R.; et al. *A Comparative Analysis of COVID-19 Vaccines Based on over 580,000 Cases from the Vaccination Adverse Event Reporting System*. Vaccines 2022, 10, 408. https://doi.org/10.3390/vaccines10030408

Lee YW, Lim SY, Lee JH, Lim JS, Kim M, Kwon S, et al. *Adverse reactions of the second dose of the BNT162b2 mRNA COVID-19 vaccine in healthcare workers in Korea.* J Korean Med Sci. 2021;36(21):e153. https://doi.org/10.3346/jkms.2021.36.e153

Pottegård A, Lund LC, Karlstad Ø, et al. *Arterial events, venous thromboembolism, thrombocytopenia, and bleeding after vaccination with Oxford-AstraZeneca ChAdOx1-S in Denmark and Norway: population based cohort study. BMJ*. 2021;373(1114):n1114. doi:10.1136/bmj.n1114 PubMedGoogle ScholarCrossref

Trougakos IP, Terpos E, Alexopoulos H, Politou M, Paraskevis D, Scorilas A, Kastritis E, Andreakos E, Dimopoulos MA. *Adverse effects of COVID-19 mRNA vaccines: the spike hypothesis*. Trends Mol Med. 2022 Jul;28(7):542-554. doi: 10.1016/j.molmed.2022.04.007. Epub 2022 Apr 21. PMID: 35537987; PMCID: PMC9021367. https://doi.org/10.1016/j.molmed.2022.04.007

Zeitoun A, Hallit S, Chehade S, Ibrahim A, Helali M, Allam C, Karam R. *A 1-year analysis of adverse events following COVID-19 vaccination in Lebanon: a retrospective study*. J Pharm Policy Pract. 2023;16(1):24. https:// doi. org/ 10. 1186/ s40545- 023- 00528-1

Ministry of Public Health - Quality Assurance of Pharmaceutical Products - Pharmacovigilance Program. *Adverse Events Following Immunization for COVID-19 Vaccines in Lebanon:February 14th, 2021 to December 14th, 2022* Reports and Executive summaries in the Context of COVID-19

https://www.moph.gov.lb/en/Pages/4/44742/pharmacovigilance-system-lebanon
https://www.moph.gov.lb/userfiles/files/Quality&Safety/PharmacovigilanceSystemInLebanon/Report 12.pdf

Saeed BQ, Al-Shahrabi R, Alhaj SS, Alkokhardi ZM, Adrees AO. Side effects and perceptions following Sinopharm COVID-19 vaccination. *International Journal of Infectious Diseases*. October 2021;111:219–226 ISSN: 1201-9712 DOI:10.1016/j.ijid.2021.08.013 This article reviews the adverse events reported with the Sinopharm vaccine use in the UAE.

Kaur RJ, Dutta S, Bhardwaj P, Charan J, Dhingra S, Mitra P,et al. *Adverse events reported from COVID-19 vaccine trials: a systematic review*. Indian J Clin Biochem. 2021;36(4):427–39. https://doi.org/10.1007/s12291-021-00968-z. This article provides a comprehensive review of the safety profile of the various licensed COVID19 vaccines.

Ganesan S, Al Ketbi LMB, Al Kaabi N, et al. Vaccine Side Effects Following COVID-19 Vaccination Among the Residents of the UAE—An Observational Study. *Frontiers in Public Health*. May 2022;10 ISSN: 2296-2565 DOI:10.3389/fpubh.2022.876336

Li Y, Lundin SK, Li J, Tao W, Dang Y, Chen Y, Tao C. *Unpacking adverse events and associations post COVID-19 vaccination: a deep dive into vaccine adverse event reporting system data*. Expert Rev Vaccines. 2024 Jan-Dec;23(1):53-59. doi: 10.1080/14760584.2023.2292203. Epub 2023 Dec 14. PMID: 38063069; PMCID: PMC10872386

Darko DM, Seaneke SK, Karikari-Boateng E, Nkansah E, Amponsa-Achiano K, Mohamed NT, Bonful HA, Buabeng RO, Ashie A, Asamoa-Amoakohene A, Ewudzie-Sampson J, Derizie AM, Neimatu AD, Wilfred AA, Ogar C, Hagos A, Sabblah GT. *Safety of mRNA COVID-19 vaccines among persons 15- years and above in Ghana: A cohort event monitoring study*. Vaccine. 2024 Dec 2;42(26):126460. doi: 10.1016/j.vaccine.2024.126460. Epub 2024 Oct 23. PMID: 39447252.

Dr Philip McMillan ; Is Covid Vaccination Data Being Kept secret? *The "COVID Storm": Heart Damage in a Vaccinated World* December 29, 2024

McMillan P. *IS Covid Vaccination Data Being KEPT SECRET?* December , 2024 Webpage https://open.substack.com/pub/philipmcmillan/p/is-covid-vaccination-data-being-kept

Lapadula G, Mezzadri L, Lo Cascio G, et al. Anti-spike antibody level is associated with the risk of clinical progression among subjects hospitalized with COVID-19 pneumonia: results from a retrospective cohort study. *Infection*. August 2024;52(4):1499–1509 ISSN: 1439-0973 DOI:10.1007/s15010-024-02250-9 PMID: 38652224 Free PMC article.

Classen JB. COVID-19 RNA Based Vaccines and the Risk of Prion Disease. *Microbiology & Infectious Diseases*. February 2021;5 ISSN: 2639-9458 DOI:10.33425/2639-9458.1109 https://principia-scientific.com/covid-19-rna-based-vaccines-and-the-risk-of-prion-disease/

Classen JB. US COVID-19 Vaccines Proven to Cause More Harm than Good Based on Pivotal Clinical Trial Data Analyzed Using the Proper Scientific Endpoint, "All Cause Severe Morbidity", 2021 https://api.semanticscholar.org/CorpusID:237300985

Hughes, D. A. (2022). What is in the so-called COVID-19 "vaccines"? Part 1: evidence of a global crime against humanity. International Journal of Vaccine Theory, Practice, and Research, 2(2), 455–586. https://doi.org/10.56098/ijvtpr.v2i2.52

Kennedy, R. F., Jr. (2021). The Real Anthony Fauci: Bill Gates, Big Pharma, and the Global War on Democracy and Public Health. Skyhorse Publishing. ISBN: 1510766804 https://www.skyhorsepublishing.com/9781510766815/the-real-anthony-fauci/

Kushnirov VV, Kochneva-Pervukhova NV, Chechenova MB, Frolova NS, Ter-Avanesyan MD. Prion properties of the Sup35 protein of yeast Pichia methanolica. *The EMBO journal*. February 2000;19(3):324–331 ISSN: 0261-4189 DOI:10.1093/emboj/19.3.324

Kuvandık, A., Özcan, E., Karaduman, S., & Sungurtekin, H. (2022). *Creutzfeldt-Jakob Disease After the Coronavirus Disease-2019 Vaccination.* Turkish Journal of Intensive Care, 20(1), 61–64. https://doi.org/10.4274/tybd.galenos.2021.91885

Kyrie, V., & Broudy, D. (2022a). Cyborgs R Us: The bio-nano panopticon of injected bodies? International Journal of Vaccine Theory, Practice, and Research, 2(2), 355–383. https://doi.org/10.56098/ijvtpr.v2i2.49

Voss, E. A., Shoaibi, A., Yin Hui Lai, L., Blacketer, C., Alshammari, T., Makadia, R., Haynes, K., Sena, A. G., Rao, G., van Sandijk, S., Fraboulet, C., Boyer, L., Le Carrour, T., Horban, S., Morales, D. R., Martínez Roldán, J., Ramírez-Anguita, J. M., Mayer, M. A., de Wilde, M., ... Ryan, P. B. (2023). *Contextualising adverse events of special interest to characterise the baseline incidence rates in 24 million patients with COVID-19 across 26 databases: a multinational retrospective cohort study*. *eClinicalMedicine*, *58*, Article 101932. https://doi.org/10.1016/j.eclinm.2023.101932

Novak N, Tordesillas L, Cabanillas B. *Adverse rare events to vaccines for COVID-19: From hypersensitivity reactions to thrombosis and thrombocytopenia*. Int Rev Immunol. 2022; 41(4): 438–447. doi: 10.1080/08830185.2021.1939696.

Meo SA, Bukhari IA, Akram J, Meo AS, Klonoff DC. COVID-19 vaccines: comparison of biological, pharmacological characteristics and adverse effects of Pfizer/BioNTech and Moderna Vaccines. Eur Rev Med Pharmacol Sci. 2021 Feb;25(3):1663-1669. doi: 10.26355/eurrev_202102_24877. PMID: 33629336.

Pottegård A, Lund LC, Karlstad Ø, et al. Arterial events, venous thromboembolism, thrombocytopenia, and bleeding after vaccination with Oxford-AstraZeneca ChAdOx1-S in Denmark and Norway: population based cohort study. BMJ. 2021;373(1114):n1114. doi:10.1136/bmj.n1114

Dagan N, Barda N, Balicer RD. *Adverse effects after BNT162b2 vaccine and SARS-CoV-2 infection, according to age and sex*. *N Engl J Med*. 2021;385(24):2299. doi:10.1056/NEJMc2115045PubMedGoogle ScholarCrossref

Barda N, Dagan N, Ben-Shlomo Y, et al. *Safety of the BNT162b2 mRNA Covid-19 vaccine in a nationwide setting*. *N Engl J Med*. 2021;385(12):1078-1090. doi:10.1056/NEJMoa2110475 PubMedGoogle ScholarCrossref

Alsaiari AA, Allahyani M, Aljuaid A, Shafie A, Al-Hazmi A, Dahlawi HA, et al. *Assessing the adverse effects of COVID-19 vaccine in different scenarios in Saudi Arabia: a cross-sectional study*. Saudi Med J. 2023;44(2):194–201. https://doi.org/10.15537/smj.2023.44.2.20220680

Yasmin F, Najeeb H, Siddiqui HF, Asghar MS, Awan HA, Usama RM, et al. *Frequency of COVID-19 vaccine side effects and its associated factors among the vaccinated population of Pakistan: a cross-sectional study*. Health Sci Rep. 2023;6(1):e1071. https://doi.org/10.1002/hsr2.1071

Krantz M.S., Kwah J.H., Stone C.A., Phillips E.J., Ortega G., Banerji A., et al. *Safety Evaluation of the Second Dose of Messenger RNA COVID-19 Vaccines in Patients with Immediate Reactions to the First Dose. JAMA Intern Med. 2021 doi: 10.1001/jamainternmed.2021.3779.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Menni C, Klaser K, May A, et al.: Vaccine side-effects and SARS-CoV-2 infection after vaccination in users of the COVID Symptom Study app in the UK: a prospective observational study. Lancet Infect Dis. 2021, 21:939-49. 10.1016/S1473-3099(21)00224-3

Immunize.org. *Vaccine History Timeline*. July , 2024 Webpage CDC expanded updated COVID-19 vaccines to include children 6 months through 5 years old. *December 9, 2022* https://www.immunize.org/vaccines/vaccine-timeline/

FDA *updates* advice to manufacturers of *COVID*-19 *Vaccines* (2024 ... CDC expanded *updated COVID*-19 *vaccines* to include children 6 months through 5 years old.

Ontario Agency for Health Protection and Promotion (Public Health Ontario). *Adverse Events Following Immunization (AEFIs)for COVID-19 in Ontario: December 13, 2020 toMay 19, 2024*: King's Printer for Ontario, 2024 https://www.publichealthontario.ca/-/media/Documents/nCoV/epi/covid-19-aefi-report.pdf

Seattle Children's Hospital. *Immunization Reactions*. February , 2025 Vaccines with 2 doses. Symptoms are more frequent after the 2nd vaccine.Vaccines with one dose. Side effects were the same type, but a little less often. https://www.seattlechildrens.org/conditions/a-z/immunization-reactions/

National Pharmaceutical Regulatory Agency (NPRA). *Summary Report on Adverse Events Following Immunisation of COVID-19 Vaccines in Malaysia* Multiple reports in pdf format https://www.npra.gov.my/index.php/en/health-professionals/summary-report-on-covid-19-vaccines-aefis.html Accessed February 1, 2025

Sharif N, Opu RR, Saha T, et al. Side effects associated with homogenous and heterogenous doses of Oxford–AstraZeneca vaccine among adults in Bangladesh: an observational study. *Scientific Reports*. October 2024;14 ISSN: 2045-2322 DOI:10.1038/s41598-024-75833-z

Schäfer I, Oltrogge JH, Nestoriuc Y, et al. Expectations and Prior Experiences Associated With Adverse Effects of COVID-19 Vaccination. *JAMA Network Open*. March 2023;6:e234732 ISSN: 2574-3805 DOI:10.1001/jamanetworkopen.2023.4732 https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2802767

Swissmedic. *Reports of suspected adverse reactions to the COVID-19 vaccines in Switzerland*. July , 2024 COVID-19 vaccinovigilance reports up to the end of June 2024 https://www.swissmedic.ch/swissmedic/en/home/news/mitteilungen/covid-19-vaccines-safety-monitoring.html

Blumenthal KG, Greenhawt M, Phillips EJ, Agmon-Levin N, Golden DBK, Shaker M. An Update in COVID-19 Vaccine Reactions in 2023: Progress and Understanding. *The Journal of Allergy and Clinical Immunology: In Practice*. November 2023;11:3305–3318 ISSN: 2213-2198 DOI:10.1016/j.jaip.2023.06.057 https://www.jaci-inpractice.org/article/S2213-2198(23)00723-7/fulltext

MEDSAFE - New Zealand Medicines and Medical Devices Safety Authority. *Myocarditis and pericarditis – rare adverse reactions to Comirnaty (Pfizer COVID-19 vaccine)*. July , 2021 Webpage https://www.medsafe.govt.nz/safety/Alerts/comirnaty-myocarditis-alert.htm
Rupp ME. *What COVID-19 variants are going around in February 2025?* February , 2025 Nebraska Medicine https://www.nebraskamed.com/COVID/what-covid-19-variants-are-going-around

April F Eichler MD, Vora SR. *Practice Changing UpDates*. January , 2025 https://www.uptodate.com/contents/practice-changing-updates

Select Subcommittee on the Coronavirus Pandemic Committee on Oversight and Accountability. *FINAL REPORT: COVID Select Concludes 2-Year Investigation, Issues 500+ Page Final Report on Lessons Learned and the Path Forward*. December , 2024 https://oversight.house.gov/wp-content/uploads/2024/12/2024.12.04-SSCP-FINAL-REPORT-ANS.pdf https://oversight.house.gov/release/final-report-covid-select-concludes-2-year-investigation-issues-500-page-final-report-on-lessons-learned-and-the-path-forward/

Bloomberg. *Covid Vaccine Study Finds Links to Health Conditions*. February , 2024 https://www.bloomberg.com/news/videos/2024-02-20/covid-vaccine-study-finds-links-to-health-conditions-video

Global News. *New study finds rare side effects from COVID-19 vaccine*. February , 2024 Youtube https://www.youtube.com/watch?v=joUqPs2imcw

STAT NEWS. *RFK Jr., Trump's HHS pick, interrogated on vaccine views at second confirmation hearing - The nominee refused to say vaccines don't cause autism*. January , 2025 Webpage https://www.statnews.com/2025/01/30/rfk-jr-confirmation-hearing-day-2-health-secretary-nominee/

Haigh S, Shastri D. *State lawmakers see new opportunities to pass vaccine exemptions after Trump's return*. January , 2025 Associated Press https://www.pbs.org/newshour/politics/state-lawmakers-see-new-opportunities-to-pass-vaccine-exemptions-after-trumps-return Accessed January 27, 2025

ACAAI. *ACAAI Updates to Guidance on Risk of Allergic Reactions to COVID-19 Vaccines*. March , 2021 Guidance now includes information on the adenovirus vector Johnson & Johnson vaccine https://acaai.org/news/acaai-updates-to-guidance-on-risk-of-allergic-reactions-to-covid-19-vaccines/

Padilla-Flores T, Sampieri A, Vaca L. Incidence and management of the main serious adverse events reported after COVID-19 vaccination. *Pharmacology Research & Perspectives*. June 2024;12 ISSN: 2052-1707 DOI:10.1002/prp2.1224 https://bpspubs.onlinelibrary.wiley.com/doi/full/10.1002/prp2.1224

Faksova K, Walsh D, Jiang Y, et al. COVID-19 vaccines and adverse events of special interest: A multinational Global Vaccine Data Network (GVDN) cohort study of 99 million vaccinated individuals. *Vaccine*. April 2024;42:2200–2211 ISSN: 0264-410X DOI:10.1016/j.vaccine.2024.01.100 *https://www.sciencedirect.com/science/article/pii/S0264410X24001270*

Voysey M., Clemens S.A.C., Madhi S.A., Weckx L.Y., Folegatti P.M., Aley P.K., Angus B., Baillie V.L., Barnabas S.L., Bhorat Q.E., et al. *Safety and efficacy of the ChAdOx1 nCoV-19 vaccine (AZD1222) against SARS-CoV-2: An interim analysis of four randomised controlled* *trials in Brazil, South Africa, and the UK. Lancet. 2021;397:99–111. doi: 10.1016/S0140-6736(20)32661-1.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Polack F.P., Thomas S.J., Kitchin N., Absalon J., Gurtman A., Lockhart S., Perez J.L., Pérez Marc G., Moreira E.D., Zerbini C., et al. *Safety Efficacy of the BNT162b2 mRNACovid-19 Vaccine. N. Engl. J. Med. 2020;383:2603–2615. doi: 10.1056/NEJMoa2034577.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Sadoff J., Le Gars M., Shukarev G., Heerwegh D., Truyers C., de Groot A.M., Stoop J., Tete S., Van Damme W., Leroux-Roels I., et al. *Interim Results of a Phase 1-2a Trial of Ad26COV2SCovid-19 Vaccine. N. Engl. J. Med. 2021;384:1824–1835. doi: 10.1056/NEJMoa2034201.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Byoun HS, Lee SU, Won YD, et al. Nationwide Cohort observational study on the safety and efficacy of COVID-19 vaccination in patients with Moyamoya disease. *Scientific reports*. October 2024;14(1):24400 ISSN: 2045-2322 DOI:10.1038/s41598-024-73940-5 PMID: 39420039

Tondo G, Virgilio E, Naldi A, Bianchi A, Comi C. Safety of COVID-19 Vaccines: Spotlight on Neurological Complications. *Life (Basel, Switzerland)*. August 2022;12(9) ISSN: 2075-1729 DOI:10.3390/life12091338 PMID: 36143376

Frasca L, Ocone G, Palazzo R. Safety of COVID-19 Vaccines in Patients with Autoimmune Diseases, in Patients with Cardiac Issues, and in the Healthy Population. *Pathogens (Basel, Switzerland)*. February 2023;12(2) ISSN: 2076-0817 DOI:10.3390/pathogens12020233 PubMed

Hromić-Jahjefendić A, Barh D, Uversky V, et al. Can COVID-19 *Vaccines Induce Premature Non-Communicable Diseases: Where Are We Heading to?. Vaccines (Basel)*. 2023;11(2):208. Published 2023 Jan 17. PMID: **36851087** PMCID: PMC9960675 DOI: 10.3390/vaccines11020208

ΓΝΩΣΕΙΣ ΕΩΣ ΣΗΜΕΡΑ ΓΙΑ ΤΙΣ ΑΝΕΠΙΘΥΜΗΤΕΣ ΕΝΕΡΓΕΙΕΣ ΤΩΝ ΕΜΒΟΛΙΩΝ (UPDATE ON VACCINE RELATED ADVERSE EVENTS)

Mahroum N, Lavine N, Ohayon A, et al. COVID-19 Vaccination and the Rate of Immune and Autoimmune Adverse Events Following Immunization: Insights From a Narrative Literature Review. *Frontiers in Immunology*. July 2022;13 ISSN: 1664-3224 DOI:10.3389/fimmu.2022.872683

publichealthscotland.scot. *COVID-19 vaccine delivery and workforce information - Adverse events and side effects*. October , 2024 https://publichealthscotland.scot/population-health/health-protection/infectious-diseases/covid-19/covid-19-vaccinations/covid-19-vaccine-delivery-and-workforce-information/adverse-events-and-side-effects/myocarditis-and-pericarditis/

Public Health Agency of Canada. *Canadian COVID-19 vaccination safety report*. January , 2024 Reported side effects following COVID-19 vaccination in Canada https://health-infobase.canada.ca/covid-19/vaccine-safety/ Accessed January 19, 2024

Ontario Agency for Health Protection and Promotion (Public Health Ontario). *Adverse events of specialinterest (AESIs) for COVID-19 vaccines surveillance. 2nd revision*: Queen's Printer for Ontario. July , 2021 https://www.publichealthontario.ca/-/media/documents/ncov/vaccines/2020/12/covid-19-guidance-aesis.pdf

Government of Alberta. *COVID-19 info for Albertans - COVID-19 vaccine information* https://www.alberta.ca/covid19-vaccine

Public Health Association of BC. *COVID-19 vaccines*. January , 2025 https://immunizebc.ca/vaccines/covid-19

Health Products Regulatory Authority - HPRA - Ireland. *COVID-19 vaccines - Reports of suspected side effects notified to the HPRA* https://www.hpra.ie/safety-information/how-we-monitor-safety/medicines/safety-monitoring-of-vaccines/covid-19-vaccines—suspected-side-effects-reported-in-ireland-and-the-eu-eea

U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION - CDC. *Selected Adverse Events Reported after COVID-19 Vaccination*. May , 2023 Webpage This page is archived for historical purposes and is no longer being updated. https://archive.cdc.gov/www_cdc_gov/coronavirus/2019-ncov/vaccines/safety/adverse-events.html Accessed May 31, 2023

EUROPEAN MEDICINES AGENCY - EMA. *Safety of COVID-19 vaccines* Webpage A number of side effects reported with COVID-19 vaccination have drawn public attention. Some of these - such as anaphylaxis, Guillain-Barré syndrome and myocarditis and pericarditis - are adverse events of special interest. Reports of suspected side effects. https://www.ema.europa.eu/en/human-regulatory-overview/public-health-threats/coronavirus-disease-covid-19/covid-19-medicines/safety-covid-19-vaccines

Yaamika H, Muralidas D, Elumalai K. Review of adverse events associated with COVID-19 vaccines, highlighting their frequencies and reported cases. *Journal of Taibah University Medical Sciences*. December 2023;18(6):1646–1661 ISSN: 1658-3612 DOI:10.1016/j.jtumed.2023.08.004 https://pmc.ncbi.nlm.nih.gov/articles/PMC10507236/

Therapeutic Goods Administration (TGA) - Australian government. *COVID-19 vaccine safety reports*. November , 2023 The TGA closely monitors reports of possible side effects to the COVID-19 vaccines. Our regular safety report gives an update on the number of side effects reported. https://www.tga.gov.au/news/covid-19-vaccine-safety-reports Accessed November 2, 2023

Karam R, Iskandar K, Watfa M, Zeitoun A. Serious adverse events following immunization with COVID-19 vaccines in Lebanon: a retrospective analysis of the National Pharmacovigilance Database. *BMC Public Health*. October 2024;24 ISSN: 1471-2458 DOI:10.1186/s12889-024-20297-z

WORLD HEALTH ASSOCIATION - WHO. *COVID-19 advice for the public: Getting vaccinated*. October , 2024 https://www.who.int/emergencies/diseases/novel-coronavirus-2019/covid-19-vaccines/advice

WORLD HEALTH ASSOCIATION - WHO. *Side Effects of COVID-19 Vaccines*. March , 2021 Webpage https://www.who.int/news-room/feature-stories/detail/side-effects-of-covid-19-vaccines

Australian Technical Advisory Group on Immunisation - external site (ATAGI). *COVID-19 Information about COVID-19, vaccines and recommendations for vaccination from the*

Australian Immunisation Handbook. November , 2024 Adverse events listed by vaccine https://immunisationhandbook.health.gov.au/contents/vaccine-preventable-diseases/covid-19 Accessed November 22, 2024

EUROPEAN MEDICINES AGENCY - EMA. *Comirnaty*. January , 2025 Comirnaty is a vaccine for preventing coronavirus disease 2019 (COVID-19) in people from the age of 6 months https://www.ema.europa.eu/en/medicines/human/EPAR/comirnaty Accessed January 23, 2025

Health Service Executive - HSE - Ireland. *Side effects and safety of COVID-19 vaccines*. December , 2023 https://www2.hse.ie/screening-and-vaccinations/covid-19-vaccine/side-effects/ Accessed December 7, 2023

Yoon D, Jeon HL, Noh Y, et al. A Nationwide Survey of mRNA COVID-19 Vaccinee's Experiences on Adverse Events and Its Associated Factors. *Journal of Korean medical science*. June 2023;38(22):e170 ISSN: 1598-6357 DOI:10.3346/jkms.2023.38.e170

Amer SA, Al-Zahrani A, Imam EA, et al. Exploring the reported adverse effects of COVID-19 vaccines among vaccinated Arab populations: a multi-national survey study. *Scientific Reports*. February 2024;14 ISSN: 2045-2322 DOI:10.1038/s41598-024-54886-0

MEDSAFE - New Zealand Medicines and Medical Devices Safety Authority. *COVID-19 Archive - Overview of Vaccine Reports*. December , 2023 Webpage https://www.medsafe.govt.nz/COVID-19/vaccine-report-overview.asp Accessed December 13, 2023

COVID-19 vaccine data - Health New Zealand | Te Whatu Ora. Te Whatu Ora. Published February 16, 2025. https://www.tewhatuora.govt.nz/for-health-professionals/data-and-statistics/covid-19-data/vaccine

HEALTH NEW ZEALAND. *COVID-19 vaccine side effects and reactionsFind out about possible COVID-19 vaccine side effects and what to do if you experience them.* November , 2024 https://info.health.nz/immunisations/vaccines-aotearoa/covid-19-vaccines/covid-19-vaccine-side-effects-and-reactions Accessed November 8, 2024

Rosen A. *What to Know About the Updated COVID Vaccine for Fall, Winter 2024–25*. September , 2024 Johns Hopkins Bloomberg School of Public Health Webpage https://publichealth.jhu.edu/2024/what-to-know-about-updated-covid-vaccines-for-2024-25 Accessed September 3, 2024

Johns Hopkins Medicine. *COVID-19 Vaccine: What You Need to Know*. September , 2024 Webpage https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/covid-19-vaccine-what-you-need-to-know

Therapeutic Goods Administration (TGA) - Australian government. *COVID-19 vaccine safety report - 20-04-23*. April , 2023 Webpage https://www.tga.gov.au/news/covid-19-vaccine-safety-reports/covid-19-vaccine-safety-report-20-04-23

Li Y, Li J, Dang Y, Chen Y, Tao C. Adverse Events of COVID-19 Vaccines in the United States: Temporal and Spatial Analysis. *JMIR public health and surveillance*. July 2024;10:e51007 ISSN: 2369-2960 DOI:10.2196/51007

Vaccine Adverse Event Reporting System (VAERS). *Report an Adverse Event page* Webpage This website is being modified to comply with President Trump's Executive Orders https://vaers.hhs.gov/reportevent.html

US Food and Drug Administration. *COVID-19 Vaccine Safety Surveillance*. January , 2025 Webpage https://www.fda.gov/vaccines-blood-biologics/safety-availability-biologics/covid-19-vaccine-safety-surveillance

Glover C, Deng L, Larter C, et al. Surveillance of adverse events following immunisation in Australia, COVID-19 vaccines, 2021. *Communicable Diseases Intelligence*. June 2024;48 ISSN: 2209-6051 DOI:10.33321/cdi.2024.48.2

wellcome.org. *What are adverse events and emergency use authorisation in relation to vaccination?* April , 2021 https://wellcome.org/news/covid-vaccine-adverse-events

Minnesota Department of Health. *About COVID-19 Vaccine*. April , 2024 Webpage https://www.health.state.mn.us/diseases/coronavirus/vaccine/basics.html Accessed April 12, 2024

Vaccines (Basel). *Adverse Events of COVID-19 Vaccines* List of publications in a special issue of Vaccines (ISSN 2076-393X). This special issue belongs to the section "COVID-19 Vaccines and Vaccination" https://www.mdpi.com/journal/vaccines/special_issues/Adverse_Vaccines

Sobieszczyk ME. *What Are the Common Side Effects of the Updated COVID-19 Vaccine?* October , 2023 HEALTH MATTERS Webpage https://healthmatters.nyp.org/what-are-the-common-side-effects-of-the-updated-covid-19-vaccine/

British Heart Foundation. *Covid-19 vaccines: side effects, safety and how to book one*. December , 2024 https://www.bhf.org.uk/informationsupport/heart-matters-magazine/news/coronavirus-and-your-health/covid-booster-vaccine

Boyd Nursing & Rehabilitation. *Selected Adverse Events Reported after COVID-19 Vaccination*. August , 2022 https://www.boydnr.com/selected-adverse-events-reported/

Kamboj M. *2024-2025 COVID-19 Vaccine Effectiveness, Side Effects, Safety, and More*. October , 2024 Memorial Sloan Kettering Cancer Center Webpage https://www.mskcc.org/coronavirus/covid-19-vaccine

COVID-19 Vaccine Adverse Events following Immunization (AEFIS). http://www.bccdc.ca/health-professionals/clinical-resources/covid-19-care/covid-19-vaccinations/toolkit-for-health-professionals/adverse-events-following-immunization

> **These reports summarize *COVID-19 vaccine adverse events following immunization* (AEFI) reported to BCCDC from December 2020 to February 2023.**

Pfizer. *All COVID-19 Updates*. September , 2024 Webpage https://www.pfizer.com/science/coronavirus/updates

Jeong M. Global COVID-19 vaccine summary: Side effects. Published February 7, 2022. https://www.medicalnewstoday.com/articles/global-covid-19-vaccine-summary-side-effects

Must Know! Possible adverse reactions after getting COVID-19 vaccine | Bangkok Hospital. https://www.bangkokhospital.com/en/content/symptoms-to-know-after-getting-the-covid-19-vaccine

Bautista-Fryer C, Bautista-Fryer C. What are the common side effects of the updated COVID-19 vaccine? *NewYork-Presbyterian*. https://healthmatters.nyp.org/what-are-the-common-side-effects-of-the-updated-covid-19-vaccine/. Published October 20, 2023.

HSA | Safety updates on COVID-19 vaccines. Health Sciences Authority - HSA - Singapore. Published July 18, 2023. https://www.hsa.gov.sg/COVID19-vaccines-safety-updates

Katella K. What to know about the updated 2024-2025 COVID vaccines. Yale Medicine. Published October 24, 2024. https://www.yalemedicine.org/news/updated-2024-2025-covid-vaccines

National Vaccine Injury Compensation Program | HRSA. Published January 2025. https://www.hrsa.gov/vaccine-compensation

Asch DA, Luo C, Chen Y. Reports of COVID-19 Vaccine Adverse Events in Predominantly Republican vs Democratic States. JAMA Netw Open. 2024 Mar 4;7(3):e244177. doi: 10.1001/jamanetworkopen.2024.4177. PMID: 38551560; PMCID: PMC10980960.

Get the facts about a COVID-19 (coronavirus) vaccine. Mayo Clinic. Published September 12, 2024. https://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/coronavirus-vaccine/art-20484859

COVID-19 vaccines FAQ. National Foundation for Infectious Diseases (NFID). Published October 2024. https://www.nfid.org/infectious-diseases/covid-19/covid-vaccine-faq/

NHS. COVID-19 vaccine. nhs.uk. Published September 2, 2024. https://www.nhs.uk/vaccinations/covid-19-vaccine/

Department of Health. Victoria, Australia, Victorian Department of Health. COVID-19 vaccine: Up to date ATAGI recommendations, vaccine schedules, and resources for immunisation providers. health.vic.gov.au. Published October 3, 2024. https://www.health.vic.gov.au/immunisation/covid-19-vaccine

Cayman Islands Health Services Authority (HSA). Public Health launches online reporting for COVID-19 vaccine side effects. HSA. Published June 13, 2023. https://www.hsa.ky/articles/public-health-launches-online-reporting-for-covid-19-vaccine-side-effects

COMIRNATY (BioNTech and Pfizer). COMIRNATY® (COVID-19 vaccine, mRNA) Safety Info. https://www.comirnaty.com/

> Additional *side effects* that have been reported with COMIRNATY or Pfizer-BioNTech *COVID*-19 *vaccines* include: Non-severe allergic *reactions* such as rash, itching ...

Healthdirect Australia. COVID-19 vaccine FAQs. Healthdirect. Published November 5, 2024. https://www.healthdirect.gov.au/covid-19-vaccine-faqs

Paul-Ehrlich-Institut. Dossier Coronavirus SARS-COV-2 and COVID-19 - Safety of COVID-19 vaccines - Paul-Ehrlich-Institut. Published November 28, 2024. https://www.pei.de/EN/newsroom/dossier/coronavirus/medicine-safety.html

Rosenblum HG, Gee J, Liu R, Marquez PL, Zhang B, Strid P, Abara WE, McNeil MM, Myers TR, Hause AM, Su JR, Markowitz LE, Shimabukuro TT, Shay DK. Safety of mRNA vaccines administered during the initial 6 months of the US COVID-19 vaccination programme: an observational study of reports to the Vaccine Adverse Event Reporting System and v-safe. Lancet Infect Dis. 2022 Jun;22(6):802-812. doi: 10.1016/S1473-3099(22)00054-8. Epub 2022 Mar 7. PMID: 35271805; PMCID: PMC8901181.

Greenhawt M, Dribin TE, Abrams EM, Shaker M, Chu DK, Golden DBK, Akin C, Anagnostou A, ALMuhizi F, Alqurashi W, Arkwright P, Baldwin JL, Banerji A, Bégin P, Ben-Shoshan M, Bernstein J, Bingemann TA, Bindslev-Jensen C, Blumenthal K, Byrne A, Cahill J, Cameron S, Campbell D, Campbell R, Cavender M, Chan ES, Chinthrajah S, Comberiati P, Eastman JJ, Ellis AK, Fleischer DM, Fox A, Frischmeyer-Guerrerio PA, Gagnon R, Garvey LH, Grayson MH, Isabwe GAC, Hartog N, Hendron D, Horner CC, Hourihane JO, Iglesia E, Kan M, Kaplan B, Katelaris CH, Kim H, Kelso JM, Khan DA, Lang D, Ledford D, Levin M, Lieberman JA, Loh R, Mack DP, Mazer B, Mody K, Mosnaim G, Munblit D, Mustafa SS, Nanda A, Nathan R, Oppenheimer J, Otani IM, Park M, Pawankar R, Perrett KP, Peter J, Phillips EJ, Picard M, Pitlick M, Ramsey A, Rasmussen TH, Rathkopf MM, Reddy H, Robertson K, Rodriguez Del Rio P, Sample S, Sheshadri A, Sheik J, Sindher SB, Spergel JM, Stone CA, Stukus D, Tang MLK, Tracy JM, Turner PJ, Vander Leek TK, Wallace DV, Wang J, Wasserman S, Weldon D, Wolfson AR, Worm M, Yacoub MR. Updated guidance regarding the risk of allergic reactions to COVID-19 vaccines and recommended evaluation and management: A GRADE assessment and international consensus approach. J Allergy Clin Immunol. 2023 Aug;152(2):309-325. doi: 10.1016/j.jaci.2023.05.019. Epub 2023 Jun 7. Erratum in: J Allergy Clin Immunol. 2024 Feb;153(2):538. doi: 10.1016/j.jaci.2023.11.020. PMID: 37295474; PMCID: PMC10247143.

Moderna Inc. Canada | SPIKEVAX® Information. modernacovid19global.com. https://modernacovid19global.com/en-CA

U.S. Food and Drug Administration. FDA approves and authorizes updated mRNA COVID-19 vaccines to better protect against currently circulating variants. fda.org. Published August 22, 2024. https://www.fda.gov/news-events/press-announcements/fda-approves-and-authorizes-updated-mrna-covid-19-vaccines-better-protect-against-currently

Cleveland Clinic Medical Professional. COVID vaccine. Cleveland Clinic. Published October 23, 2023. https://my.clevelandclinic.org/health/procedures/covid-vaccine

Wise J. Covid-19: Two rare vaccine side effects detected in large global study. BMJ. 2024 Feb 26;384:q488. doi: 10.1136/bmj.q488. PMID: 38408769.

UK Health Security Agency. Vaccine safety and adverse events following immunisation: the green book, chapter 8. GOV.UK. Published November 22, 2024. https://www.gov.uk/government/publications/vaccine-safety-and-adverse-events-following-immunisation-the-green-book-chapter-8

Ottawa Public Health. Frequently asked questions about COVID-19 vaccination. ottawapublichealth.ca. Published October 28, 2024. https://www.ottawapublichealth.ca/en/public-health-topics/frequently-asked-questions-about-covid-19-vaccination.aspx

Mayo Clinic. COVID-19 vaccines for kids: What you need to know. mayoclinic.org. Published September 13, 2024. https://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/covid-19-vaccines-for-kids/art-20513332

COVID-19 Vaccine Safety Update - MDHHS Noontime Knowledge. Michigan Gov. https://www.michigan.gov/-/media/Project/Websites/mdhhs/Folder4/Folder17/Folder3/Folder117/Folder2/Folder217/Folder1/Folder317/COVID-19_Vaccine_Safety_Update_noontime_knowledge_FINAL.pdf

Department for Health and Wellbeing. Adverse event following immunisation | SA Health. SA Health (South Australia). Published December 13, 2024. https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/clinical+resources/clinical+programs+and+practice+guidelines/immunisation+for+health+professionals/immunisation+section+reporting/adverse+event+following+immunisation

Royal Australian College of General Practitioners (RACGP), Hibble B, Schulz T. Managing vaccine side effects in primary care. racgp.org.au. https://www.racgp.org.au/FSDEDEV/media/documents/RACGP/Coronavirus/Managing-Vaccine-side-effects-in-primary-care.pdf

Edwards KM, Orenstein WA. UpToDate. UpToDate. Published January 23, 2025. https://www.uptodate.com/contents/covid-19-vaccines

Korsen D, Lowry M. New Comprehensive Review Examines Potential Harms of COVID-19 Vaccination and Intramuscular Vaccination. nationalacademies.org. Published April 16, 2024. https://www.nationalacademies.org/news/2024/04/new-comprehensive-review-examines-potential-harms-of-covid-19-vaccination-and-intramuscular-vaccination

Vaccine Safety/Adverse Events. health.mil. Published January 25, 2025. https://www.health.mil/Military-Health-Topics/Health-Readiness/Immunization-Healthcare/Vaccine-Safety-Adverse-Events

Katella K. Comparing the COVID-19 vaccines: How are they different? Yale Medicine. Published November 22, 2024. https://www.yalemedicine.org/news/covid-19-vaccine-comparison

British Heart Foundation. Coronavirus and your health. *British Heart Foundation*. https://www.bhf.org.uk/informationsupport/heart-matters-magazine/news/coronavirus-and-your-health. Published April 1, 2024.

Philadelphia CHO. Feature article: Long-term side effects of COVID-19 vaccine? What we know. Children’s Hospital of Philadelphia. Published March 9, 2022. https://www.chop.edu/parents-pack/parents-pack-newsletter/newsletter-archive/long-term-side-effects-covid-19-vaccine

Blumenthal KG, Greenhawt M, Phillips EJ, Agmon-Levin N, Golden DBK, Shaker M. An Update in COVID-19 Vaccine Reactions in 2023: Progress and Understanding. J Allergy Clin Immunol Pract. 2023 Nov;11(11):3305-3318. doi: 10.1016/j.jaip.2023.06.057. Epub 2023 Jul 4. PMID: 37414339.

Department of Health. Victoria, Australia. Adverse events following immunisation reporting. Published September 20, 2024. https://www.health.vic.gov.au/immunisation/adverse-events-following-immunisation-reporting

Cheriyedath S. Large study of COVID vaccine side effects in Sweden. News-Medical.net. Published October 7, 2021. https://www.news-medical.net/news/20211006/Large-study-of-COVID-vaccine-side-effects-in-Sweden.aspx

COVID-19 vaccine booster dose. HSE.ie. Published September 6, 2024. https://www2.hse.ie/screening-and-vaccinations/covid-19-vaccine/get-the-vaccine/covid-19-vaccine-booster-dose/

Hause AM, Shay DK, Klein NP, Abara WE, Baggs J, Cortese MM, Fireman B, Gee J, Glanz JM, Goddard K, Hanson KE, Hugueley B, Kenigsberg T, Kharbanda EO, Lewin B, Lewis N, Marquez P, Myers T, Naleway A, Nelson JC, Su JR, Thompson D, Olubajo B, Oster ME, Weintraub ES, Williams JTB, Yousaf AR, Zerbo O, Zhang B, Shimabukuro TT. Safety of COVID-19 Vaccination in United States Children Ages 5 to 11 Years. Pediatrics. 2022 Aug 1;150(2):e2022057313. doi: 10.1542/peds.2022-057313. PMID: 35581698; PMCID: PMC9706403.

Lamprinou M, Sachinidis A, Stamoula E, Vavilis T, Papazisis G. COVID-19 vaccines adverse events: potential molecular mechanisms. Immunol Res. 2023 Jun;71(3):356-372. doi: 10.1007/s12026-023-09357-5. Epub 2023 Jan 6. PMID: 36607502; PMCID: PMC9821369.

Florida Department of Health. Health Alert on mRNA COVID-19 vaccine safety | Florida Department of Health. FloridaHealth.gov. Published February 15, 2023. https://www.floridahealth.gov/newsroom/2023/02/20230215-updated-health-alert.pr.html

ABC News (Australia). World's largest study in COVID vaccine side-effects | ABC News. *YouTube*. Published online February 26, 2024. https://www.youtube.com/watch?v=_bjzWUkVknQ

U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION - CDC. Coronavirus Disease 2019 (COVID-19) Vaccine Safety. cdc.gov. Published January 31, 2025. https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/safety-of-vaccines.html

Scientific Publications Directory: Collection of peer reviewed case reports and studies citing adverse effects post COVID vaccination. react19.org. https://react19.org/science

ΘΑΝΑΤΟΙ ΜΕΤΑ COVID ΕΜΒΟΛΙΑΣΜΟ

Maiese A, Baronti A, Manetti AC, Paolo MD, Turillazzi E, Frati P, et al. Death after the Administration of COVID-19 Vaccines. Approved by EMA: Has a Causal RelationshipBeen Demonstrated? Vaccines 2022;10: 308.

Torjesen I. Covid-19: Pfizer-BioNTech vaccine is "likely" responsible for deaths of some elderly patients, Norwegian review finds. BMJ [Internet]. 2021 [cited 2022 May 20];373:n1372. Available from: http:// dx.doi.org/10.1136/bmj.n1372

Burkhardt A. Pathology of vaccine deaths and vaccine injuries: after the evidence now first proof [Internet]. [cited 2022 May 20]. Available from: https://pathologie-konferenz.de/en/

ΠΟΙΟΤΙΚΕΣ ΔΙΑΦΟΡΕΣ ΜΕΤΑΞΥ ΦΙΑΛΙΔΙΩΝ ΕΜΒΟΛΙΩΝ, ΚΑΘΟΡΙΣΤΙΚΕΣ ΓΙΑ ΤΗΝ ΕΜΦΑΝΙΣΗ ΑΝΕΠΙΘΥΜΗΤΩΝ ΕΝΕΡΓΕΙΩΝ (VIAL-TO-VIAL VARIABILITY)

Διαφορές που μπορεί να υπάρξουν και να οδηγήσουν σε ανεπιθύμητες ενέργειες έως και σε θάνατο:

- **Διαφορά στην δόση**
- **Παρουσία ξένων σωματιδίων, ορατών ή μη**
- **Τρόπος μεταφοράς/συντήρησης**
- **Χρήση διαλύτη στη σύριγγα**

Bruce Yu Y, Taraban MB, Briggs KT. *All vials are not the same: Potential role of vaccine quality in vaccine adverse reactions*. Vaccine. 2021 Oct 29;39(45):6565-6569. doi: 10.1016/j.vaccine.2021.09.065. Epub 2021 Oct 6. PMCID: PMC8492451 PMID: 34625289
https://www.sciencedirect.com/science/article/pii/S0264410X21012809#b0095

Bruce Yu, Katharine T. Briggs, and Marc B. Taraban, *"All doses are not the same: Potential role of vaccine quality in vaccine adverse reactions" in "Vaccine Technology VIII"*, Tarit Mukhopadhyay, Merck Research Laboratories, USA; Charles Lutsch, Sanofi Pasteur, France; Linda Hwee-Lin Lua, University of Queensland, Australia; Francesc Godia, Universitat Autònoma de Barcelona, Spain Eds, ECI Symposium Series, (2022).
https://dc.engconfintl.org/vaccine_viii/31

39 vials of the Moderna mRNA COVID-19 vaccine were found to contain foreign materials at multiple vaccination sites in Japan
Three men died within days after receiving their second dose of the vaccine. On September 10, 2021, a Japanese Health Ministry panel stated that it does not have enough information to determine whether there is a causal link between the three deaths and the vaccine. Moderna recalled three lots of the vaccine and issued a statement saying that the most probable cause of the foreign materials were a result of friction between two improperly aligned machinery components during manufacturing, and this caused stainless steel particulates to end up in some vials It appears, the affected vials were only distributed to Japan.

O. Tsukimori Contaminated Moderna vaccines to have little impact on Japan's rollout, Suga says The Japan Times (2021) Google Scholar

Kyodo J. Japan so far unable to link deaths to withdrawn batches of Moderna vaccine. Japan Times 2021. https://www.japantimes.co.jp/news/2021/09/10/national/moderna-deaths-findings/ [accessed September 10, 2021].
Google Scholar

Are allergic to nirmatrelvir, ritonavir, or any of the other ingredients in PAXLOVID; Have liver or kidney problems, including hepatitis (bring your *latest* lab ...

The Official Web Site for The State of New Jersey

nj.gov
https://www.nj.gov

***COVID*-19 *Vaccine* Information · How to Get *Vaccinated* · Help Getting an Appointment · Learn More About *Vaccination* · *Vaccine* Dashboard · Popular · Topics · Stay.**

AstraZeneca Admits its Covid Vaccine Can Cause Rare ...

YouTube · Firstpost
91,9K+ views · 9 months ago

... *Covid vaccine* can cause rare *side effects*. It comes after the pharma giant faces a class-action lawsuit in the UK that alleges that its *Covid* ...

COVID-19 Vaccination: Reporting Adverse Effects FAQ

NICD
https://www.nicd.ac.za › covid-19-vaccination-reportin...

The health event may or may not be caused by the *vaccine*. For example, the following are *adverse events* following immunisation: a person who receives a *COVID*-19 ...

Comprehensive review highlights key adverse events ...

NaturalNews.com
https://www.naturalnews.com › 2024-02-29-key-advers...

29 Feb 2024 — ... *latest COVID*-19 monovalent *vaccines*. It can occur as a ... *vaccine adverse reactions*, beginning in the initial *COVID*-19 *vaccine* trials.

CDC Releases Hidden COVID-19 Vaccine Injury Reports

YouTube
https://www.youtube.com › watch

FOX 32 Chicago *New* 880K views · 26:30. Go to channel · BREAKING: Officials full *update* on DC helicopter-plane crash. LiveNOW from FOX *New* 365K ...

ΑΝΑΠΟΤΕΛΕΣΜΑΤΙΚΟΤΗΤΑ ΚΑΙ ΕΠΙΚΙΝΔΥΝΟΤΗΤΑ ΤΩΝ ΕΜΒΟΛΙΩΝ

Andrews CD, Parker EPK, Horne E, Walker V, Palmer T, Schaffer AL, et al. *OpenSAFELY: Effectiveness of COVID-19 vaccination in children and adolescents*. medRxiv. 2024; Available from: https://www.medrxiv.org/content/early/2024/05/20/2024.05.20.24306810

Alessandria M, Malatesta GM, Berrino F, Donzelli A. *A Critical Analysis of All-Cause Deaths during COVID-19 Vaccination in an Italian Province*. Microorganisms. 2024; 12(7):1343. doi: 10.3390/microorganisms12071343. https://doi.org/10.3390/microorganisms12071343

Mead M, Seneff S, Wolfinger R, et al. *COVID-19 Modified mRNA "Vaccines" Part 1: Lessons Learned from Clinical Trials, Mass Vaccination, and the Bio-Pharmaceutical Complex.* Vaccine Theory Prac & Res. 2024;3(1):1112-1178. doi:10.56098/fdrasy50. https://doi.org/10.56098/fdrasy50

Suzumura Y. *Analysis of the Association Between BNT162b2 mRNA COVID-19 Vaccination and Deaths Within 10 Days After Vaccination Using the Sex Ratio in Japan.* Cureus. 2023;15(12):e50144. Published 2023 Dec 7. doi:10.7759/cureus.50144. https://doi.org/10.7759/cureus.50144

Acevedo-Whitehouse K, Bruno R. *Potential health risks of mRNA-based vaccine therapy: A hypothesis.* Med Hypotheses. 2023;171:111015. doi:10.1016/j.mehy.2023.111015. https://doi.org/10.1016/j.mehy.2023.111015

Igyártó BZ, Qin Z. The mRNA-LNP vaccines – the good, the bad and the ugly?. Front Immunol. 2024;15:1336906. Published 2024 Feb 8. doi:10.3389/fimmu.2024.1336906. https://doi.org/10.3389/fimmu.2024.1336906

Ο ΡΟΛΟΣ ΤΩΝ ΕΜΒΟΛΙΩΝ ΣΤΗΝ ΕΜΦΑΝΙΣΗ ΣΥΜΠΤΩΜΑΤΩΝ ΜΕΤΑ ΛΟΙΜΩΞΗ COVID-19 (VACCINATION AND POST-COVID SYMPTOMS)

Kuodi, P., Gorelik, Y., Zayyad, H., Wertheim, O., Wiegler, K. B., Abu Jabal, K., Dror, A. A., Nazzal, S., Glikman, D., & Edelstein, M. (2022). *Association between BNT162b2 vaccination and reported incidence of post-COVID-19 symptoms: cross-sectional study 2020-21, Israel. NPJ vaccines*, *7*(1), 101. https://doi.org/10.1038/s41541-022-00526-5

The authors stated that vaccination with 2+ doses of BNT162b2 was associated with a reduced risk of reporting most of the common post-acute COVID-19 symptoms. Our results suggest that BNT162b2 vaccination may have a protective effect against longer term COVID-19 symptoms.

Wisnivesky JP, Govindarajulu U, Bagiella E, Goswami R, Kale M, Campbell KN, Meliambro K, Chen Z, Aberg JA, Lin JJ. *Association of Vaccination with the Persistence of Post-COVID Symptoms.* J Gen Intern Med. 2022 May;37(7):1748-1753. doi: 10.1007/s11606-022-07465-w. Epub 2022 Mar 9. PMID: 35266128; PMCID: PMC8906626.

The authors stated that their findings suggest that COVID vaccination is not associated with improvement in PASC.

Abu Hamdh, B., Nazzal, Z. *A prospective cohort study assessing the relationship between long-COVID symptom incidence in COVID-19 patients and COVID-19 vaccination.* Sci Rep **13**, 4896 (2023). https://doi.org/10.1038/s41598-023-30583-2

Hoque, A., Rahman, M., Imam, H., Nahar, N. & Chowdhury, F. *Third dose vaccine with BNT162b2 and its response on Long COVID after breakthrough infections*. Preprint at https://www.medrxiv.org/content/10.1101/2021.11.08.21266037v1 (2022).

Asadi-Pooya AA, Nemati M, Shahisavandi M, Nemati H, Karimi A, Jafari A, Nasiri S, Mohammadi SS, Rahimian Z, Bayat H, Akbari A, Emami A, Eilami O. *How does COVID-19 vaccination affect long-COVID symptoms?* PLoS One. 2024 Feb 7;19(2):e0296680. doi: 10.1371/journal.pone.0296680. PMID: 38324547; PMCID: PMC10849259.

Ayoubkhani D, Bermingham C, Pouwels KB, Glickman M, Nafilyan V, Zaccardi F, Khunti K, Alwan NA, Walker AS. *Trajectory of long covid symptoms after covid-19 vaccination: community based cohort study*. BMJ. 2022 May 18;377:e069676. doi: 10.1136/bmj-2021-069676. PMID: 35584816; PMCID: PMC9115603.

Romero-Ibarguengoitia ME, Rodríguez-Torres JF, Garza-Silva A, Rivera-Cavazos A, Morales-Rodriguez DP, Hurtado-Cabrera M, Kalife-Assad R, Villarreal-Parra D, Loose-Esparza A, Gutiérrez-Arias JJ, Mata-Porras YG, Ojeda-Salazar DA, Sanz-Sánchez MA, González-Cantú A, Azzolini E, Rescigno M. *Association of vaccine status, reinfections, and risk factors with Long COVID syndrome.* Sci Rep. 2024 Feb 2;14(1):2817. doi: 10.1038/s41598-024-52925-4. PMID: 38307886; PMCID: PMC10837423.

ΨΕΥΔΕΙΣ ΔΙΑΨΕΥΣΕΙΣ ΑΠΟ ΕΛΕΓΚΤΕΣ ΓΕΓΟΝΟΤΩΝ, ΕΙΔΗΣΕΩΝ,ΕΠΙΣΤΗΜΟΝΙΚΩΝ ΑΝΑΚΟΙΝΩΣΕΩΝ (GREEK HOAXES KAI FACT CHECKERS ΣΤΟ ΕΞΩΤΕΡΙΚΟ)

Είναι τόσο πολυπληθείς οι αναληθείς διαψεύσεις, που θα χρειάζονταν πολλές χιλιάδες σελίδων για να αναφερθούν μερικές από αυτές…

Άλλοτε προκαλούν απορία τα επιχειρήματα των fact checkers, άλλοτε γέλιο και συχνά θυμό… Ανθρωποι με πλήρη άγνοια του εκάστοτε αντικειμένου, αντικρούουν καταξιωμένους επιστήμονες, βάζουν ταμπέλες όπως, συνομωσιολόγος, αντιεμβολιαστής κ.λπ., περιγράφουν τα ευρήματα σοβαρών μελετών ως αναξιόπιστα, κ.ο.κ. Μόνο τους μέλημα:
να μη σχηματίσει κανείς την ιδέα ότι ο ιός SARS-CoV-2 είναι προϊόν ανθρώπινης παρέμβασης ή ότι τα εμβόλια έχουν ανεπιθύμητες ενέργειες …

Πρόσφατα είχαμε παραδοχή από τον ιδρυτή του Facebook για αφόρητες πολιτικές πιέσεις την προηγούμενη τετραετία, προκειμένου να υπάρχει αυστηρή λογοκρισία στο διαδίκτυο, και ένα καλό νέο από την νέα κυβέρνηση Trump, ότι καταργείται η λογοκρισία και η φίμωση των χρηστών του διαδικτύου όπως και η δημοσίευση ανακοινώσεων και μελετών των υψηλά ιστάμενων μελών του CDC σε επιστημονικά περιοδικά στα οποία είχαν προνομιακή πρόσβαση.

https://www.medpagetoday.com/opinion/faustfiles/114043
CDC Researchers Ordered to Retract Papers Submitted to All Journals
— Banned terms must be scrubbed from CDC-authored manuscripts
by Jeremy Faust MD, MS, MA, Editor-in-Chief, MedPage Today February 1, 2025

The policy goes beyond the previously [reportedopens in a new tab or window] pause of the CDC's own publications, [including *Morbidity and Mortality Weekly Report (MMWR)*opens in a new tab or window], which has seen two issues go unreleased since Jan. 16, marking the first publication gap of any kind in approximately 60 years. *Emerging Infectious Diseases* and *Preventing Chronic Disease*, the CDC's other major publications, also remain under lock and key, but have not yet been affected because they are monthly releases and both were released as scheduled in January, prior to President Donald Trump's inauguration. The policy also goes beyond the general communications gag order that already prevents any CDC scientist from submitting any new scientific findings to the public.

Παρακάτω παραδείγματα αναληθών διαψεύσεων :

https://www.factcheck.org/2024/05/still-no-evidence-covid-19-vaccination-increases-cancer-risk-despite-posts/

Still No Evidence COVID-19 Vaccination Increases Cancer Risk, Despite Posts   in: SciCheck Digest

By Catalina Jaramillo Posted on May 3, 2024

Study Largely Confirms Known, Rare COVID-19 Vaccine ...

FactCheck.org
https://www.factcheck.org › ...

· Μετάφραση αυτής της σελίδας
Ισχυρισμός: “Hundreds of millions of people were used as lab rats and now the truth that WE ALL ALREADY KNEW can no longer be denied,” suggesting a new study proves...
Ισχυρίζεται ο/η: Social media posts
Επαλήθευση πληροφοριών από FactCheck.org: Distorts the Facts

ΣΤΟΧΕΥΜΕΝΗ ΛΟΓΟΚΡΙΣΙΑ – ΛΟΓΟΚΡΙΘΕΝΤΑ ΑΡΘΡΑ (REDACTED)

Rosenblum HG, Gee J, Liu R, Marquez PL, Zhang B, Strid P, Abara WE, McNeil MM, Myers TR, Hause AM, Su JR, Markowitz LE, Shimabukuro TT, Shay DK. Safety of mRNA vaccines administered during the initial 6 months of the US COVID-19 vaccination programme: an observational study of reports to the Vaccine Adverse Event Reporting System and v-safe. Lancet Infect Dis. 2022 Jun;22(6):802-812. doi: 10.1016/S1473-3099(22)00054-8. Epub 2022 Mar 7. PMID: 35271805; PMCID: PMC8901181.

Why is Paul Offit Lying To The American Public About DNA ...

Rumble

https://rumble.com › ...

· Μετάφραση αυτής της σελίδας

πριν από 3 ημέρες — ... *adverse effects* in the future. @DrPaulOffit knows all of this ... *Redacted* News. 6 hours ago. TRUMP IS BURNING IT ALL DOWN AND DEMOCRATS ...

BOMBSHELL: FOIA documents reveal FBI surveillance of ...

NaturalNews.com

https://www.naturalnews.com › ...

· Μετάφραση αυτής της σελίδας

πριν από 1 ημέρα — The FOIA request, which Jones submitted to uncover details about the

Massive Censoring Actions By Medical Journals On Covid ...

Truth11.com
https://www.truth11.com › ...

· Μετάφραση αυτής της σελίδας
11 Νοε 2024 — Massive Censoring Actions By Medical Journals On *Covid Vaccines Adverse Reaction* Data ... Since the rollout of the *Covid* mRNA "*vaccines*" numerous ..
federal government's activities against InfoWars, yielded heavily *redacted* ...

PSI Chairman Johnson Subpoenas HHS for Records on ...

Senator Ron Johnson (.gov)

https://www.ronjohnson.senate.gov › ...

· Μετάφραση αυτής της σελίδας

29 Ιαν 2025 — Previously withheld or heavily *redacted* ... Data and records relating to *COVID*-19 *vaccine* lots associated with higher rates of *adverse events*; ΑΠΟΣΥΡΘΕΝΤΑ ΑΡΘΡΑ (RETRACTED)

https://retractionwatch.com/retracted-coronavirus-covid-19-papers/

"A Report on Myocarditis Adverse Events in the U.S. Vaccine Adverse Events Reporting System (VAERS) in Association with COVID-19 Injectable Biological Products," published on October 1, 2021 in *Current Problems in Cardiology*, temporarily retracted on October 15, 2021. Our coverage here.

"A Systematic Review of Autopsy Findings in Deaths after COVID-19 Vaccination," published on July 5, 2023 in *SSRN: Preprints with The Lancet*; retracted on July 6, 2023.

"A Systematic Review of Autopsy Findings in Deaths after COVID-19 Vaccination," published on June 21, 2024 in *Forensic Science International*; retracted on August 1, 2024.

"Case Report: Coronavirus disease 2019 (COVID-19) modified RNA vaccination-induced adult-onset still's disease with fulminant myocarditis as initial presentation," published on March 14, 2023 in *Frontiers in Cardiovascular Medicine*; retracted on October 14, 2024.

"Clinical and Scientific Rationale for the "MATH+" Hospital Treatment Protocol for COVID-19," published on December 15, 2020 in the *Journal of Intensive Care Medicine*; retracted on October 9, 2021. See our coverage here.

"Countering fake news in the COVID-19 era: The public's opinion on the role of an honest and reliable website," published on November 17, 2020 in *Early Human Development*; retracted sometime in March, 2021. See our coverage here.

"COVID-19 as an "infodemic" in public health: Critical role of the social media," published on March 18, 2021 in *Frontiers in Public Health*; retracted on December 23, 2022.

"COVID-19 mRNA Vaccines: Lessons Learned from the Registrational Trials and Global Vaccination Campaign," published on January 24, 2024 in *Cureus*; retracted on February 26, 2024. See our coverage here.

"COVID-19 related acute decline in paediatric admissions in Malta, a population-based study," published on November 12, 2020 in *Early Human Development*; retracted sometime in March, 2021. See our coverage here.

"COVID-19, its novel vaccination and fake news – What a brew," published on November 12, 2020 in *Early Human Development*; retracted sometime in March, 2021. See our coverage here.

"Describing the unvaccinated as the main driver of the current COVID-19 situation in Germany should not be based on analyzing pre-pandemic patterns of contacts," published on December 13, 2021 in *The Lancet Regional Health – Europe*; retracted on January 10, 2022

"Effectiveness of Ivermectin-Based Multidrug Therapy in Severely Hypoxic, Ambulatory COVID-19 Patients," published on February 9, 2022 in *Future Microbiology*; retracted on January 9, 2025.

"Effectiveness of Surgical and Cotton Masks in Blocking SARS–CoV-2: A Controlled Comparison in 4 Patients," published on April 6, 2020 in the *Annals of Internal Medicine*, retracted on June 1, 2020.

"Efficacy and Safety of Ivermectin for Treatment and prophylaxis of COVID-19 Pandemic," preprint posted on *ResearchSquare* on November 13, 2020, withdrawn (along with its two revisions) on July 14, 2021. More information here.

□ "Errors of Interpretation – correcting the record on the comparative efficacy of surgical masks versus respirators," published on December 15, 2022 in *Clinical Infectious Diseases*; retracted on January 17, 2023.

□ "Evaluating the Clinical Outcomes of Remdesivir Among Patients Admitted With COVID-19 in a Tertiary Care Hospital," published on November 11, 2021 in the journal *Cureus*; retracted on March 17, 2022.

□ "Evaluating the effects of air disinfectants in decontamination of COVID-19 aerosols," published on January 10, 2023 in *Health Science Reports*; retracted on July 25, 2023.

□ "Evaluation of ferritin level in COVID-19 patients and its inflammatory response," published on February 3, 2022 in *Applied Nanoscience*; retracted on November 28, 2022.

□ "Evaluation of rapid antibody test and chest computed tomography results of COVID-19 patients: A retrospective study," preprint posted on February 20, 2021 in *medRxiv*; retracted on July 19, 2021.

"Facemasks in the COVID-19 era: A health hypothesis," published on November 22, 2020 in *Medical Hypotheses*; retracted on or about May 3, 2021. Our coverage here.

□ "Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial," published on March 20, 2020 in the *International Journal of Microbial Agents*; retracted on unknown date (html page overwrite), estimated to be December 16, 2024. More context here and here.

□ "Hydroxychloroquine in the Treatment of COVID-19: A Multicenter Randomized Controlled Study," published on August 14, 2020 in T*he American Journal of Tropical Medicine and Hygiene*; EOC published October 11, 2021, retracted on September 2, 2022.

□ "Hydroxychloroquine or chloroquine with or without a macrolide for treatment of COVID-19: a multinational registry analysis published in *The Lancet* on May 22, 2020, subjected to an expression of concern on June 2 ,and retracted on June 4.

□ "Hydroxychloroquine plus azithromycin: a potential interest in reducing in-hospital morbidity due to COVID-19 pneumonia (HI-ZY-COVID)?" preprint posted on *medRxiv*, May 11, 2020, withdrawn on May 20, 2020. Our coverage here.

"Impact of COVID-19 pandemic on vaccination coverage of children and adolescents: A systematic review," published on February 2, 2022 in *Health Science Reports*; retracted on July 26, 2023.

"Increased Age-Adjusted Cancer Mortality After the Third mRNA-Lipid Nanoparticle Vaccine Dose During the COVID-19 Pandemic in Japan," published on April 8, 2024 in *Cureus*; EOC issued on June 12, 2024 and retracted on June 26, 2024.

"Is vitamin D deficiency associated with the COVID-19 epidemic in Europe," preprint posted on January 29, 2021 in *medRxiv*; retracted on March 6, 2021.

"Microbiome-Based Hypothesis on Ivermectin's Mechanism in COVID-19: Ivermectin Feeds Bifidobacteria to Boost Immunity," published on July 11, 2022 in *Frontiers in Microbiology*; EOC issued on January 5, 2023; retracted on May 3, 2023. "mRNA COVID-19 Vaccination and Development of CMR-confirmed Myopericarditis," preprint published on September 16, 2021 in *medRxiv*; retracted on September 24, 2021.

 "mRNA Vaccines to Prevent COVID-19 Disease and Reported Allergic Reactions: Current Evidence and Approach," published December 31, 2020 in *The Journal of Allergy and Clinical Immunology: In Practice*. Temporary Removal published on unknown date; reinstated on unknown date.

"New relapse of multiple sclerosis and neuromyelitis optica as a potential adverse event of AstraZeneca AZD1222 vaccination for COVID-19," published on October 13, 2021 in *Multiple Sclerosis and Related Disorders*; retracted on January 9, 2025

"Presence of viral spike protein and vaccinal spike protein in the blood serum of patients with long-COVID syndrome," published on December 1, 2023 in the *European Review for Medical and Pharmacological Sciences*; EOC issued on Janaury 31, 2024; retracted on March 31, 2024.

"Re: How the adverse effect counting window affected vaccine safety calculations in randomised trials of COVID-19 vaccines," published on February 26, 2024 in the *Journal of Evaluation in Clinical Practice*; retracted on May 27, 2024.

"SARS–CoV–2 Spike Impairs DNA Damage Repair and Inhibits V(D)J Recombination In Vitro," published in Viruses on October 13, 2021; EoC published December 22, 2021; retracted on May 10, 2022. See our coverage here.

"Spontaneous Abortions and Policies on COVID-19 mRNA Vaccine Use During Pregnancy," published in November 2021 in *Science, Public Health Policy, and the Law*; retracted on unknown date. See our coverage here.

"The Effect of COVID-19 Vaccination on Reducing the Risk of Infection, Hospitalization, and Death in Isfahan Province, Iran," published in January 2022 in the *Iranian Journal of Public Health*; retracted on February 1, 2022.

"The mechanisms of action of Ivermectin against SARS-CoV-2: An evidence-based clinical review article," published on June 15, 2021 in *The Journal of Antibiotics*; unknown date of retraction.

"The Race to Herd Immunity: Results from a Large-Scale Study," preprint posted on April 2, 2021 in *SSRN: Social Science Resource Network*, retracted on unknown date without notice.

"The role of social circle COVID-19 illness and vaccination experiences in COVID-19 vaccination decisions: an online survey of the United States population," published on January 24, 2023 in *BMC Infectious Diseases*; retracted on April 11, 2023.

"The Role of Vitamin D in Suppressing Cytokine Storm in COVID-19 Patients and Associated Mortality," preprint posted on April 10, 2020 in *medRxiv*; withdrawn on April 15, 2020. Reinstated on unknown date.

"The Safety of COVID-19 Vaccinations—We Should Rethink the Policy," published June 24, 2021, in *Vaccines*; EOC issued June 28, 2021; retracted July 2, 2021. See our coverage here.

"Theoretical novel COVID-19 vaccination risk of rare and severe adverse events versus COVID-19 mortality," published on October 1, 2020 in *Early Human Development*; retracted sometime in March, 2021. See our coverage here

"Treatment with Ivermectin Is Associated with Decreased Mortality in COVID-19 Patients: Analysis of a National Federated Database," published on February 28, 2022 in International Journal of Infectious Diseases," retracted sometime close to June 1, 2022. Our coverage here.

"Use of Post-Mortem Computed Tomography During the COVID-19 Pandemic: The Malaysian Experience," published on October 28, 2022 in *The Malaysian Journal of Medical Sciences*; retracted on January 18, 2023.

"Vitamin D sufficiency, a serum 25-hydroxyvitamin D at least 30 ng/mL reduced risk for adverse clinical outcomes in patients with COVID-19 infection," published on October 14, 2020 in *PLoS One*; EOC issued on October 14, 2020, retracted on June 6, 2024. Our coverage here.

"Why are we vaccinating children against COVID-19?," published on September 14, 2021 in *Toxicology Reports*; correction published October 7, 2021, expression of concern published December 17, 2021, retracted on May 6, 2022. Our coverage here.

ΕΚΦΡΑΣΗ ΑΝΗΣΥΧΙΑΣ (Expressions of concern)

"Different T cell related immunological profiles in COVID-19 patients compared to healthy controls," published on May 28, 2021 in *International Immunopharmacology*; EOC issued on July 14, 2024.

"Excess mortality across countries in the western world since the COVID-19 pandemic: 'Our World in Data' estimates of January 2020 to December 2022," published on June 3, 2024 in *BMJ Public Health*; EOC issued on June 14, 2024.

"Humoral immune mechanisms involved in protective and pathological immunity during COVID-19," published on July 1, 2021 in *Human Immunology*; EOC issued on 4/8/2023.

 “Ivermectin for Prevention and Treatment of COVID-19 Infection: A Systematic Review, Meta-Analysis, and Trial Sequential Analysis to Inform Clinical Guidelines,” published June 21, 2021 in the *American Journal of Therapeutics*; EoC published February 7, 2022. Our coverage here and here.

 “Mrna COVID Vaccines Dramatically Increase Endothelial Inflammatory Markers and ACS Risk as Measured by the PULS Cardiac Test: a Warning (Abstract 10712),” published on November 8, 2021; EOC published November 24, 2021; Correction issued December 21, 2021. See our coverage here.

 “Review of the Emerging Evidence Demonstrating the Efficacy of Ivermectin in the Prophylaxis and Treatment of COVID-19,” published on April 22, 2021 in the *American Journal of Therapeutics*; EoC published February 7, 2022. Our coverage here.

 “Risk factors associated with COVID-19-induced death in patients hospitalized in intensive care units (ICUs) in a city in Southern Brazil,” published on August 31, 2021 as part of a special issue in *Toxicology Reports*; EoC assigned to entire issue on December 17, 2021. See our coverage here.

 “Safety of COVID-19 vaccines administered in the EU: Should we be concerned?,” published on August 31, 2021 as part of a special issue in *Toxicology Reports*; correction issued on September 2, 2021, EoC assigned to entire issue on December 17, 2021. See our coverage here.

“The Comparative Analysis of Two RT-qPCR Kits for Detecting SARS-CoV-2 Reveals a Higher Risk of False-Negative Diagnosis in Samples with High Quantification Cycles for Viral and Internal Genes,” published on July 5, 2022 in the *Canadian Journal of Infectious Diseases and Medical Microbiology*; EOC issued on January 19, 2023.

“Unexpected detection of SARS-CoV-2 antibodies in the prepandemic period in Italy,” published in Tumori on November 11, 2020, subject to an expression of concern on March 22, 2021. Expression of concern removed on June 30, 2021.

https://timesofindia.indiatimes.com/india/why-a-scientific-paper-on-adverse-events-in-covid-vaccination-was-withdrawn-post-publication/articleshow/113823634.cms

· Μετάφραση αυτής της σελίδας

30 Σεπ 2024 — According to the retraction notice, a post-publication review concluded that the reported *adverse events* of special interest (AESIs) were ...

Mulligan, M.J., Lyke, K.E., Kitchin, N. *et al.* Phase I/II study of COVID-19 RNA vaccine BNT162b1 in adults. *Nature* **586**, 589–593 (2020). https://doi.org/10.1038/s41586-020-2639-4

ΕΣΦΑΛΜΕΝΗ ΠΛΗΡΟΦΟΡΗΣΗ (MISINFORMATION)

Pierri, F., DeVerna, M. R., Yang, K. C., Axelrod, D., Bryden, J., & Menczer, F. (2023). One Year of COVID-19 Vaccine Misinformation on Twitter: Longitudinal Study. *Journal of medical Internet research*, *25*, e42227. https://doi.org/10.2196/42227

Facebook execs denied covid misinformation despite ...

The Washington Post

https://www.washingtonpost.com › ...

· **Μετάφραση αυτής της σελίδας**

28 Οκτ 2021 — Facebook told the White House to focus on the 'facts' about *vaccine* misinformation. Internal documents show it wasn't sharing key data.

ΣΚΟΠΙΜΗ ΠΑΡΑΠΛΗΡΟΦΟΡΗΣΗ /ΠΑΡΕΡΜΗΝΕΙΑ (DISINFORMATION)

INFODEMIC…

Richtel, Matt (6 February 2020). «W.H.O. Fights a Pandemic Besides Coronavirus: an 'Infodemic'». *The New York Times*. ISSN 0362-4331. Αρχειοθετήθηκε από το πρωτότυπο στις 6 February 2020. A

Paul, Katie (1 February 2020). «As coronavirus misinformation spreads on social media, Facebook removes posts». Reuters. Αρχειοθετήθηκε από το πρωτότυπο στις 6 February 2020. A

«Virus Outbreak: Chinese trolls decried for fake news». *Taipei Times*. 28 February 2020.

«Taiwan accuses China of waging cyber 'war' to disrupt virus fight». Reuters. 29 February 2020.

«Coronavirus: Russia denies spreading US conspiracy on social media». *BBC News*. 23 February 2020.

«Coronavirus: Russia pushing fake news about US using outbreak to 'wage economic war' on China, officials say». Agence France-Presse. 23 Φεβρουαρίου 2020.

Kate Ng (23 Φεβρουαρίου 2020). «US accuses Russia of huge coronavirus disinformation campaign». The Independent. Ανακτήθηκε στις 27 Φεβρουαρίου 2020.

«Conspiracy theories to colonialism: GOP covers up Trump's incompetent coronavirus response». *Salon*. 27 February 2020.

«Larry Kudlow Claims Coronavirus 'Contained' In U.S. As CDC Warns Of Likely Spread». *HuffPost*. 25 February 2020.

«Trump's Biggest Supporters Think The Coronavirus Is A Deep State Plot». *BuzzFeed*. 26 February 2020.

«Trump's reckless coronavirus statements put the entire US at risk». *The Verge*. 25 February 2020.

«Bots are waging a coronavirus disinformation campaign on social media». *Inverse*. 27 February 2020.

«Iran Cleric Blames Trump For Coronavirus Outbreak In Religious City». *Radio Farda*. 22 February 2020. Ανακτήθηκε στις 26 February 2020.

«Coronavirus: Misinformation and false medical advice spreads in Iran». *BBC News*. 29 February 2020.

«Arab Writers: The Coronavirus Is Part Of Biological Warfare Waged By The U.S. Against China». *Middle East Media Research Institute*. 6 February 2020. Αρχειοθετήθηκε από το πρωτότυπο στις 9 February 2020

Patwa P, Sharma S, Pykl S, Guptha V, Kumari G, Akhtar M, Ekbal A, Das A, Chakraborty T. Combating Online Hostile Posts in Regional Languages during Emergency Situation. Cham: Springer; 2021. Fighting an infodemic: COVID-19 fake news dataset.

Patel MP, Kute VB, Agarwal SK, COVID-19 Working Group of Indian Society of Nephrology "Infodemic" COVID 19: more pandemic than the Virus. Indian J Nephrol. 2020 May;30(3):188–91. doi: 10.4103/ijn.IJN_216_20. https://europepmc.org/abstract/MED/33013069 IJN-30-188 - DOI - PMC - PubMed

Zarocostas J. How to fight an infodemic. Lancet. 2020 Feb 29;395(10225):676. doi: 10.1016/S0140-6736(20)30461-X. https://europepmc.org/abstract/MED/32113495 S0140-6736(20)30461-X - DOI - PMC - PubMed

Managing the COVID-19 infodemic: promoting healthy behaviours and mitigating the harm from misinformation and disinformation. World Health Organization. [2022-08-10]. https://tinyurl.com/3p5zads7 .

Eysenbach G. How to fight an infodemic: the four pillars of infodemic management. J Med Internet Res. 2020 Jun 29;22(6):e21820. doi: 10.2196/21820. https://www.jmir.org/2020/6/e21820/ v22i6e21820 - DOI - PMC - PubMed

Enhancing self-medication practices in the era of infodemic: the role of pharmacovigilance.

Calderon-Ospina CA. Ther Adv Drug Saf. 2023 Aug 23;14:20420986231194754. doi: 10.1177/20420986231194754. eCollection 2023. PMID: 37636838 Free PMC article. No abstract available.

Facebook execs denied covid misinformation despite ...

[The Washington Post](https://www.washingtonpost.com)

[*https://www.washingtonpost.com › ...*](https://www.washingtonpost.com)

· [**Μετάφραση αυτής της σελίδας**]()

28 Οκτ 2021 — Facebook told the White House to focus on the 'facts' about *vaccine* misinformation. Internal documents show it wasn't sharing key data.

ΒΙΟΚΙΝΗΤΙΚΗ ΤΟΥ NUCLEOSIDE-MODIFIED MESSENGER RNA (mRNA) ΤΩΝ COVID ΕΜΒΟΛΙΩΝ ΚΑΙ ΔΙΑΡΚΕΙΑ ΠΑΡΑΜΟΝΗΣ ΣΕ ΑΝΘΡΩΠΙΝΟΥΣ ΙΣΤΟΥΣ

Κλινικές μελέτες δείχνουν ότι το τροποποιημένο (modified) mRNA συνήθως παραμένει στο σώμα μέχρι ένα μήνα μετά την έγχυση και μπορεί να ανιχνευθεί στο μυοκάρδιο, σε σκελετικούς μύς, σε θέσεις φλεγμονής και ίνωσης.

Αυτός είναι και ο λόγος που θεωρείται από αρκετούς σοβαρούς επιστήμονες ότι το mRNA που έχει υποστεί τροποποίηση με pseudouridin και άλλες αλλαγές, όπως μεθυλίωση, είναι ακατάλληλο για κλινική χρήση λόγω κινδύνου μακράς ανοσοδιεγερτικής δράσης.

Sebastian Ols, Lifei Yang, Elizabeth A. Thompson, Pradeepa Pushparaj, Karen Tran, Frank Liang, Ang Lin, Bengt Eriksson, Gunilla B. Karlsson Hedestam, Richard T. Wyatt, Karin Loré, Route of Vaccine Administration Alters Antigen Trafficking but Not Innate or Adaptive Immunity, Cell Reports, Volume 30, Issue 12, 2020,Pages 3964-3971.e7, ISSN 2211-1247, https://doi.org/10.1016/j.celrep.2020.02.111.
(https://www.sciencedirect.com/science/article/pii/S2211124720302928)

[Innate immune mechanisms of mRNA vaccines]()

2022, Immunity

[The mRNA-LNP platform's lipid nanoparticle component used in preclinical vaccine studies is highly inflammatory]()

2021, iScience

Impact of nanoparticle properties on immune cell interactions in the lymph node
Distinct Inflammatory Programs Underlie the Intramuscular Lipid Nanoparticle
Advancing mRNA Therapeutics: The Role and Future of Nanoparticle Delivery
Modulation of innate immune response to mRNA vaccination after SARS-CoV-2 infection or sequential vaccination in humans Open Access View abstract

***McKernan K.,** Kyriakopoulos A.M., McCullough P.A. Differences in vaccine and SARS-CoV-2 replication derived mRNA: Implications for cell biology and future disease. OSF Preprints. 2021 doi: 10.31219/osf.io/bcsa6.* [[DOI]()] [[Google Scholar]()]

ΑΝΙΧΝΕΥΣΗ mRNA ΣΤΗΝ ΚΥΚΛΟΦΟΡΙΑ ΚΑΙ ΣΕ ΙΣΤΟΥΣ ΜΑΚΡΑΝ ΤΟΥ ΣΗΜΕΙΟΥ ΕΝΕΣΗΣ ΤΟΥ ΕΜΒΟΛΙΟΥ

SARS-CoV-2 mRNA Vaccine (BNT162, PF-0 7302048): 2.6.5.5B.

Pharmacokinetics: organ distribution continued, report number: 185350, Page 6. Available at: https://www.pmda.go.jp/drugs/2021/P20210212001/672212000_30300AMX00231_I100_1.pdf.

Boros LG, Kyriakopoulos AM, Brogna C, Piscopo M, McCullough PA, Seneff S. *Long-lasting, biochemically modified mRNA, and its frameshifted recombinant spike proteins in human tissues and circulation after COVID-19 vaccination. Pharmacol Res Perspect*. 2024; 12:e1218. doi:10.1002/prp2.1218

Krauson AJ, Casimero FVC, Siddiquee Z, Stone JR. *Duration of SARS-CoV-2 mRNA vaccine persistence and factors associated with cardiac involvement in recently vaccinated patients*. NPJ Vaccines. 2023;8:141. doi:10.1038/s41541- 023- 00742-7

Garg A., Seeliger B., Derda A.A., Xiao K., Gietz A., Scherf K., Sonnenschein K., Pink I., Hoeper M.M., Welte T., et al. *Circulating Cardiovascular MicroRNAs in Critically Ill COVID-19 Patients.* Eur. J. Heart Fail. 2021;23:468–475. doi: 10.1002/ejhf.2096. [DOI] [PMC free article] [PubMed] [Google Scholar]

Röltgen K, Nielsen SCA, Silva O, et al. *Immune imprinting, breadth of variant recognition, and germinal center response in human SARS-Cov-2 infection and vaccination*. Cell 2022;185:1025–40.

Magen E, Mukherjee S, Bhattacharya M, et al. *Clinical and molecular characterization of a rare case of BNT162b2 mRNA COVID- 19 vaccine- associated myositis*. Vaccines 2022;10:1135.

Mörz M. *A case report: multifocal necrotizing encephalitis and myocarditis after BNT162b2 mRNA vaccination against COVID- 19.* Vaccines 2022;10:1651.

Kim MS**,** Jung SY, Ahn JG, et al. Comparative safety of mRNA COVID-19 vaccines to influenza vaccines: a pharmacovigilance analysis using WHO international database. *J Med Virol*. 2022; 94: 1085-1095.

Prasad V, Ioannidis JPA. *Constructive and obsessive criticism in science*. *Eur J Clin Invest*. 2022; 52(11):e13839.

Periodic Safety Update Report #1 for Covid-19 mRNA vaccine (nucleoside modified) (BNT162b2). Submitted to the European Medicines Agency on 19 August 2021, made publicly available in response to a Freedom of Information Act (FOIA) request from an anonymous reader and published by the Austrian science and political blog, TKP. https://tkp.at/2023/01/17/aerzte-tragen-die-verantwortung-bei-impf-schaeden-und-fuer-deren-meldung/.

https://www.nebraskamed.com/COVID/where-mrna-vaccines-and-spike-proteins-go

ΣΤΟ ΑΙΜΑ

Fertig TE, Chitoiu L, Marta DS, Ionescu VS, Cismasiu VB, Radu E, Angheluta G, Dobre M, Serbanescu A, Hinescu ME, Gherghiceanu M. Vaccine mRNA Can Be Detected in Blood at 15 Days Post-Vaccination. Biomedicines. 2022 Jun 28;10(7):1538. doi: 10.3390/biomedicines10071538. PMID: 35884842; PMCID: PMC9313234**.**
Article PubMed PubMed Central CAS Google Scholar

Castruita J.A.S., Schneider U.V., Mollerup S., Leineweber T.D., Weis N., Bukh J., Pedersen M.S., Westh H. SARS-CoV-2 spike mRNA vaccine sequences circulate in blood up to 28 days after COVID-19 vaccination. APMIS. 2023;131:128–132. doi: 10.1111/apm.13294. **[DOI] [PMC free article] [PubMed] [Google Scholar]**

Röltgen, K. et al. Immune imprinting, breadth of variant recognition, and germinal center response in human SARS-CoV-2 infection and vaccination. *Cell* **185**, 1025–1040 (2022). Article PubMed PubMed Central Google Scholar

BNT162b2 mRNA was detected in patients by PCR in circulating leukocytes up to 6 days from vaccination and in the plasma up to 15 days from vaccination

Using human axillary lymph node biopsies, spike protein and vaccine mRNA were reported to persist up to 60 days from vaccination with either BNT162b2 or mRNA-1273 as detected by immunohistochemistry and in-situ hybridization

ΣΤΟ ΓΑΛΑ

Hanna N, De Mejia CM, Heffes-Doon A, Lin X, Botros B, Gurzenda E, Clauss-Pascarelli C, Nayak A. Biodistribution of mRNA COVID-19 vaccines in human breast milk. EBioMedicine. 2023 Oct;96:104800. doi: 10.1016/j.ebiom.2023.104800. Epub 2023 Sep 19. PMID: 37734205; PMCID: PMC10514401.

Hanna, N. · Heffes-Doon, A. · Lin, X. · et al. **Detection of messenger RNA COVID-19 vaccines in human breast milk** *JAMA Pediatr.* 2022; **176**:1268-1270 Crossref Scopus (25) PubMed Google Scholar

Low, J.M. · Gu, Y. · Ng, M.S.F. · et al. **Codominant IgG and IgA expression with minimal vaccine mRNA in milk of BNT162b2 vaccinees** *NPJ Vaccines.* 2021; **6**:105 Crossref Scopus (56) PubMed Google Scholar

https://www.thelancet.com/journals/ebiom/article/PIIS2352-3964(23)00366-3/fulltext

Golan, Y. · Prahl, M. · Cassidy, A. · et al.**Evaluation of messenger RNA from COVID-19 BTN162b2 and mRNA-1273 vaccines in human milk** *JAMA Pediatr*. 2021; **175**:1069-1071 Crossref Scopus (38) PubMed Google Scholar

ΣΕ ΙΣΤΟΥΣ

Krauson, A. J., Casimero, F. V. C., Siddiquee, Z., & Stone, J. R. (2023). Duration of SARS-CoV-2 mRNA vaccine persistence and factors associated with cardiac involvement in recently vaccinated patients. ***NPJ vaccines***, ***8***(1), 141. https://doi.org/10.1038/s41541-023-00742-7 https://doi.org/10.1038/s41541-023-00742-7

Here, we developed specific RT-qPCR-based assays to detect each mRNA vaccine and screened lymph nodes, liver, spleen, and myocardium from recently vaccinated deceased patients. Vaccine was detected in the axillary lymph nodes in the majority of patients dying within 30 days of vaccination, but not in patients dying more than 30 days from vaccination. Vaccine was not detected in the mediastinal lymph nodes, spleen, or liver. Vaccine was detected in the myocardium in a subset of patients vaccinated within 30 days of death. Cardiac ventricles in which vaccine was detected had healing myocardial injury at the time of vaccination and had more myocardial macrophages than the cardiac ventricles in which vaccine was not detected. These results suggest that SARS-CoV-2 mRNA vaccines routinely persist up to 30 days from vaccination and can be detected in the heart.

European Medicines Agency Assessment Report. [(accessed on 15 November 2022)]. Available online: https://www.ema.europa.eu/en/documents/assessment-report/comirnaty-epar-public-assessment-report_en.pdf.

European Medicines Agency COVID-19 Vaccine Moderna. [(accessed on 15 November 2022)]. Available online: https://www.ema.europa.eu/en/documents/assessment-report/spikevax-previously-covid-19-vaccine-moderna-epar-public-assessment-report_en.pdf.

ΠΡΩΤΕΙΝΗ S (SPIKE) ΑΝΙΧΝΕΥΣΙΜΗ ΜΑΚΡΑΝ ΤΗΣ ΘΕΣΗΣ ΕΓΧΥΣΗΣ

Κλινικές μελέτες δείχνουν ότι recombinant spike protein μπορεί να παραμένει στην κυκλοφορία του αίματος επί μακρόν.

Πολύ σημαντική αύξηση της πρόσληψης 18-flourodeoxyglucose στον καρδιακό μυ βρέθηκε μέχρι και 180 days μετά τον εμβολιασμό.

ΣΤΗΝ ΚΥΚΛΟΦΟΡΙΑ ΤΟΥ ΑΙΜΑΤΟΣ

Röltgen, K. et al. Immune imprinting, breadth of variant recognition, and germinal center response in human SARS-CoV-2 infection and vaccination. *Cell* **185**, 1025–1040 (2022). Article PubMed PubMed Central Google Scholar

Spike protein was detected in the plasma up to 7 days from vaccination.

Ogata, A. F. et al. Circulating severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccine antigen detected in the plasma of mRNA-1273 vaccine recipients. *Clin. Infect. Dis.*

74, 715–718 (2022). Article PubMed CAS Google Scholar
https://doi.org/10.1093/cid/ciab465

Διαδοχικές μετρήσεις πρωτεϊνών του ιού SARS-CoV-2) σε 13 άτομα που είχαν λάβει δύο δόσεις του εμβολίου mRNA-1273 έδειξαν σε 11 από αυτούς ανιχνεύσιμη πρωτεΐνη S από την πρώτη κιόλας ημέρα, με κάθαρση που συνέπιπτε με την παραγωγή ανοσοσφαιρινών αντι-S IgG και IgA.

Bansal, S. et al. Cutting edge: circulating exosomes with COVID spike protein are induced by BNT162b2 (Pfizer-BioNTech) vaccination prior to development of antibodies: a novel mechanism for immune activation by mRNA vaccines. *J. Immunol.* **207**, 2405–2410 (2021). Article PubMed CAS Google Scholar

Induction of circulating exosomes expressing spike protein was seen on day 14 after vaccination, followed by Abs 14 d after the second dose of th. Exosomes with spike protein, Abs to SARS-CoV-2 spike, and T cells secreting IFN-γ and TNF-α increased following the booster dose. Transmission electron microscopy of exosomes also demonstrated spike protein Ags on their surface. Exosomes with spike protein and Abs decreased in parallel after four months. These results demonstrate an important role of circulating exosomes with spike protein for effective immunization following mRNA-based vaccination.

Trougakos IP, Terpos E, Alexopoulos H, Politou M, Paraskevis D, Scorilas A, Kastritis E, Andreakos E, Dimopoulos MA. Adverse effects of COVID-19 mRNA vaccines: the spike hypothesis. Trends Mol Med. 2022 Jul;28(7):542-554. doi: 10.1016/j.molmed.2022.04.007. Epub 2022 Apr 21. PMID: 35537987; PMCID: PMC9021367.
https://doi.org/10.1016/j.molmed.2022.04.007

Seneff S, Nigh G, Kyriakopoulos AM, McCullough PA. Innate immune suppression by SARS-CoV-2 mRNA vaccinations: The role of G-quadruplexes, exosomes, and MicroRNAs. Food Chem Toxicol. 2022 Jun;164:113008. doi: 10.1016/j.fct.2022.113008. Epub 2022 Apr 15. PMID: 35436552; PMCID: PMC9012513. https://doi.org/10.1016/j.fct.2022.113008

Uversky VN, Redwan EM, Makis W, Rubio-Casillas A. IgG4 Antibodies Induced by Repeated Vaccination May Generate Immune Tolerance to the SARS-CoV-2 Spike Protein. Vaccines (Basel). 2023 May 17;11(5):991. doi: 10.3390/vaccines11050991. PMID: 37243095; PMCID: PMC10222767. https://doi.org/10.3390/vaccines11050991

Theoharides TC. Could SARS-CoV-2 Spike Protein Be Responsible for Long-COVID Syndrome? Mol Neurobiol. 2022 Mar;59(3):1850-1861. doi: 10.1007/s12035-021-02696-0. Epub 2022 Jan 13. PMID: 35028901; PMCID: PMC8757925. https://doi.org/10.1007/s12035-021-02696-0

Theoharides TC, Conti P. Be aware of SARS-CoV-2 spike protein: There is more than meets the eye. J Biol Regul Homeost Agents. 2021 May-Jun;35(3):833-838. doi: 10.23812/THEO_EDIT_3_21. PMID: 34100279.
https://doi.org/10.23812/THEO_EDIT_3_21

Yonker LM, Swank Z, Bartsch YC, Burns MD, Kane A, Boribong BP, Davis JP, Loiselle M, Novak T, Senussi Y, Cheng CA, Burgess E, Edlow AG, Chou J, Dionne A, Balaguru D, Lahoud-Rahme M, Arditi M, Julg B, Randolph AG, Alter G, Fasano A, Walt DR. Circulating Spike Protein Detected in Post-COVID-19 mRNA Vaccine Myocarditis. Circulation. 2023 Mar 14;147(11):867-876. doi: 10.1161/CIRCULATIONAHA.122.061025. Epub 2023 Jan 4. PMID: 36597886; PMCID: PMC10010667.
https://doi.org/10.1161/CIRCULATIONAHA.122.061025

Castruita JAS, Schneider UV, Mollerup S, Leineweber TD, Weis N, Bukh J, Pedersen MS, Westh H. SARS-CoV-2 spike mRNA vaccine sequences circulate in blood up to 28 days after COVID-19 vaccination. APMIS. 2023 Mar;131(3):128-132. doi: 10.1111/apm.13294. Epub 2023 Jan 29. PMID: 36647776; PMCID: PMC10107710. https://doi.org/10.1111/apm.13294

Brogna C, Cristoni S, Marino G, et al. Detection of recombinant spike protein in the blood of individuals vaccinated against SARS-CoV-2: possible molecular mechanisms. Proteomics Clin Appl.2023;17:e2300048. doi:10.1002/prca.202300048

Boros LG, Kyriakopoulos AM, Brogna C,Piscopo M, McCullough PA, Seneff S. Long-lasting, biochemically modified mRNA, and its frameshifted recombinant spike proteins in human tissues and circulation after COVID-19 vaccination. Pharmacol Res Perspect. 2024;12(3):e1218. https://doi.org/10.1002/prp2.1218

Rhea E.M., Logsdon A.F., Hansen K.M., Williams L.M., Reed M.J., Baumann K.K., Holden S.J., Raber J., Banks W.A., Erickson M.A. The S1 protein of SARS-CoV-2 crosses the blood-brain barrier in mice. Nat. Neurosci. 2021;24:368–378. doi: 10.1038/s41593-020-00771-8. [DOI] [PMC free article] [PubMed] [Google Scholar]

ΣΕ ΑΛΛΑ ΒΙΟΛΟΓΙΚΑ ΥΓΡΑ

ΣΤΟ ΓΑΛΑ

Ενώ υπάρχουν μελέτες που δείχνουν mRNA των εμβολίων και αντισώματα IgG και IgA έναντι της πρωτείνης S, δεν μπόρεσα να εντοπίσω μελέτη με αναφερόμενη παρουσία πρωτεϊνης S στο γάλα

ΣΤΟ ΣΠΕΡΜΑ

Δεν αναφέρεται ανίχνευσή της

ΠΡΩΤΕΙΝΗ S (SPIKE) ΣΕ ΙΣΤΟΥΣ

Yamamoto M., Kase M., Sano H., Kamijima R., Sano S. Persistent varicella zoster virus infection following mRNA COVID-19 vaccination was associated with the presence of encoded spike protein in the lesion. J. Cutan. Immunol. Allergy. 2023;6:18–23. doi: 10.1002/cia2.12278. [DOI] [Google Scholar]

Mishra R., Banerjea A.C. SARS-CoV-2 Spike targets USP33-IRF9 axis via exosomal miR-148a to activate human microglia. Front. Immunol. 2021;12:656700. doi: 10.3389/fimmu.2021.656700. [DOI] [PMC free article] [PubMed] [Google Scholar]

ΤΟΞΙΚΟΤΗΤΑ ΤΗΣ ΠΡΩΤΕΙΝΗΣ S

Fontes-Dantas F.L., Fernandes G.G., Gutman E.G., De Lima E.V., Antonio L.S., Hammerle M.B., Mota-Araujo H.P., Colodeti L.C., Araújo S.M.B., Froz G.M., et al. SARS-CoV-2 Spike protein induces TLR4-mediated long-term cognitive dysfunction recapitulating post-COVID-19 syndrome in mice. Cell Rep. 2023;42:112189. doi: 10.1016/j.celrep.2023.112189. [DOI] [PMC free article] [PubMed] [Google Scholar]

Khaddaj-Mallat R., Aldib N., Bernard M., Paquette A.S., Ferreira A., Lecordier S., Saghatelyan A., Flamand L., ElAli A. SARS-CoV-2 deregulates the vascular and immune functions of brain pericytes via Spike protein. Neurobiol. Dis. 2021;161:105561. doi: 10.1016/j.nbd.2021.105561. [DOI] [PMC free article] [PubMed] [Google Scholar]

Henrion-Caude A. Spikopathy: The Pathology of the Spike Protein. Conference Presentation, General Assembly Meeting, World Council for Health. worldcouncilforhealth.org. 2021. [(accessed on 7 April 2023)]. Available online: https://worldcouncilforhealth.org/multimedia/alexandra-henrion-caude-france-spikopathy/

Solis O., Beccari A.R., Iaconis D., Talarico C., Ruiz-Bedoya C.A., Nwachukwu J.C., Cimini A., Castelli V., Bertini R., Montopoli M., et al. The SARS-CoV-2 spike protein binds and modulates estrogen receptors. Sci. Adv. 2022;8:eadd4150. doi: 10.1126/sciadv.add4150. [DOI] [PMC free article] [PubMed] [Google Scholar]

Parry PI, Lefringhausen A, Turni C, Neil CJ, Cosford R, Hudson NJ, Gillespie J. 'Spikeopathy': COVID-19 Spike Protein Is Pathogenic, from Both Virus and Vaccine mRNA. Biomedicines. 2023 Aug 17;11(8):2287. PMID: **37626783** PMCID: PMC10452662 DOI: 10.3390/biomedicines11082287 Free PMC article. Review

Seneff S., Kyriakopoulos A.M., Nigh G., McCullough P.A. A Potential Role of the Spike Protein in Neurodegenerative Diseases: A Narrative Review. Cureus. 2023;15:e34872. doi: 10.7759/cureus.34872. [DOI] [PMC free article] [PubMed] [Google Scholar]

Barreda D., Santiago C., Rodríguez J.R., Rodríguez J.F., Casasnovas J.M., Mérida I., Ávila-Flores A. SARS-CoV-2 Spike Protein and Its Receptor Binding Domain Promote a Proinflammatory Activation Profile on Human Dendritic Cells. Cells. 2021;10:3279. doi: 10.3390/cells10123279. [DOI] [PMC free article] [PubMed] [Google Scholar]

Suzuki Y.J., Nikolaienko S.I., Dibrova V.A., Dibrova Y.V., Vasylyk V.M., Novikov M.Y., Shults N.V., Gychka S.G. SARS-CoV-2 spike protein-mediated cell signaling in lung vascular cells. Vascul. Pharmacol. 2021;137:106823. doi: 10.1016/j.vph.2020.106823. [DOI] [PMC free article] [PubMed] [Google Scholar]

Colunga Biancatelli R.M.L., Solopov P.A., Sharlow E.R., Lazo J.S., Marik P.E., Catravas J.D. The SARS-CoV-2 spike protein subunit S1 induces COVID-19-like acute lung injury in K18-hACE2 transgenic mice and barrier dysfunction in human endothelial cells. Am. J.

Physiol. Lung Cell. Mol. Physiol. 2021;321:L477–L484. doi: 10.1152/ajplung.00223.2021. [DOI] [PMC free article] [PubMed] [Google Scholar]

Avolio E., Carrabba M., Milligan R., Kavanagh Williamson M., Beltrami A.P., Gupta K., Elvers K.T., Gamez M., Foster R.R., Gillespie K., et al. The SARS-CoV-2 Spike protein disrupts human cardiac pericytes function through CD147 receptor-mediated signalling: A potential non-infective mechanism of COVID-19 microvascular disease. Clin. Sci. 2021;135:2667–2689. doi: 10.1042/CS20210735. [DOI] [PMC free article] [PubMed] [Google Scholar]

Cao X., Nguyen V., Tsai J., Gao C., Tian Y., Zhang Y., Carver W., Kiaris H., Cui T., Tan W. The SARS-CoV-2 Spike protein induces long-term transcriptional perturbations of mitochondrial metabolic genes, causes cardiac fibrosis, and reduces myocardial contractile in obese mice. Mol. Metab. 2023;74:101756. doi: 10.1016/j.molmet.2023.101756. [DOI] [PMC free article] [PubMed] [Google Scholar]

Baumeier C., Aleshcheva G., Harms D., Gross U., Hamm C., Assmus B., Westenfeld R., Kelm M., Rammos S., Wenzel P., et al. Intramyocardial Inflammation after COVID-19 Vaccination: An Endomyocardial Biopsy-Proven Case Series. Int. J. Mol. Sci. 2022;23:6940. doi: 10.3390/ijms23136940. [DOI] [PMC free article] [PubMed] [Google Scholar]

Barmada A., Klein J., Ramaswamy A., Brodsky N.N., Jaycox J.R., Sheikha H., Jones K.M., Habet V., Campbell M., Sumida T.S., et al. Cytokinopathy with aberrant cytotoxic lymphocytes and profibrotic myeloid response in SARS-CoV-2 mRNA vaccine-associated myocarditis. Sci. Immunol. 2023;8:eadh3455. doi: 10.1126/sciimmunol.adh3455. [DOI] [PMC free article] [PubMed] [Google Scholar]

Zheng Y., Zhao J., Li J., Guo Z., Sheng J., Ye X., Jin G., Wang C., Chai W., Yan J., et al. SARS-CoV-2 spike protein causes blood coagulation and thrombosis by competitive binding to heparan sulfate. Int. J. Biol. Macromol. 2021;193:1124–1129. doi: 10.1016/j.ijbiomac.2021.10.112. [DOI] [PMC free article] [PubMed] [Google Scholar]

Ryu J.K., Sozmen E.G., Dixit K., Montano M., Matsui Y., Liu Y., Helmy E., Deerinck T.J., Yan Z., Schuck R., et al. SARS-CoV-2 spike protein induces abnormal inflammatory blood clots neutralized by fibrin immunotherapy. bioRxiv. 2021 doi: 10.1101/2021.10.12.464152. preprint . [DOI] [Google Scholar]

Boschi C., Scheim D.E., Bancod A., Militello M., Bideau M.L., Colson P., Fantini J., Scola B. SARS-CoV-2 Spike Protein Induces Hemagglutination: Implications for COVID-19 Morbidities and Therapeutics and for Vaccine Adverse Effects. Int. J. Mol. Sci. 2022;23:15480. doi: 10.3390/ijms232415480. [DOI] [PMC free article] [PubMed] [Google Scholar]

Kim E.S., Jeon M.T., Kim K.S., Lee S., Kim S., Kim D.G. Spike Proteins of SARS-CoV-2 Induce Pathological Changes in Molecular Delivery and Metabolic Function in the Brain Endothelial Cells. Viruses. 2021;13:2021. doi: 10.3390/v13102021. [DOI] [PMC free article] [PubMed] [Google Scholar]

Oh J., Cho W.H., Barcelon E., Kim K.H., Hong J., Lee S.J. SARS-CoV-2 spike protein induces cognitive deficit and anxiety-like behavior in mouse via non-cell autonomous hippocampal neuronal death. Sci. Rep. 2022;12:5496. doi: 10.1038/s41598-022-09410-7. [DOI] [PMC free article] [PubMed] [Google Scholar]

Tillman T.S., Chen Q., Bondarenko V., Coleman J.A., Xu Y., Tang P. SARS-CoV-2 Spike Protein Downregulates Cell Surface alpha7nAChR through a Helical Motif in the Spike Neck. ACS Chem. Neurosci. 2023;14:689–698. doi: 10.1021/acschemneuro.2c00610. [DOI] [PMC free article] [PubMed] [Google Scholar]

Rong Z., Mai H., Kapoor S., Puelles V.G., Czogalla J., Schädler J., Vering J., Delbridge C., Steinke H., Frenzel H., et al. SARS-CoV-2 Spike Protein Accumulation in the Skull-Meninges-Brain Axis: Potential Implications for Long-Term Neurological Complications in post-COVID-19. bioRxiv. 2023:preprint. doi: 10.1101/2023.04.04.535604. [DOI] [Google Scholar]

Olajide O.A., Iwuanyanwu V.U., Adegbola O.D., Al-Hindawi A.A. SARS-CoV-2 Spike Glycoprotein S1 Induces Neuroinflammation in BV-2 Microglia. Mol. Neurobiol. 2022;59:445–458. doi: 10.1007/s12035-021-02593-6. [DOI] [PMC free article] [PubMed] [Google Scholar]

Wu Z., Zhang X., Huang Z., Ma K. SARS-CoV-2 Proteins Interact with Alpha Synuclein and Induce Lewy Body-like Pathology In Vitro. Int. J. Mol. Sci. 2022;23:3394. doi: 10.3390/ijms23063394. [DOI] [PMC free article] [PubMed] [Google Scholar]

Nyström S., Hammarström P. Amyloidogenesis of SARS-CoV-2 Spike Protein. J. Am. Chem. Soc. 2022;144:8945–8950. doi: 10.1021/jacs.2c03925. [DOI] [PMC free article] [PubMed] [Google Scholar]

Tetz G., Tetz V. Prion-like Domains in Spike Protein of SARS-CoV-2 Differ across Its Variants and Enable Changes in Affinity to ACE2. Microorganisms. 2022;10:280. doi: 10.3390/microorganisms10020280. [DOI] [PMC free article] [PubMed] [Google Scholar]

Burkhardt A. Reutlingen Autopsy/Histology Study: Side-Effects from Corona Vaccinations. PowerPoint Conference Presentation (in German). Corona-blog.net. 2022. [(accessed on 7 April 2023)]. Available online: https://corona-blog.net/2022/03/10/reutlinger-autopsie-histologie-studie-nebenwirkungen-und-todesfaelle-durch-die-corona-impfungen/

Burkhardt A. Pathology Conference: Vaccine-Induced Spike Protein Production in the Brain, Organs etc., now Proven. Report24.news. 2022. [(accessed on 7 April 2023)]. Available online: https://report24.news/pathologie-konferenz-impfinduzierte-spike-produktion-in-gehirn-u-a-organen-nun-erwiesen/

Cheng, MH, Zhang, S, Porritt, RA, Noval Rivas, M, Paschold, L, Willscher, E, et al. Superantigenic character of an insert unique to SARS-CoV-2 spike supported by skewed TCR repertoire in patients with hyperinflammation. *Proc Natl Acad Sci USA*. (2020) 117:25254–62. doi: 10.1073/pnas.2010722117 PubMed Abstract | Crossref Full Text | Google Scholar

Forsyth, CB, Zhang, L, Bhushan, A, Swanson, B, Zhang, L, Mamede, JI, et al. The SARS-CoV-2 S1 spike protein promotes MAPK and NF-kB activation in human lung cells and inflammatory cytokine production in human lung and intestinal epithelial cells. Microorganisms. (2022) 10:1996. doi: 10.3390/microorganisms10101996 PubMed Abstract | Crossref Full Text | Google Scholar

Khan, S, Shafiei, MS, Longoria, C, Schoggins, JW, Savani, RC, and Zaki, H. SARS-CoV-2 spike protein induces inflammation via TLR2-dependent activation of the NF-κB pathway. eLife. (2021) 10:e68563. doi: 10.7554/eLife.68563 PubMed Abstract | Crossref Full Text | Google Scholar

Suzuki, YJ, Nikolaienko, SI, Dibrova, VA, Dibrova, YV, Vasylyk, VM, Novikov, MY, et al. SARS-CoV-2 spike protein-mediated cell signaling in lung vascular cells. Vasc Pharmacol. (2021) 137:106823. doi: 10.1016/j.vph.2020.106823 PubMed Abstract | Crossref Full Text | Google Scholar

Suzuki, YJ, and Gychka, SG. SARS-CoV-2 spike protein elicits cell Signaling in human host cells: implications for possible consequences of COVID-19 vaccines. Vaccines. (2021) 9:36. doi: 10.3390/vaccines9010036 PubMed Abstract | Crossref Full Text | Google Scholar

Η ΠΡΩΤΕΙΝΗ S ΕΠΗΡΕΑΖΕΙ ΤΗ ΛΕΙΤΟΥΡΓΙΑ ΤΟΥ ΕΝΔΟΘΗΛΙΟΥ

Shibata S, Arima H, Asayama K, Hoshide S, Ichihara A, Ishimitsu T, et al. Hypertension and related diseases in the era of COVID19: a report from the Japanese Society of Hypertension Task Force on COVID-19. Hypertens Res. 2020;43:1028–46

Terentes-Printzios, D., Gardikioti, V., Solomou, E. *et al.* The effect of an mRNA vaccine against COVID-19 on endothelial function and arterial stiffness. *Hypertens Res* **45**, 846–855 (2022). https://doi.org/10.1038/s41440-022-00876-6

Mogi, M. Is COVID-19 vaccination beneficial or harmful to endothelial cells?. *Hypertens Res* **45**, 920–921 (2022). https://doi.org/10.1038/s41440-022-00878-4 https://rdcu.be/d4kRv

Lei Y, Zhang J, Schiavon CR, He M, Chen L, Shen H, Zhang Y, Yin Q, Cho Y, Andrade L, et al. SARS-CoV-2 Spike protein impairs endothelial function via downregulation of ACE 2. Circ Res. 2021;128:1323–1326. doi: 10.1161/circresaha.121.318902 [DOI] [PMC free article] [PubMed] [Google Scholar]

Robles JP, Zamora M, Adan-Castro E, Siqueiros-Marquez L, Martinez de la Escalera G, Clapp C. The Spike protein of SARS-CoV-2 induces endothelial inflammation through integrin alpha5beta1 and NF-kappaB signaling. J Biol Chem. 2022;298:101695. doi: 10.1016/j.jbc.2022.101695 [DOI] [PMC free article] [PubMed] [Google Scholar]

Circulation Research και Salk Institute News, 30 Απριλίου 2021, «SARS–CoV-2 Spike Protein Impairs Endothelial Function via Downregulation of ACE 2

Parry PI, Lefringhausen A, Turni C, Neil CJ, Cosford R, Hudson NJ, Gillespie J. 'Spikeopathy': COVID-19 Spike Protein Is Pathogenic, from Both Virus and Vaccine mRNA. Biomedicines. 2023 Aug 17;11(8):2287. PMID: **37626783** PMCID: PMC10452662 DOI: 10.3390/biomedicines11082287 Free PMC article. Review.

Terentes-Printzios D., Gardikioti V., Solomou E., Emmanouil E., Gourgouli I., Xydis P., et al. (2022). The effect of an mRNA vaccine against COVID-19 on endothelial function and arterial stiffness. Hypertens. Res. 45 (5), 846–855. 10.1038/s41440-022-00876-6 [DOI] [PMC free article] [PubMed] [Google Scholar]

Maccio U, Zinkernagel AS, Shambat SM, Zeng X, Cathomas G, Ruschitzka F, et al. SARS-CoV-2 leads to a small vessel endotheliitis in the heart. EBioMedicine 2021;63:103182.

Calabretta E, Moraleda JM, Iacobelli M, Jara R, Vlodavsky I, O'Gorman P. COVID-19-induced endotheliitis: emerging evidence and possible therapeutic strategies. British J Haematology 2021;193(1),43–51

Η ΠΡΩΤΕΙΝΗ S ΔΙΑΠΕΡΝΑ ΤΟΝ ΑΙΜΑΤΕΓΚΕΦΑΛΙΚΟ ΦΡΑΓΜΟ

DeOre B. J., Tran K. A., Andrews A. M., Ramirez S. H., Galie P. A. (2021). SARS-CoV-2 spike protein disrupts blood-brain barrier integrity via RhoA activation. J. Neuroimmune Pharmacol. 16 (4), 722–728. 10.1007/s11481-021-10029-0 [DOI] [PMC free article] [PubMed] [Google Scholar]

Frank M. G., Nguyen K. H., Ball J. B., Hopkins S., Kelley T., Baratta M. V., et al. (2022). SARS-CoV-2 spike S1 subunit induces neuroinflammatory, microglial and behavioral sickness responses: evidence of PAMP-like properties. Brain Behav. Immun. 100, 267–277. 10.1016/j.bbi.2021.12.007 [DOI] [PMC free article] [PubMed] [Google Scholar]

Idrees D., Kumar V. (2021). SARS-CoV-2 spike protein interactions with amyloidogenic proteins: potential clues to neurodegeneration. Biochem. Biophys. Res. Commun. 554, 94–98. 10.1016/j.bbrc.2021.03.100 [DOI] [PMC free article] [PubMed] [Google Scholar]

Rhea EM, Logsdon AF, Hansen KM, Williams LM, Reed MJ, Baumann KK, Holden SJ, Raber J, Banks WA, Erickson MA. The S1 protein of SARS-CoV-2 crosses the blood-brain barrier in mice. Nat Neurosci. 2020 Dec 16; PubMed.

Oh J., Cho W. H., Barcelon E., Kim K. H., Hong J., Lee S. J. (2022). SARS-CoV-2 spike protein induces cognitive deficit and anxiety-like behavior in mouse via non-cell autonomous hippocampal neuronal death. Sci. Rep. 12 (1), 5496. 10.1038/s41598-022-09410-7 [DOI] [PMC free article] [PubMed] [Google Scholar]

Petrovszki D., Walter F. R., Vigh J. P., Kocsis A., Valkai S., Deli M. A., et al. (2022). Penetration of the SARS-CoV-2 spike protein across the blood-brain barrier, as revealed by a combination of a human cell culture model system and optical biosensing. Biomedicines 10 (1), 188. 10.3390/biomedicines10010188 [DOI] [PMC free article] [PubMed] [Google Scholar]

Tavassoly O., Safavi F., Tavassoly I. (2020). Seeding brain protein aggregation by SARS-CoV-2 as a possible long-term complication of COVID-19 infection. ACS Chem. Neurosci. 11 (22), 3704–3706. 10.1021/acschemneuro.0c00676 [DOI] [PubMed] [Google Scholar]

ΝΑΝΟΛΙΠΙΔΙΑ (LNPS) ΓΙΑ mMRNA ΕΜΒΟΛΙΑ ΚΑΙ ΑΛΛΕΣ ΧΡΗΣΕΙΣ

The role of lipid components in lipid nanoparticles for vaccines and gene therapy.

Hald Albertsen C, Kulkarni JA, Witzigmann D, Lind M, Petersson K, Simonsen JB. Adv Drug Deliv Rev. 2022 Sep;188:114416. doi: 10.1016/j.addr.2022.114416. Epub 2022 Jul 3. PMID: 35787388 Free PMC article. Review.

Lee Y, Jeong M, Park J, Jung H, Lee H. Immunogenicity of lipid nanoparticles and its impact on the efficacy of mRNA vaccines and therapeutics. Exp Mol Med. 2023 Oct;55(10):2085-2096. doi: 10.1038/s12276-023-01086-x. Epub 2023 Oct 2. PMID: 37779140; PMCID: PMC10618257.

Anderluzzi G, Lou G, Woods S, Schmidt ST, Gallorini S, Brazzoli M, Johnson R, Roberts CW, O'Hagan DT, Baudner BC, Perrie Y. The role of nanoparticle format and route of administration on self-amplifying mRNA vaccine potency. J Control Release. 2022 Feb;342:388-399. doi: 10.1016/j.jconrel.2021.12.008. Epub 2021 Dec 10. PMID: 34896446; PMCID: PMC8660137.

Bathula NV, Friesen JJ, Casmil IC, Wayne CJ, Liao S, Soriano SKV, Ho CH, Strumpel A, Blakney AK. Delivery vehicle and route of administration influences self-amplifying RNA biodistribution, expression kinetics, and reactogenicity. J Control Release. 2024 Oct;374:28-38. doi: 10.1016/j.jconrel.2024.07.078. Epub 2024 Aug 8. PMID: 39097193.

Mobasher M, Ansari R, Castejon AM, Barar J, Omidi Y. Advanced nanoscale delivery systems for mRNA-based vaccines. Biochim Biophys Acta Gen Subj. 2024 Mar;1868(3):130558. doi: 10.1016/j.bbagen.2024.130558. Epub 2024 Jan 5. PMID: 38185238.

Lipid Nanoparticles─From Liposomes to mRNA Vaccine Delivery, a Landscape of Research Diversity and Advancement

June 28, 2021ACS Nano Rumiana Tenchov, Robert Bird, Allison E. Curtze, Qiongqiong Zhou

Developing Biodegradable Lipid Nanoparticles for Intracellular mRNA Delivery and Genome Editing. Qiu M, Li Y, Bloomer H, Xu Q. Acc Chem Res. 2021 Nov 2;54(21):4001-4011. doi: 10.1021/acs.accounts.1c00500. Epub 2021 Oct 20. PMID: 34668716 Review.

Optimization of phospholipid chemistry for improved lipid nanoparticle (LNP) delivery of messenger RNA (mRNA). Álvarez-Benedicto E, Farbiak L, Márquez Ramírez M, Wang X, Johnson LT, Mian O, Guerrero ED, Siegwart DJ. Biomater Sci. 2022 Jan 18;10(2):549-559. doi: 10.1039/d1bm01454d. PMID: 34904974 Free PMC article.

Delivery Strategies for mRNA Vaccines. Ramachandran S, Satapathy SR, Dutta T. Pharmaceut Med. 2022 Feb;36(1):11-20. doi: 10.1007/s40290-021-00417-5. Epub 2022 Jan 30. PMID: 35094366 Free PMC article. Review.

Ndeupen S, Qin Z, Jacobsen S. The mRNA-LNP platform’s lipid nanoparticle component used in preclinical vaccine studies is highly inflammatory. bioRxiv 2021 Jul 23;2021.03.04.430128. doi:10.1101/2021.03.04.430128. Google Scholar WorldCat PMC - PubMed

Ndeupen, S, Qin, Z, Jacobsen, S, Bouteau, A, Estanbouli, H, and Igyártó, BZ. The mRNA-LNP platform's lipid nanoparticle component used in preclinical vaccine studies is highly inflammatory. iScience. (2021) 24:103479. doi: 10.1016/j.isci.2021.103479 PubMed Abstract | Crossref Full Text | Google Scholar

Eygeris Y, Gupta M, Kim J, Sahay G. Chemistry of Lipid Nanoparticles for RNA Delivery. Acc Chem Res. 2022 Jan 4;55(1):2-12. Epub 2021 Dec 1. Review. PMID: 34850635 DOI: 10.1021/acs.accounts.1c00544

Bansal, Sandhya & Perincheri, Sudhir & Fleming, Timothy & Poulson, Christin & Tiffany, Brian & Bremner, Ross & Mohanakumar, Thalachallour. (2021). Cutting Edge: Circulating Exosomes with COVID Spike Protein Are Induced by BNT162b2 (Pfizer–BioNTech) Vaccination prior to Development of Antibodies: A Novel Mechanism for Immune Activation by mRNA Vaccines. The Journal of Immunology. 207. ji2100637. 10.4049/jimmunol.2100637.

Thi TTH, Suys EJA, Lee JS, Nguyen DH, Park KD, Truong NP. Lipid-based nanoparticles in the clinic and clinical trials: from cancer nanomedicine to COVID-19 vaccines. Vaccines (Basel). 2021;9(4):359. - PMC - PubMed

Chaudhary N., Weissman D., Whitehead K.A. MRNA Vaccines for Infectious Diseases: Principles, Delivery and Clinical Translation. Nat. Rev. Drug Discov. 2021;20:817–838. doi: 10.1038/s41573-021-00283-5. - DOI - PMC - PubMed

J. Kent, Shiyao Li, Thakshila H. Amarasena, Arnold Reynaldi, Wen Shi Lee, Michael G. Leeming, David H. O’Connor, Julie Nguyen, Helen E. Kent, Frank Caruso, Jennifer A. Juno, Adam K. Wheatley, Miles P. Davenport, and Yi Ju. Blood Distribution of SARS-CoV-2 Lipid Nanoparticle mRNA Vaccine in Humans Stephen. ACS Nano 2024 18 (39), 27077-27089 DOI: 10.1021/acsnano.4c11652

Hashiba, K. et al. Branching ionizable lipids can enhance the stability, fusogenicity, and functional delivery of mRNA. Small Sci. 3, 2200071 (2023).

Hashiba, K. et al. Overcoming thermostability challenges in mRNA–lipid nanoparticle systems with piperidine-based ionizable lipids. Commun. Biol. 2024 71 7, 1–13 (2024) https://pubs.acs.org/doi/10.1021/acs.nanolett.4c02566?ref=recommended

Parhiz, H, Brenner, JS, Patel, PN, Papp, TE, Shahnawaz, H, Li, Q, et al. Added to pre-existing inflammation, mRNA-lipid nanoparticles induce inflammation exacerbation (IE). J Control Release. (2022) 344:50–61. doi: 10.1016/j.jconrel.2021.12.027 PubMed Abstract | Crossref Full Text | Google Scholar

Alameh, MG, Tombácz, I, Bettini, E, Lederer, K, Sittplangkoon, C, Wilmore, JR, et al. Lipid nanoparticles enhance the efficacy of mRNA and protein subunit vaccines by inducing robust T follicular helper cell and humoral responses. Immunity. (2022) 55:1136–8. doi: 10.1016/j.immuni.2022.05.007 PubMed Abstract | Crossref Full Text | Google Scholar

Kazuki Hashiba, Masamitsu Taguchi, Sachiko Sakamoto, Ayaka Otsu, Yoshiki Maeda, Yuichi Suzuki, Hirofumi Ebe, Arimichi Okazaki, Hideyoshi Harashima, Yusuke Sato Impact of Lipid Tail Length on the Organ Selectivity of mRNA-Lipid Nanoparticles Nano Lett. 2024, 24, 41, 12758–12767 https://doi.org/10.1021/acs.nanolett.4c02566

Emily L. Han, Sophia Tang, Dongyoon Kim et al. Peptide-Functionalized Lipid Nanoparticles for Targeted Systemic mRNA Delivery to the Brain
https://doi.org/10.1021/acs.nanolett.4c05186
Developing Biodegradable Lipid Nanoparticles for Intracellular mRNA Delivery and Genome Editing.
Qiu M, Li Y, Bloomer H, Xu Q. Acc Chem Res. 2021 Nov 2;54(21):4001-4011. doi: 10.1021/acs.accounts.1c00500. Epub 2021 Oct 20. PMID: 34668716 Review.

Optimization of phospholipid chemistry for improved lipid nanoparticle (LNP) delivery of messenger RNA (mRNA).
Álvarez-Benedicto E, Farbiak L, Márquez Ramírez M, Wang X, Johnson LT, Mian O, Guerrero ED, Siegwart DJ. Biomater Sci. 2022 Jan 18;10(2):549-559. doi: 10.1039/d1bm01454d. PMID: 34904974 Free PMC article.

Delivery Strategies for mRNA Vaccines.
Ramachandran S, Satapathy SR, Dutta T. Pharmaceut Med. 2022 Feb;36(1):11-20. doi: 10.1007/s40290-021-00417-5. Epub 2022 Jan 30. PMID: 35094366 Free PMC article. Review.

Sebastian Ols, Lifei Yang, Elizabeth A. Thompson, Pradeepa Pushparaj, Karen Tran, Frank Liang, Ang Lin, Bengt Eriksson, Gunilla B. Karlsson Hedestam, Richard T. Wyatt, Karin Loré. Route of Vaccine Administration Alters Antigen Trafficking but Not Innate or Adaptive Immunity, Cell Reports, Volume 30, Issue 12, 2020, Pages 3964-3971.e7, ISSN 2211-1247, https://doi.org/10.1016/j.celrep.2020.02.111. (https://www.sciencedirect.com/science/article/pii/S2211124720302928)

Ndeupen S, Qin Z, Jacobsen S, Bouteau A, Estanbouli H, Igyártó BZ. The mRNA-LNP platform's lipid nanoparticle component used in preclinical vaccine studies is highly inflammatory. Iscience. 2021. https://doi.org/10.1016/j.isci.2021.103479.
Article PubMed PubMed Central Google Scholar

Di J., Du Z., Wu K., Jin S., Wang X., Li T., Xu Y. Biodistribution and Non-linear Gene Expression of mRNA LNPs Affected by Delivery Route and Particle Size. Pharm. Res. 2022;39:105–114. doi: 10.1007/s11095-022-03166-5. [DOI] [PMC free article] [PubMed] [Google Scholar]

Segalla G. Chemical-physical criticality and toxicological potential of lipid nanomaterials contained in a COVID-19 mRNA vaccine. Int. J. Vaccine Theory Pract. Res. Inj. Causes Treat. 2023;3:787–817. doi: 10.56098/ijvtpr.v3i1.68. [DOI] [Google Scholar]

Sfera A., Thomas K., Sfera D., Anton J., Andronescu C., Jafri N., Susanna S., Kozlakidis Z. Do messenger RNA vaccines induce pathological syncytial? Int. J. Pathol. Clin. Res. 2022;8:137. [Google Scholar]

ΕΚΔΟΧΑ (EXCIPIENTS)

European Parliament Parliamentary question P-005690/2021: Excipients ALC-0315 and ALC-0159. Priority Question for Written Answer to the Commission, Rule 138, Guido Reil (ID); European Parliament Europarl.europa.eu 2021. [(accessed on 4 June 2023)]. Available online: https://www.europarl.europa.eu/doceo/document/P-9-2021-005690_EN.html.

ΠΙΘΑΝΗ ΣΧΕΣΗ ΥΠΟΤΡΟΠΗΣ ΚΑΡΚΙΝΟΥ Ή ΑΙΜΑΤΟΛΟΓΙΚΗΣ ΚΑΚΟΗΘΕΙΑΣ ΚΑΘΩΣ ΚΑΙ ΝΕΟΕΜΦΑΝΙΖΟΜΕΝΟΥ ΚΑΡΚΙΝΟΥ Ή ΑΙΜΑΤΟΛΟΓΙΚΗΣ ΚΑΚΟΗΘΕΙΑΣ ΜΕ ΕΜΒΟΛΙΑ COVID

Διάφοροι ογκολόγοι είδαν με έκπληξη ότι την τελευταία τετραετία οι καρκινοπαθείς αυξήθηκαν σημαντικά και επιπλέον άλλαξε τελείως η συχνότητα κάθε τύπου καρκίνου. Άρχισαν δηλαδή να εμφανίζονται σχεδόν κατά συρροήν καρκίνοι θεωρούμενοι έως τότε σπάνιοι π.χ. χολαγγειοκαρκίνωμα, σπάνιοι τύποι σαρκώματος κ.λπ. Το ίδιο παρατήρησαν αιματολόγοι. Είδαν αύξηση αιματολογικών κακοηθειών όπως λευχαιμία, λέμφωμα, μυέλωμα, και αλλαγή της συνήθους κατανομής διαφόρων τύπων, όπως συχνότερη εμφάνιση κάποιων – π.χ. αγγειοανοσοβλαστικό λέμφωμα– που τα προηγούμενα χρόνια σπάνιζαν.

Παρατηρήθηκε επίσης υποτροπή καρκίνων ή αιματολογικών κακοηθειών σε σταθεροποιημένους ασθενείς.

Είδη καρκίνου που παραδοσιακά εμφανίζονταν σε μεγαλύτερης ηλικίας ασθενείς, πλέον εμφανίζονται σε κατά πολύ νεότερους. Βέβαια, αυτή η τάση για εμφάνιση πολλών καρκίνων σε νεότερες ηλικίες, είχε αρχίσει να παρατηρείται ήδη προ της πανδημίας, κυρίως σε καρκίνους που έχουν σχέση με την παχυσαρκία, όχι όμως σε τέτοιο βαθμό…

Έκπληξη προκάλεσε η πολύ ταχεία εξέλιξη πολλών κακοηθειών, π.χ.καρκίνος μαστού, καρκίνωμα νεφρού κ.λπ. Ο εξαιρετικά γρήγορος ρυθμός προόδου προς προχωρημένο στάδιο και η σύντομη κακή έκβαση (εντός εβδομάδων), προκάλεσαν την δημιουργία του λαϊκού όρου turbo cancer.

Όσο και να το ήθελαν, οι θεράποντες ογκολόγοι και αιματολόγοι, δεν μπορούσαν να μην υποθέσουν πιθανή συσχέτιση με την COVID πανδημία και τα COVID εμβόλια. Κάποιοι από αυτούς εμφάνισαν οι ίδιοι καρκίνο ή σπάνια αιματολογική κακοήθεια πολύ σύντομα μετά τον εμβολιασμό τους… Ωστόσο ελάχιστοι μίλησαν ή έγραψαν γι αυτή την πιθανή συσχέτιση, προκειμένου να μην κατεδαφιστεί το αφήγημα ότι τα εμβόλια είναι ¨αποτελεσματικά και ασφαλή¨, με αποτέλεσμα, να προτρέπονται οι καρκινοπαθείς να εμβολιάζονται και να τους γίνονται συστάσεις για ενισχυτικές δόσεις και επικαιροποιημένα εμβόλια!

Dalgleish A. As an Oncologist I am Seeing People with Stable Cancer Rapidly Progress after Being Forced to Have a Booster. Letter to Dr Abbassi, Editor-in-Chief BMJ. dailysceptic.org. 2022. [(accessed on 11 June 2023)]. Available online: https://dailysceptic.org/2022/11/26/as-an-oncologist-i-am-seeing-people-with-stable-cancer-rapidly-progress-after-being-forced-to-have-a-booster/

Bae E, Bae S, Vaysblat M, Abdelwahed M, Sarkar K, Bae S. Development of High-Grade Sarcoma After Second Dose of Moderna Vaccine. Cureus. 2023 Apr 15;15(4):e37612. doi: 10.7759/cureus.37612. PMID: 37197108; PMCID: PMC10184721.   high-grade sarcoma at the site of the injection of the MODERNA vaccine.

Quintero D, Patel N, Harris G, et al.: COVID-19 vaccine-associated ganulomatous mass mimicking a sarcoma: a case report. Radiol Case Rep. 2022, 17:2775-8. 10.1016/j.radcr.2022.05.035

Eens, Sander, et al. "B-cell lymphoblastic lymphoma following intravenous BNT162b2 mRNA booster in a BALB/c mouse: A case report." Frontiers in Oncology. 1 May 2023

Hayden E. Klein March 22, 2023 Evidence-Based Oncology April 2023 Volume29 Issue 4 Pages: SP334

Kashyap Patel, MD, Sees Link Between COVID-19 and Cancer Progression, Calls for More Biomarker Testing

David M Gullotti, Evan J Lipson, Elliot K Fishman, Steven P Rowe. Acute axillary lymphadenopathy detected shortly after COVID-19 vaccination found to be due to newly diagnosed metastatic melanoma. Radiology Case Reports,Volume 17, Issue 3, 2022, Pages 878-880, ISSN 1930-0433, https://doi.org/10.1016/j.radcr.2021.12.002. https://pubmed.ncbi.nlm.nih.gov/35035652

(https://www.sciencedirect.com/science/article/pii/S1930043321008633)

Ο ΡΟΛΟΣ ΤΗΣ N1-METHYLPSEUDOURIDINE (M1Ψ)

Διάφορες μελέτες συνδέουν την M1Ψ με καρκίνο.

Galardy et al., 2012;

Lan et al., 2023

gastric cancer (GC) (Chang et al., 2024),

colorectal cancer (CRC) (Kan et al., 2021; Hou et al., 2019; Zhang Q.

Vaccination with 1-methylΨ (pseudouridine enriched) mRNA can elicit cellular immunity to peptide antigens produced by +1 ribosomal frameshifting in major histocompatibility complex-diverse people. The translation of 1-methylΨ mRNA using liquid chromatography tandem mass spectrometry identified nine peptides derived from the mRNA +1 frame. These products impact on off-target host T cell immunity that include increased production of new B cell antigens with far reaching clinical consequences

//

In the study with a mice sarcoma model, it was found that the unmodified mRNA generated immune responses that decreased tumor growth and improved survival, while, similar to the control group, the modified mRNA had no effect on the tumor.

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Ding, H., Liu, N., Wang, Y. *et al.* Implications of RNA pseudouridylation for cancer biology and therapeutics: a narrative review. *J Transl Med* **22**, 906 (2024). https://doi.org/10.1186/s12967-024-05687-6

Cui L, Ma R, Cai J, Guo C, Chen Z, Yao L, et al. RNA modifications: importance in immune cell biology and related diseases. Signal Transduct Target Ther. 2022;7(1):334.Article PubMed PubMed Central CAS Google Scholar

Eyler DE, Franco MK, Batool Z, Wu MZ, Dubuke ML, Dobosz-Bartoszek M, et al. Pseudouridinylation of mRNA coding sequences alters translation. Proc Natl Acad Sci U S A. 2019;116(46):23068–74.Article PubMed PubMed Central CAS Google Scholar

Xue, C., Chu, Q., Zheng, Q. *et al.* Role of main RNA modifications in cancer: N^6-methyladenosine, 5-methylcytosine, and pseudouridine. *Sig Transduct Target Ther* **7**, 142 (2022). https://doi.org/10.1038/s41392-022-01003-0

Zhang, G., Zhu, Y., Tan, Y. *et al.* Higher expression of pseudouridine synthase 7 promotes non-small cell lung cancer progression and suggests a poor prognosis. *J Cardiothorac Surg* **18**, 222 (2023). https://doi.org/10.1186/s13019-023-02332-z

Jonas Cerneckis et al. Decoding pseudouridine: an emerging target for therapeutic development. Trends in Pharmacological Sciences, June 2022, Vol. 43, No. 6, pp.522-535

SIMIAN VIRUS 40 (ΠΡΟΚΑΛΕΙ ΚΑΡΚΙΝΟ ΣΕ ΠΕΙΡΑΜΑΤΟΖΩΑ ΚΑΙ ΑΝΘΡΩΠΟΥΣ)

Engels EA. Cancer risk associated with receipt of vaccines contaminated with simian virus 40: epidemiologic research. Expert Rev Vaccines. 2005 Apr;4(2):197-206. doi: 10.1586/14760584.4.2.197. PMID: 15889993.

Engels EA, Chen J, Viscidi RP, Shah KV, Daniel RW, Chatterjee N, et al. Poliovirus vaccination during pregnancy, maternal seroconversion to simian virus 40, and risk of childhood cancer. Am J Epidemiol (2004) 160(4):306–16. doi: 10.1093/aje/kwh219

Engels EA, Katki HA, Nielsen NM, Winther JF, Hjalgrim H, Gjerris F, et al. Cancer incidence in Denmark following exposure to poliovirus vaccine contaminated with simian virus 40. J Natl Cancer Inst (2003) 95(7):532–9. doi: 10.1093/jnci/95.7.532

Carroll-Pankhurst C, Engels EA, Strickler HD, Goedert JJ, Wagner J, Mortimer EA Jr. Thirty-five year mortality following receipt of SV40- contaminated polio vaccine during the neonatal period. Br J Cancer. 2001 Nov 2;85(9):1295-7. doi: 10.1054/bjoc.2001.2065. PMID: 11720463; PMCID: PMC2375249.
Follow-up of a cohort of 1073 persons, unique because they received SV40-contaminated poliovirus vaccines as newborns in 1961-63.
Possible link to testicular cancers

Farwell JR, Dohrmann GJ, Marrett LD, Meigs JW. Effect of SV40 virus-contaminated polio vaccine on the incidence and type of CNS neoplasms in children: a population-based study. Trans Am Neurol Assoc (1979) 104:261–4.

Strickler HD, Rosenberg PS, Devesa SS, Hertel J, Fraumeni JF Jr, Goedert JJ. Contamination of poliovirus vaccines with simian virus 40 (1955-1963) and subsequent cancer rates. JAMA. 1998 Jan 28;279(4):292-5. doi: 10.1001/jama.279.4.292. PMID: 9450713.

Strickler HD, Rosenberg PS, Devesa SS, Fraumeni JF Jr., Goedert JJ. Contamination of poliovirus vaccine with SV40 and the incidence of medulloblastoma. Med Pediatr Oncol (1999) 32(1):77–8. doi: 10.1002/(SICI)1096-911X(199901)32:1<77::AID-MPO21>3.0.CO;2-F

Dang-Tan T, Mahmud SM, Puntoni R, Franco EL. Polio vaccines, simian virus 40, and human cancer: the epidemiologic evidence for a causal association. Oncogene (2004) 23(38):6535–40. doi: 10.1038/sj.onc.1207877

Fraumeni JF Jr., Ederer F, Miller RW. An evaluation of the carcinogenicity of simian virus 40 in man. JAMA (1963) 185:713–8. doi: 10.1001/jama.1963.03060090045016

Innis MD. Immunisation and childhood leukaemia. Lancet (1965) 1(7385):605–. doi: 10.1016/S0140-6736(65)91188-8

Innis MD. Oncogenesis and poliomyelitis vaccine. Nature (1968) 219(5157):972–3. doi: 10.1038/219972a0

Davignon L, Robillard P, Lemonde P, Frappier ABCG. Vaccination and leukæmia mortality. Lancet (1970) 296(7674):638–. doi: 10.1016/S0140-6736(70)91402-9

Rollison DE, Page WF, Crawford H, Gridley G, Wacholder S, Martin J, Miller R, Engels EA. Case-control study of cancer among US Army veterans exposed to simian virus 40-contaminated adenovirus vaccine. Am J Epidemiol. 2004 Aug 15;160(4):317-24. PMID: 15286016. DOI: 10.1093/aje/kwh212
Findings do not support a role for SV40 in the development of these cancers.After more than 30 years of follow-up, exposure to SV40-contaminated poliovirus vaccine was not associated with significantly increased rates of ependymomas and other brain cancers, osteosarcomas, or mesotheliomas in the United States

Davignon L, Robillard P, Lemonde P, Frappier ABCG. Vaccination and leukæmia mortality. Lancet (1970) 296(7674):638–. doi: 10.1016/S0140-6736(70)91402-9
Olin P, Giesecke J. Potential exposure to SV40 in polio vaccines used in Sweden during 1957: no impact on cancer incidence rates 1960 to 1993. Dev Biol Stand. 1998;94:227-33. PMID: 9776244.
The use of potentially SV40 contaminated inactivated polio vaccines in Sweden has not been shown to be associated with increased cancer incidence. However, the exposed cohorts have not yet reached the age of increased risk of brain cancer or mesothelioma.

Poulin DL, DeCaprio JA. Is there a role for SV40 in human cancer? J Clin Oncol. 2006 Sep 10;24(26):4356-65. doi: 10.1200/JCO.2005.03.7101. PMID: 16963733.

Although many people may have been exposed to SV40 by polio vaccination, there is inadequate evidence to support widespread SV40 infection in the population, increased tumor incidence in those individuals who received contaminated vaccine, or a direct role for SV40 in human cancer.

Stroup DF, Berlin JA, Morton SC, Olkin I, Williamson GD, Rennie D, et al. Meta-analysis of observational studies in epidemiology: a proposal for reporting. Meta-analysis Of

Observational Studies in Epidemiology (MOOSE) group. JAMA (2000) 283(15):2008–12. doi: 10.1001/jama.283.15.2008

Stewart AM, Hewitt D. Aetiology of childhood leukaemia. Lancet (1965) 2(7416):789–90. doi: 10.1016/S0140-6736(65)90835-4

ΠΟΙΟΙ ΥΠΟΣΤΗΡΙΖΟΥΝ ΟΤΙ ΔΕΝ ΣΥΝΔΕΕΤΑΙ Η ΑΥΞΗΣΗ ΕΜΦΑΝΙΣΗΣ ΚΑΡΚΙΝΟΥ ΜΕ COVID ΕΜΒΟΛΙΑ ΚΑΙ ΟΝΟΜΑΖΟΥΝ ΤΗΝ ΑΥΞΗΣΗ 'ΠΡΟΒΛΕΠΟΜΕΝΗ'

https://www.breastcancer.org/managing-life/staying-well-during-covid-19/vaccine-facts

COVID-19 vaccines do not cause cancer .There's no evidence linking COVID-19 vaccines to cancer. Both the U.S. National Cancer Institute and the American Cancer Society report there's no information that COVID-19 vaccines cause cancer. There's also no evidence that suggests the vaccine can make cancer grow or come back (recur).

https://science.feedback.org/are-claims-linking-recent-us-trends-cancer-diagnoses-covid19-vaccines-plausible-look-at-available-data/

https://blog.dana-farber.org/insight/2019/07/worth-the-shot-no-vaccines-wont-give-you-cancer/
Published on: 2024-03-29 Editor:Pablo Rougerie

Although the latest ACS report provided an informative overview of the current cancer trends in the U.S., it's unable to tell us whether there's actually been a sudden increase in cancer cases since the COVID-19 vaccine rollout The forecast is based on data from public cancer databases only up to the year 2020. The reason for this is that it takes time to collect data from local healthcare practitioners, verify the accuracy of the information, and consolidate the data into databases. Thus, any changes in cancer cases due to unexpected events occurring from 2021 onward and not resulting from historical trends would not be captured by this model.

Therefore, the verified data available at the national level is affected by the uncertainty surrounding the forecast. It isn't suited to support the claim that cancer diagnoses actually spiked.

Even if cancer cases have actually risen post-COVID vaccination, this alone still isn't bulletproof evidence that the vaccines are responsible for the rise. People and healthcare systems experienced significant upheaval during the pandemic that could have influenced the number of new cancer diagnoses in 2024, independent of vaccination.

Commenting on the issue, Lisa Richardson, the director of the CDC's Division of Cancer Prevention and Control, told ***CNN***:

"What we might see is that there are actually more cases of cancer, because people caught up. But it's not truly an increase. It's just a catch up of what was there that we didn't diagnose during 2020."

ACS news story accompanying the release of the 2024 report

Likewise, the U.S. National Cancer Institute states that "there is no evidence that COVID-19 vaccines cause cancer, lead to recurrence, or lead to disease progression". Claims to the contrary commonly rely on flawed analysis or unverified statements.

The amount of residual DNA detected in the vaccine vials is well below the limit recommended by the WHO and the U.S. Food and Drug Administration (FDA), as Science Feedback showed.

Finally, there is no scientific evidence or plausible mechanism suggesting that these DNA fragments would change our DNA and cause cancer.

https://www.mskcc.org/coronavirus/covid-19-vaccine

Yandell, Kate. "COVID-19 Vaccines Have Not Been Shown to Cause 'Turbo Cancer'." FactCheck.org. 31 Aug 2023.

Yandell, Kate. "COVID-19 Vaccines Have Not Been Shown to Alter DNA, Cause Cancer." FactCheck.org. 26 Oct 2023.

Sousa LG, McGrail DJ, Li K, et al.: Spontaneous tumor regression following COVID-19 vaccination. J Immunother Cancer. 2022, 10:e004371. 10.1136/jitc-2021-004371

This case suggests that the mRNA-1273 COVID-19 vaccine stimulated anticancer immunity and tumor regression.

Manuela Marron et al. Vaccination and the Risk of Childhood Cancer—A Systematic Review and Meta-Analysis Front. Oncol., 22 January 2021
Sec. Cancer Epidemiology and Prevention Volume 10 - 2020 |

Η ΘΕΣΗ ΤΗΣ IARC [WHO's International Agency for Research on Cancer (ΔΙΕΘΝΟΥΣ ΑΝΤΙΠΡΟΣΩΠΙΑΣ ΤΟΥ WHO ΓΙΑ ΤΗΝ ΕΡΕΥΝΑ ΣΤΟΝ ΚΑΡΚΙΝΟ)] : NO EVIDENCE

The WHO's International Agency for Research on Cancer (IARC) said there was "no evidence that any vaccines cause cancer".

"Increasing trends in cancer in young persons were already observable before the Covid epidemic and associated vaccination campaigns," an IARC spokesperson told AFP on March 25, 2024.

Cancer patients are recommended to get vaccinated against Covid-19 as they have a higher risk of complications if they are infected, they said.

They pointed out that vaccines such as the hepatitis B (HBV) and human papillomavirus (HPV) vaccines reduce the risk of cancer.

Meanwhile, the American Cancer Society reported in January 2024 that young adults were the only age group showing an increase in cancer rates between 1995 and 2020 in the United States (archived link).

Misinformation about Covid-19 vaccines has flooded social media -- including false claims that research has found they cause cancer -- despite the World Health Organization stressing that the benefits of vaccination outweigh the risks (archived link).

`April 17, 2024 This story was updated to amend internal metadata`

https://factcheck.afp.com/doc.afp.com.36HV7N2

Claims that Covid vaccines cause early-onset breast cancer are unsubstantiated

- Published on October 7, 2024 at 22:46
- By Gwen ROLEY, AFP Canada

ΠΑΡΑΜΕΛΗΣΗ ΤΟΥ ΠΡΟΛΗΠΤΙΚΟΥ ΕΛΕΓΧΟΥ ΚΑΤΑ ΤΗΝ ΠΑΝΔΗΜΙΑ (Pandemic effects on screening) : Η ΠΙΟ ΕΥΚΟΛΗ ΔΙΚΑΙΟΛΟΓΙΑ…

AFP's report on health misinformation here.

https://www.rarecancers.org.au/news/415/possible-side-effects-of-the-pfizer-vaccine

https://factcheck.afp.com/doc.afp.com.34Q88NC Posts distort VAERS data (?)

AFP has fact-checked other misinformation about vaccination here.

ΤΟ ΑΝΟΣΟΠΟΙΗΤΙΚΟ ΣΥΣΤΗΜΑ ΠΑΙΖΕΙ ΣΗΜΑΝΤΙΚΟ ΡΟΛΟ ΣΤΗΝ ΑΝΑΠΤΥΞΗ ΚΑΡΚΙΝΟΥ (THE IMMUNE SYSTEM PLAYS AN IMPORTANT ROLE IN THE DEVELOPMENT OF CANCER)

Marron M, Brackmann LK, Kuhse P, Christianson L, Langner I, Haug U and Ahrens W (2021) Vaccination and the Risk of Childhood Cancer—A Systematic Review and Meta-Analysis. *Front. Oncol.* 10:610843. doi: 10.3389/fonc.2020.610843 *peer-reviewed*

Lakshmi Narendra B, Eshvendar Reddy K, Shantikumar S, Ramakrishna S. Immune system: a double-edged sword in cancer. *Inflamm Res* (2013) 62(9):823–34. doi: 10.1007/s00011-013-0645-9

Flores-Lujano J. Infection During the First Year of Life and Acute Leukemia: Epidemiological Evidence. In: *Clinical Epidemiology of Acute Lymphoblastic Leukemia - From the Molecules to the Clinic*. Intech (2013). doi: 10.5772/52717

Rousseau MC, Parent ME, St-Pierre Y. Potential health effects from non-specific stimulation of the immune function in early age: the example of BCG vaccination. *Pediatr Allergy Immunol* (2008) 19(5):438–48. doi: 10.1111/j.1399-3038.2007.00669.x

Greaves M. Infection, immune responses and the aetiology of childhood leukaemia. *Nat Rev Cancer* (2006) 6(3):193–203. doi: 10.1038/nrc1816

Ward G. The infective theory of acute leukaemia. *Br J Child Dis* (1917) 14:10–20.

Kinlen L. Evidence for an infective cause of childhood leukaemia: comparison of a Scottish new town with nuclear reprocessing sites in Britain. *Lancet* (1988) 2(8624):1323–7. doi: 10.1016/S0140-6736(88)90867-7

Kinlen LJ. Epidemiological evidence for an infective basis in childhood leukaemia. *Br J Cancer* (1995) 71(1):1–5. doi: 10.1038/bjc.1995.1

Maia R, Wunsch Filho V. Infection and childhood leukemia: review of evidence. *Rev Saude Publica* (2013) 47(6):1172–85. doi: 10.1590/S0034-89102013000901172

Kinlen LJ, Dickson M, Stiller CA. Childhood leukaemia and non-Hodgkin's lymphoma near large rural construction sites, with a comparison with Sellafield nuclear site. *BMJ* (1995) 310(6982):763–8. doi: 10.1136/bmj.310.6982.763

Greaves MF. Speculations on the cause of childhood acute lymphoblastic leukemia. *Leukemia* (1988) 2(2):120–5.

Marcotte EL, Thomopoulos TP, Infante-Rivard C, Clavel J, Petridou ET, Schuz J, et al. Caesarean delivery and risk of childhood leukaemia: a pooled analysis from the Childhood Leukemia International Consortium (CLIC). *Lancet Haematol* (2016) 3(4):e176–85. doi: 10.1016/S2352-3026(16)00002-8

Rudant J, Lightfoot T, Urayama KY, Petridou E, Dockerty JD, Magnani C, et al. Systematic reviews and meta-and pooled analyses childhood acute lymphoblastic leukemia and indicators of early immune stimulation: a childhood leukemia international consortium study. *Am J Epidemiol* (2014) 181(8):549–62. doi: 10.1093/aje/kwu298

Rudant J, Orsi L, Menegaux F, Petit A, Baruchel A, Bertrand Y, et al. Childhood acute leukemia, early common infections, and allergy: the ESCALE study. *Am J Epidemiol* (2010) 172(9):1015–27. doi: 10.1093/aje/kwq233

U. K. Childhood Cancer Study Investigators. Breastfeeding and childhood cancer. *Br J Cancer* (2001) 85(11):1685–94. doi: 10.1054/bjoc.2001.2110

Heinonen OP, Shapiro S, Monson RR, Hartz SC, Rosenberg L, Slone D. Immunization during pregnancy against poliomyelitis and influenza in relation to childhood malignancy. *Int J Epidemiol* (1973) 2(3):229–35. doi: 10.1093/ije/2.3.229

Urayama KY, Buffler PA, Gallagher ER, Ayoob JM, Ma X. A meta-analysis of the association between day-care attendance and childhood acute lymphoblastic leukaemia. *Int J Epidemiol* (2010) 39(3):718–32. doi: 10.1093/ije/dyp378

Mathé G, Facy F, Hatton F, Halle-Pannenko O. BCG vaccination and acute leukaemia. *Biomedicine* (1974) 21(3):132–4.

Comstock GW, Martinez I, Livesay VT. Efficacy of BCG vaccination in prevention of cancer. *J Natl Cancer Inst* (1975) 54(4):835–9.

Snider DE, Comstock GW, Martinez I, Caras GJ. Efficacy of BCG vaccination in prevention of cancer: an update. *J Natl Cancer Inst* (1978) 60(4):785–8. doi: 10.1093/jnci/60.4.785

Salonen T, Saxen L. Risk indicators in childhood malignancies. *Int J Cancer* (1975) 15(6):941–6. doi: 10.1002/ijc.2910150609

Salonen T. Prenatal and perinatal factors in childhood cancer. *Ann Clin Res* (1976) 8(1):27–42.

Crispen RG, Rosenthal SR. BCG vaccination and cancer mortality. *Cancer Immunol Immunother* (1976) 1(3):139–42. doi: 10.1007/BF00205456

Hofman D. BCG vaccination and leukemia. *Pneumonol Pol* (1977) 45(8):523–8.

Ambrosch F, Krepler P, Wiedermann G. The effect of neonatal BCG vaccination on the incidence of leukemia. *MMW Munch Med Wochenschr* (1978) 120(8):243–6.

Andersen E, Isager H. Pre-morbid factors in Hodgkin's disease. II. BCG-vaccination status, tuberculosis, infectious diseases, tonsillectomy, and appendectomy. *Scand J Haematol* (1978) 21(4):273–7. doi: 10.1111/j.1600-0609.1978.tb00363.x

Sinniah D, White JC, Omar A, Chua CP. Acute leukemia in Malaysian children. *Cancer* (1978) 42(4):1970–5. doi: 10.1002/1097-0142(197810)42:4<1970::AID-CNCR2820420441>3.0.CO;2-7

Skegg DC. BCG vaccination and the incidence of lymphomas and leukaemia. *Int J Cancer* (1978) 21(1):18–21. doi: 10.1002/ijc.2910210105

Nilsson BS, Widström O. Neonatal B.C.G. vaccination and childhood cancer. *Lancet* (1979) 1(8109):222–. doi: 10.1016/S0140-6736(79)90632-9

Neumann G. Relation of vaccination to childhood malignancy. *Med Klin* (1980) 75(2):72–5.

Kendrick MA, Comstock GW. BCG vaccination and the subsequent development of cancer in humans. *J Natl Cancer Inst* (1981) 66(3):431–7.

Grufferman S, Wang HH, DeLong ER, Kimm SY, Delzell ES, Falletta JM. Environmental factors in the etiology of rhabdomyosarcoma in childhood. *J Natl Cancer Inst* (1982) 68(1):107–13.

Sutherland I. BCG and vole bacillus vaccination in adolescence and mortality from leukaemia. *Stat Med* (1982) 1(4):329–35. doi: 10.1002/sim.4780010410

Farwell JR, Dohrmann GJ, Flannery JT. Medulloblastoma in childhood: an epidemiological study. *J Neurosurg* (1984) 61(4):657–64. doi: 10.3171/jns.1984.61.4.0657

van Steensel-Moll HA, Valkenburg HA, Vandenbroucke JP, van Zanen GE. Are maternal fertility problems related to childhood leukaemia? *Int J Epidemiol* (1985) 14(4):555–9. doi: 10.1093/ije/14.4.555

Kneale GW, Stewart AM, Kinnier Wilson LM. Immunizations against infectious diseases and childhood cancers. *Cancer Immunol Immunother* (1986) 21(2):129–32. doi: 10.1007/BF00199860

McKinney PA, Cartwright RA, Saiu JM, Mann JR, Stiller CA, Draper GJ, et al. The inter-regional epidemiological study of childhood cancer (IRESCC): a case control study of aetiological factors in leukaemia and lymphoma. *Arch Dis Child* (1987) 62(3):279–87. doi: 10.1136/adc.62.3.279

Hartley AL, Birch JM, McKinney PA, Blair V, Teare MD, Carrette J, et al. The inter-regional epidemiological study of childhood cancer (IRESCC): past medical history in children with cancer. *J Epidemiol Community Health* (1988) 42:235–42. doi: 10.1136/jech.42.3.235

Gilman EA, Margaret L, Wilson K, Kneale GW, Waterhouse JAH. Childhood cancers and their association with pregnancy drugs and illnesses. *Paediatr Perinat Epidemiol* (1989) 3(1):66–94. doi: 10.1111/j.1365-3016.1989.tb00371.x

Nishi M, Miyake H. A case-control study of non-T cell acute lymphoblastic leukaemia of children in Hokkaido, Japan. *J Epidemiol Community Health* (1989) 43(4):352–5. doi: 10.1136/jech.43.4.352

Buckley JD, Buckley CM, Ruccione K, Sather HN, Waskerwitz MJ, Woods WG, et al. Epidemiological characteristics of childhood acute lymphocytic leukemia. Analysis by immunophenotype. The Childrens Cancer Group. *Leukemia* (1994) 8(5):856–64.

Shu XO, Nesbit ME, Buckley JD, Krailo MD, Robinson LL. An exploratory analysis of risk factors for childhood malignant germ-cell tumors: report from the Childrens Cancer Group (Canada, United States). *Cancer Causes Control* (1995) 6(3):187–98. doi: 10.1007/BF00051790

Kaatsch P, Kaletsch U, Krummenauer F, Meinert R, Miesner A, Haaf G, et al. Case control study on childhood leukemia in Lower Saxony, Germany. Basic considerations, methodology, and summary of results. *Klin Padiatr* (1996) 208(4):179–85. doi: 10.1055/s-2008-1046470

Bhatia S, Nesbit ME, Egeler RM, Buckley JD, Mertens A, Robison LL. Epidemiologic study of Langerhans cell histiocytosis in children. *J Pediatr* (1997) 130(5):774–84. doi: 10.1016/S0022-3476(97)80021-2

Petridou E, Trichopoulos D, Kalapothaki V, Pourtsidis A, Kogevinas M, Kalmanti M, et al. The risk profile of childhood leukaemia in Greece: a nationwide case-control study. *Br J Cancer* (1997) 76(9):1241–7. doi: 10.1038/bjc.1997.541

Kaatsch P, Kaletsch U, Meinert R, Miesner A, Hoisl M, Schuz J, et al. German case control study on childhood leukaemia–basic considerations, methodology and summary of the results. *Klin Padiatr* (1998) 210(4):185–91. doi: 10.1055/s-2008-1043877

Dockerty JD, Skegg DC, Elwood JM, Herbison GP, Becroft DM, Lewis ME. Infections, vaccinations, and the risk of childhood leukaemia. *Br J Cancer* (1999) 80(9):1483–9. doi: 10.1038/sj.bjc.6690548

Groves FD, Gridley G, Wacholder S, Shu XO, Robison LL, Neglia JP, et al. Infant vaccinations and risk of childhood acute lymphoblastic leukaemia in the USA. *Br J Cancer* (1999) 81(1):175–8. doi: 10.1038/sj.bjc.6690668

Schüz J, Kaletsch U, Meinert R, Kaatsch P, Michaelis J. Association of childhood leukaemia with factors related to the immune system. *Br J Cancer* (1999) 80(3-4):585–90. doi: 10.1038/sj.bjc.6690395

Auvinen A, Hakulinen T, Groves F. Haemophilus influenzae type B vaccination and risk of childhood leukaemia in a vaccine trial in Finland. *Br J Cancer* (2000) 83(7):956–8. doi: 10.1054/bjoc.2000.1382

Von Kries R, Peter Grunert V, Kaletsch U, Michaelis J, Göbel U, Grunert VP, et al. Prevention of childhood leukemia by BCG vaccination in newborns? A population-based case-control study in Lower Saxony, Germany. *Pediatr Hematol Oncol* (2000) 17(7):541–50. doi: 10.1080/08880010050122807

Krone B, Kolmel KF, Grange JM, Mastrangelo G, Henz BM, Botev IN, et al. Impact of vaccinations and infectious diseases on the risk of melanoma–evaluation of an EORTC case-control study. *Eur J Cancer* (2003) 39(16):2372–8. doi: 10.1016/S0959-8049(03)00625-7

Frentzel-Beyme R, Becher H, Salzer-Kuntschik M, Kotz R, Salzer M. Factors affecting the incident juvenile bone tumors in an Austrian case-control study. *Cancer Detect Prev* (2004) 28(3):159–69. doi: 10.1016/j.cdp.2004.03.001

Ma X, Does MB, Metayer C, Russo C, Wong A, Buffler PA. Vaccination history and risk of childhood leukaemia. *Int J Epidemiol* (2005) 34(5):1100–9. doi: 10.1093/ije/dyi113

Mallol-Mesnard N, Menegaux F, Auvrignon A, Auclerc MF, Bertrand Y, Nelken B, et al. Vaccination and the risk of childhood acute leukaemia: the ESCALE study (SFCE). *Int J Epidemiol* (2007) 36(1):110–6. doi: 10.1093/ije/dyl270

Daniels JL, Pan IJ, Olshan AF, Breslow NE, Bunin GR, Ross JA. Obstetric history and birth characteristics and Wilms tumor: a report from the Children’s Oncology Group. *Cancer Causes Control* (2008) 19(10):1103–10. doi: 10.1007/s10552-008-9174-1

MacArthur AC, McBride ML, Spinelli JJ, Tamaro S, Gallagher RP, Theriault GP. Risk of childhood leukemia associated with vaccination, infection, and medication use in childhood. *Am J Epidemiol* (2008) 167(5):598–606. doi: 10.1093/aje/kwm339

Villumsen M, Sørup S, Jess T, Ravn H, Relander T, Baker JL, et al. Risk of lymphoma and leukaemia after bacille Calmette-Guérin and smallpox vaccination: A Danish case-cohort study. *Vaccine* (2009) 27(49):6950–8. doi: 10.1016/j.vaccine.2009.08.103

Pagaoa MA, Okcu MF, Bondy ML, Scheurer ME. Associations between vaccination and childhood cancers in Texas regions. *J Pediatr* (2011) 158(6):996–1002. doi: 10.1016/j.jpeds.2010.11.054

Qu CF, Chen TY, Fan CS, Zhan QM, Wang YT, Lu JH, et al. Efficacy of neonatal HBV vaccination on liver cancer and other liver diseases over 30-year follow-up of the qidong hepatitis B intervention study: a cluster randomized controlled trial. *PloS Med* (2014) 11(12):13. doi: 10.1371/journal.pmed.1001774

Sankaran H, Danysh HE, Scheurer ME, Okcu MF, Skapek SX, Hawkins DS, et al. The role of childhood infections and immunizations on childhood rhabdomyosarcoma: a report from the children's oncology group. *Pediatr Blood Cancer* (2016) 63(9):1557–62. doi: 10.1002/pbc.26065

Soegaard SH, Rostgaard K, Schmiegelow K, Kamper-Jorgensen M, Hargreave M, Hjalgrim H, et al. Childhood vaccinations and risk of acute lymphoblastic leukaemia in children. *Int J Epidemiol* (2017) 46(3):905–13. doi: 10.1093/ije/dyx052

Figueroa SC, Kennedy CJ, Wesseling C, Wiemels JM, Morimoto L, Mora AM. Early immune stimulation and childhood acute lymphoblastic leukemia in Costa Rica: A comparison of statistical approaches. *Environ Res* (2020) 182:109023. doi: 10.1016/j.envres.2019.109023

Wiemels JL, Cazzaniga G, Daniotti M, Eden OB, Addison GM, Masera G, et al. Prenatal origin of acute lymphoblastic leukaemia in children. *Lancet* (1999) 354(9189):1499–503. doi: 10.1016/S0140-6736(99)09403-9

Greaves M. In utero origins of childhood leukaemia. *Early Hum Dev* (2005) 81(1):123–9. doi: 10.1016/j.earlhumdev.2004.10.004

Wiemels J. Perspectives on the causes of childhood leukemia. *Chem Biol Interact* (2012) 196:59–67. doi: 10.1016/j.cbi.2012.01.007

Swaminathan S, Klemm L, Park E, Papaemmanuil E, Ford A, Kweon SM, et al. Mechanisms of clonal evolution in childhood acute lymphoblastic leukemia. *Nat Immunol* (2015) 16(7):766–74. doi: 10.1038/ni.3160

Martin-Lorenzo A, Hauer J, Vicente-Duenas C, Auer F, Gonzalez-Herrero I, Garcia-Ramirez I, et al. Infection exposure is a causal factor in b-cell precursor acute lymphoblastic leukemia as a result of pax5-inherited susceptibility. *Cancer Discov* (2015) 5(12):1328–43. doi: 10.1158/2159-8290.CD-15-0892

Caputo M, Raupach-Rosin H, Karch A, Borte M, Lehmann I, Liebert UG, et al. Vaccinations and infections are associated with unrelated antibody titers: an analysis from the german birth cohort study LISA. *Front Pediatr* (2019) 7:1–11. doi: 10.3389/fped.2019.00254

Seidman DS, Slater PE. Accuracy of the medical interview. *Br J Obstet Gynaecol* (1987) 94(8):721–3. doi: 10.1111/j.1471-0528.1987.tb03715.x

von Hippel PT. The heterogeneity statistic I(2) can be biased in small meta-analyses. *BMC Med Res Methodol* (2015) 15:1–8. doi: 10.1186/s12874-015-0024-z

ΝΕΟΕΜΦΑΝΙΖΟΜΕΝΟΣ ΚΑΡΚΙΝΟΣ Ή ΑΙΜΑΤΟΛΟΓΙΚΗ ΚΑΚΟΗΘΕΙΑ ΣΥΝΤΟΜΑ ΜΕΤΑ ΕΜΒΟΛΙΑΣΜΟ

Adenoviral Vector DNA- and SARS-CoV-2 mRNA-Based Covid-19 Vaccines: Possible Integration into the Human Genome - Are Adenoviral Genes Expressed in Vector-based Vaccines? Virus Res. 2021.

Iannelli V. What is COVID-19 vaccine turbo cancer? Vaxopedia. March 27, 2024. . November 10,2024 ttps://vaxopedia.org/2024/03/22/what-is-covid-19-vaccine-turbo-cancer/

Ugai T, Sasamoto N, Lee HW, et al. Is early-onset cancer an emerging global epidemic? current evidence and future implications. *Nat Rev Clin Oncol*. 2022;19(10):656-673. doi:10.1038/s41571-022-00672-8
8.Myth that COVID-19 vaccines cause cancer takes hold. Infodemiology.com. March 20, 2024. November 10,2024 https://www.infodemiology.com/myth-that-covid-19-vaccines-cause-cancer-takes-hold/

https://www.ons.gov.uk/aboutus/transparencyandgovernance/freedomofinformationfoi/deathsduetocovid19vaccineandfiguresofvaccinatedpeoplediagnosedwithcancer

https://science.feedback.org/are-claims-linking-recent-us-trends-cancer-diagnoses-covid19-vaccines-plausible-look-at-available-data/

https://www.technologynetworks.com/biopharma/videos/how-covid-19-vaccines-are-accelerating-new-cancer-treatments-364705

https://www.voicesforvaccines.org/jtf_topics/do-covid-19-vaccines-cause-cancer/

https://philanthropynewsdigest.org/news/other-sources/article/?id=14466463&title=COVID-19-Vaccines-Can-Potentially-Worsen-Cancer:-Review

https://www.youtube.com/watch?v=60auAx7ixcQ

https://www.youtube.com/watch?v=J_tR3IzGDsQ

https://www.youtube.com/watch?v=dPEJGXIk4Nk

https://www.youtube.com/watch?v=j9qdZ9Totow

ΕΜΦΑΝΙΣΗ/ΥΠΟΤΡΟΠΗ ΑΥΤΟΑΝΟΣΩΝ ΔΙΑΤΑΡΑΧΩΝ/ΝΟΣΗΜΑΤΩΝ ΚΑΙ ΕΜΒΟΛΙΑ COVID

Lamprinou M, Sachinidis A, Stamoula E, Vavilis T, Papazisis G. COVID-19 vaccines adverse events: potential molecular mechanisms. Immunol Res. 2023 Jun;71(3):356-372. doi: 10.1007/s12026-023-09357-5. Epub 2023 Jan 6. PMID: 36607502; PMCID: PMC9821369.

Kim S, Bea S, Choe SA, Choi NK, Shin JY. Autoimmune disorders reported following COVID-19 vaccination: A disproportionality analysis using the WHO database. Eur J Clin Pharmacol. 2024 Mar;80(3):445-453. doi: 10.1007/s00228-023-03618-w. Epub 2024 Jan 12. PMID: 38212538.

Mahroum N, Lavine N, Ohayon A, Seida R, Alwani A, Alrais M, Zoubi M, Bragazzi NL. COVID-19 Vaccination and the Rate of Immune and Autoimmune Adverse Events Following Immunization: Insights From a Narrative Literature Review. Front Immunol. 2022 Jul 5;13:872683. doi: 10.3389/fimmu.2022.872683. PMID: 35865539; PMCID: PMC9294236.

Larsen, E. S., Nilsson, A. C., Möller, S., Voss, A. B., & Johansen, I. S. (2023). Immunogenicity and risk of disease flare after a three-dose regimen with SARS-CoV-2 vaccination in patients with systemic lupus erythematosus: results from the prospective cohort study COVAC-SLE. *Clinical and Experimental Rheumatology*, *41*(3), 676-684. https://doi.org/10.55563/clinexprheumatol/b8a6zb

Pavlina Spiliopoulou , Helena J. Janse van Rensburg , Lisa Avery , Vathany Kulasingam , Albiruni Razak , Philippe Bedard ,Aaron Hansen , Andrzej Chruscinski , Ben Wang , Maria Kulikova , Rachel Chen , Vanessa Speers , Alisa Nguyen , Jasmine Lee ,Bryan Coburn, Anna Spreafico and Lillian L. Siu Longitudinal efficacy and toxicity of SARS-CoV-2 vaccination in cancer patients treated with immunotherapy.Cell Death and Disease (2023) 14:49 ; https://doi.org/10.1038/s41419-022-05548-4

The authors found for the first time,hat anti-SARS-CoV-2 vaccination, elicited the generation of five autoantibodies. The significantly increased autoantibodies were IgM autoantibodies against beta-2 glycoprotein ($p = 0.02$), myeloperoxidase ($p = 0.03$), nucleosome ($p = 0.041$), SPLUNC2 ($p < 0.001$) and IgG autoantibody against Myosin Heavy Chain 6 (MYH6) ($p < 0.001$).

Rodríguez Y, Rojas M, Beltrán S, et al. Autoimmune and autoinflammatory conditions after COVID- 19 vaccination.
New case reports and updated literature review. J Autoimmun 2022;132:102898.

COVID-19 Vaccination and the Rate of Immune and Autoimmune Adverse Events Following Immunization: Insights From a Narrative Literature Review.

Mahroum N, Lavine N, Ohayon A, Seida R, Alwani A, Alrais M, Zoubi M, Bragazzi NL. Front Immunol. 2022 Jul 5;13:872683. doi: 10.3389/fimmu.2022.872683. eCollection 2022. PMID: 35865539 Free PMC article. Review.

Self-DNA driven inflammation in COVID-19 and after mRNA-based vaccination: lessons for non-COVID-19 pathologies.

Heil M. Front Immunol. 2024 Feb 19;14:1259879. doi: 10.3389/fimmu.2023.1259879. eCollection 2023. PMID: 38439942 Free PMC article.

A flare of Still's disease following COVID-19 vaccination in a 34-year-old patient https://pubmed.ncbi.nlm.nih.gov/34797392/

A case of de novo annular-plaque type psoriasis following Oxford-AstraZeneca COVID-19 vaccination
https://pubmed.ncbi.nlm.nih.gov/35702789/

A case of new-onset acute generalized pustular psoriasis following Pfizer-BioNTech COVID-19 vaccine
https://pubmed.ncbi.nlm.nih.gov/35285114/

A case of psoriatic spondyloarthritis exacerbation triggered by COVID-19 messenger RNA vaccine
https://pubmed.ncbi.nlm.nih.gov/35176180/

A Case Series on the COVID-19 Vaccines and Possible Immune-Related Adverse Events: A New Challenge for the Rheumatologists
https://pubmed.ncbi.nlm.nih.gov/36321010/

Vojdani A, Kharrazian D. Potential antigenic cross-reactivity between SARS-CoV-2 and human tissue with a possible link to an increase in autoimmune diseases. Clin Immunol. (2020) 217:108480. doi: 10.1016/j.clim.2020.108480 - DOI - PMC - PubMed

Akinosoglou K, Tzivaki I, Marangos M. Covid-19 vaccine and autoimmunity: Awakening the sleeping dragon. Clin Immunol. (2021) 226:108721. doi: 10.1016/j.clim.2021.108721 - DOI - PMC - PubMed

Y. Chen, Z. Xu, P. Wang, X.M. Li, Z.W. Shuai, D.Q. Ye, *et al.* New-onset autoimmune phenomena post-COVID-19 vaccination Immunology, 165 (4) (2022), pp. 386-401 Google Scholar

Boekel L, Kummer L Y, van Dam K P J, et al. Adverse events after first COVID-19 vaccination in patients with autoimmune diseases. Lancet Rheumatol 2021; published online June 18. https://doi.org/10.1016/S2665-9913(21)00181-8.

Increased disease activity in 5% o patients

Antibody development after COVID-19 vaccination in patients with autoimmune diseases in the Netherlands: a substudy of data from two prospective cohort studies.

Boekel L, Steenhuis M, Hooijberg F, Besten YR, van Kempen ZLE, Kummer LY, van Dam KPJ, Stalman EW, Vogelzang EH, Cristianawati O, Keijzer S, Vidarsson G, Voskuyl AE, Wieske L, Eftimov F, van Vollenhoven R, Kuijpers TW, van Ham SM, Tas SW, Killestein J, Boers M, Nurmohamed MT, Rispens T, Wolbink G. Lancet Rheumatol. 2021 Nov;3(11):e778-e788. doi: 10.1016/S2665-9913(21)00222-8. Epub 2021 Aug 6. PMID: 34396154 Free PMC article.

Furer V, Rondaan C, Agmon-Levin N, van Assen S, Bijl M, Kapetanovic MC, de Thurah A, Mueller-Ladner U, Paran D, Schreiber K, Warnatz K, Wulffraat NM, Elkayam O. Point of view on the vaccination against COVID-19 in patients with autoimmune inflammatory rheumatic diseases. RMD Open. 2021 Feb;7(1):e001594. doi: 10.1136/rmdopen-2021-001594. PMID: 33627440; PMCID: PMC7907831.

Herpes zoster following BNT162b2 mRNA COVID-19 vaccination in patients with autoimmune inflammatory rheumatic diseases: a case series.

Furer V, Zisman D, Kibari A, Rimar D, Paran Y, Elkayam O. Rheumatology (Oxford). 2021 Oct 9;60(SI):SI90-SI95. doi: 10.1093/rheumatology/keab345. PMID: 33848321 Free PMC article.

The Use of COVID-19 Vaccines in Patients with SLE.

Tang W, Gartshteyn Y, Ricker E, Inzerillo S, Murray S, Khalili L, Askanase A. Curr Rheumatol Rep. 2021 Nov 12;23(11):79. doi: 10.1007/s11926-021-01046-2. PMID: 34767100 Free PMC article. Review.

COVID-19 Vaccination in Patients with Autoimmune Inflammatory Rheumatic Diseases: Clinical Guidance of the Korean College of Rheumatology.

Park JK, Lee EB, Shin K, Sung YK, Kim TH, Kwon SR, Lee MS, Hong SJ, Choi BY, Lee SS, Back HJ; Korean College of Rheumatology Task Force for COVID-19 Vaccine Guidance for Patients with Autoimmune Inflammatory Rheumatic Diseases. J Korean Med Sci. 2021 Mar 29;36(12):e95. doi: 10.3346/jkms.2021.36.e95. PMID: 33783147 Free PMC article. Review.

Connolly, CM · Ruddy, JA · Boyarsky, BJ · et al. **Safety of the first dose of mRNA SARS-CoV-2 vaccines in patients with rheumatic and musculoskeletal diseases** Ann Rheum Dis. 2021; published online March 19. https://doi.org/10.1136/annrheumdis-2021-220231 Scopus (48) Google Scholar

Achiron, A · Dolev, M · Menascu, S · et al. **COVID-19 vaccination in patients with multiple sclerosis: What we have learnt by February 2021** Mult Scler. 2021; **27**:864-870 Crossref Scopus (165) PubMed Google Scholar

Velikova, T · Georgiev, T. **SARS-CoV-2 vaccines and autoimmune diseases amidst the COVID-19 crisis** Rheumatol Int. 2021; **41**:509-518 Crossref Scopus (114) PubMed Google Scholar

Hinterseher J, Hertl M, Didona D. Autoimmune skin disorders and SARS-CoV-2 vaccination - a meta-analysis. J Dtsch Dermatol Ges. 2023 Aug;21(8):853-861. doi: 10.1111/ddg.15114. Epub 2023 May 23. PMID: 37218538.

Nakahara Y, Yamane M, Sunada M, Aoyama Y. SARS-CoV-2 vaccine-triggered conversion from systemic lupus erythematosus (SLE) to bullous SLE and dipeptidyl peptidase 4 inhibitors-associated bullous pemphigoid. J Dermatol. 2023 Feb;50(2):162-165. doi: 10.1111/1346-8138.16687. Epub 2022 Dec 28. PMID: 36578130; PMCID: PMC9880653.

Wu PC, Huang IH, Wang CY, Chi CC. New Onset and Exacerbation of Autoimmune Bullous Dermatosis Following COVID-19 Vaccination: A Systematic Review. Vaccines (Basel). 2024 Apr 26;12(5):465. doi: 10.3390/vaccines12050465. PMID: 38793716; PMCID: PMC11125893.

Russo D, Accarino R, Varricchio S, Franca RA, Potestio L, Patruno C, Napolitano M, Mascolo M. Granuloma annulare after SARS-CoV-2 vaccination: A case report and literature review. Pathol Res Pract. 2023 Feb;242:154300. doi: 10.1016/j.prp.2022.154300. Epub 2022 Dec 31. PMID: 36638589; PMCID: PMC9804962.

Sen P, Nune RN, Day A, Joshi J, Agarwal M V, et al (2023) Post-COVID-19 condition in patients with autoimmune rheumatic diseases: the COVID-19 Vaccination in Autoimmune diseases (COVAD) study. Lancet Rheumatol 5:e247–e50. https://doi.org/10.1016/S2665-9913(23)00066-8 Article CAS PubMed PubMed Central Google Scholar

Chen Y, Xu Z, Wang P, Li X-M, Shuai Z-W, Ye D-Q, Pan H-F. New-onset autoimmune phenomena post-COVID-19 vaccination. Immunology. 2022;165:386-401. - PubMed . doi: 10.1111/imm.13443. Epub 2022 Jan 7. PMID: 34957554 Review. https://pubmed.ncbi.nlm.nih.gov/34957554/

Connolly CM, Ruddy JA, Boyarsky BJ, et al. Disease flare and reactogenicity in patients with rheumatic and musculoskeletal diseases following two-dose SARS-CoV-2 messenger RNA vaccination. Arthritis Rheumatol. 2022;74(1):28-32. doi:10.1002/art.41924

Jeon YH, Lim DH, Choi SW, Choi SJ. A flare of Still's disease following COVID-19 vaccination in a 34-year-old patient. Rheumatol Int. 2022;42(4):743-748. doi:10.1007/s00296-021-05052-6

Rodríguez Y, Rojas M, Beltrán S, Polo F, Camacho-Domínguez L, Morales SD, Gershwin ME, Anaya JM. Autoimmune and autoinflammatory conditions after COVID-19 vaccination. New case reports and updated literature review. J autoimmun. 2022;132:102898. PubMed Google Scholar

Alqatari S., Ismail M., Hasan M., Bukhara R., Al Argan R., Alwaheed A., Alkhafaji D., Ahmed S., Hadhiah K., Alamri T., et al. Emergence of post COVID-19 vaccine autoimmune diseases: A single centre study. Infect. Drug Resist. 2023;16:1263–1278. doi: 10.2147/IDR.S394602. [DOI] [PMC free article] [PubMed] [Google Scholar]

Rodriguez Y., Rojas M., Beltran S., Polo F., Camacho-Dominguez L., Morales S.D., Gershwin M.E., Anaya J.M. Autoimmune and autoinflammatory conditions after COVID-19 vaccination. New case reports and updated literature review. J. Autoimmun. 2022;132:102898. doi: 10.1016/j.jaut.2022.102898. [DOI] [PMC free article] [PubMed] [Google Scholar]

Lansang R.P., Amdemichael E., Sajic D. IgA pemphigus following COVID-19 vaccination: A case report. SAGE Open Med. Case Rep. 2023;11:2050313X231181022. doi: 10.1177/2050313X231181022. [DOI] [PMC free article] [PubMed] [Google Scholar]

Minakawa S., Matsuzaki Y., Yao S., Sagara C., Akasaka E., Koga H., Ishii N., Hashimoto T., Sawamura D. Case report: A case of epidermolysis bullosa acquisita with IgG and IgM anti-basement membrane zone antibodies relapsed after COVID-19 mRNA vaccination. Front. Med. 2023;10:1093827. doi: 10.3389/fmed.2023.1093827. [DOI] [PMC free article] [PubMed] [Google Scholar]

Talotta R. Do COVID-19 RNA-based vaccines put at risk of immune-mediated diseases? In reply to “potential antigenic cross-reactivity between SARS-CoV-2 and human tissue with a possible link to an increase in autoimmune diseases”. Clin. Immunol. 2021;224:108665. doi: 10.1016/j.clim.2021.108665. [DOI] [PMC free article] [PubMed] [Google Scholar]

Koumaki D, Krueger-Krasagakis SE, Papadakis M, Katoulis AC, Gkiaouraki I, Zografaki K, Mylonakis D, Krasagakis K. Psoriasis flare-up after AZD1222 and BNT162b2 COVID-19 mRNA vaccines: report of twelve cases from a single centre. J Eur Acad Dermatol Venereol. 2022 Jun;36(6):e411-e415. Epub 2022 Feb 4 PMID: **35075691** DOI: [10.1111/jdv.17965]

Chen Y, Xu Z, Wang P, et al. New-onset autoimmune phenomena post-COVID-19 vaccination. Immunology 2022;165(4):386–401.[Cited Here] | [View Full Text] | [PubMed] | [CrossRef] | [Google Scholar]

Cahuapaza-Gutierrez NL. Systemic lupus erythematosus following COVID-19 vaccination. A systematic review of case reports and case series. Lupus. 2024;33(4):375-386. PMID: **38315894** DOI: [10.1177/09612033241232054]

Laskowski K, Paszkiewicz J, Plewik D, Szepeluk A, Hozyasz KK. Association Between SARS-CoV-2 Vaccination and Development of Antinuclear Antibodies Among Students. J Prim Care Community Health. 2024;15:21501319241273213. PMID: **39257165** PMCID: [PMC11406642] DOI: [10.1177/21501319241273213]

Jara L.J., Vera-Lastra O., Mahroum N., Pineda C., Shoenfeld Y. Autoimmune post-COVID vaccine syndromes: Does the spectrum of autoimmune/inflammatory syndrome expand? Clin. Rheumatol. 2022;41:1603–1609. doi: 10.1007/s10067-022-06149-4. [DOI] [PMC free article] [PubMed] [Google Scholar]

ΑΓΓΕΙΙΤΙΔΕΣ

A Case Report of MPO-ANCA-Associated Vasculitis Following Heterologous mRNA1273 COVID-19 Booster Vaccination
https://pubmed.ncbi.nlm.nih.gov/35790206/

A case report of possible concurrent vasculitis in vertebral bodies and partial transverse myelitis following COVID-19 vaccination
https://pubmed.ncbi.nlm.nih.gov/36181106/

A Rare Cutaneous Manifestation: Leukocytoclastic Vasculitis after Pfizer-BioNTech COVID-19 Vaccination
https://pubmed.ncbi.nlm.nih.gov/36624889/

***Yoshimoto K.**, Kaneda S., Asada M., Taguchi H., Kawashima H., Yoneima R., et al. (2023). Giant cell arteritis after COVID-19 vaccination with long-term follow-up: a case report and review of the literature. Med. Kaunas. 59 (12), 2127. 10.3390/medicina59122127* [DOI] [PMC free article] [PubMed] [Google Scholar]

Hashizume H, Ajima S, Ishikawa Y. Immunoglobulin A vasculitis post-severe acute respiratory syndrome coronavirus 2 vaccination and review of reported cases. J Dermatol. 2022 May;49(5):560-563. doi: 10.1111/1346-8138.16326. Epub 2022 Feb 28. PMID: 35229346; PMCID: PMC9111130.

Hashizume H, Ajima S, Ishikawa Y. Immunoglobulin A vasculitis post-severe acute respiratory syndrome coronavirus 2 vaccination and review of reported cases. J Dermatol.

2022 May;49(5):560-563. doi: 10.1111/1346-8138.16326. Epub 2022 Feb 28. PMID: 35229346; PMCID: PMC9111130.

Uh JA, Lee SK, Kim JH, Lee JH, Kim MS, Lee UH. Cutaneous Small-vessel Vasculitis after ChAdOx1 COVID-19 Vaccination: A Report of Five Cases. Int J Low Extrem Wounds. 2022 Jun;21(2):193-196. doi: 10.1177/15347346221078734. Epub 2022 Feb 7. PMID: 35130095; PMCID: PMC8832129.

ΑΥΞΗΣΗ ΤΗΣ ΣΥΧΝΟΤΗΤΑΣ ΣΟΒΑΡΩΝ ΛΟΙΜΩΞΕΩΝ ΑΠΟ ΑΠΛΑ ΠΑΘΟΓΟΝΑ ΚΑΙ COVID ΕΜΒΟΛΙΑ

Υπάρχει διάχυτη η εντύπωση ότι μετά την εφαρμογή COVID εμβολιασμού αυξήθηκε η συχνότητα και σοβαρότητα λοιμώξεων από απλά παθογόνα.

Ήταν αναμενόμενο να αρχίσουν να εμφανίζονται και δημοσιεύσεις με αντίθετα συμπεράσματα! Ο τρόπος έκφρασης του βαθμού στατιστικής σημαντικότητας μάλλον μαρτυρεί την υπερπροσπάθεια συγκάλυψης αντί να αποδεικνύει αλήθειες π.χ. στο άρθρο Said KB, et al, 2024 (*p*-value = 0.00000000000088)… ! Δεν νομίζω ότι έχει ξαναδεί κανείς p με τόσα πολλά μηδενικά!

Θα είχε πολλά να πει γι΄αυτό η στατιστικολόγος Regina Watteel που πρόσφατα δημοσίευσε τις παρατηρήσεις της για εμφανή στατιστικά λάθη σε πολλές εργασίες που αλλοιώνουν την αλήθεια, σε μία προσπάθεια να διασωθεί το αφήγημα…
https://statscritic.substack.com/p/salvaging-the-covid-19-vaccine-narrative…

Said KB, Alsolami A, Alshammari KF, Moussa S, Alshammeri F, Alghozwi MH, Alshammari SF, Alharbi NF, Khalifa AM, Mahmoud MR, Alshammari K, Ghoniem ME. The Rapidly Changing Patterns in Bacterial Co-Infections Reveal Peaks in Limited Gram Negatives during COVID-19 and Their Sharp Drop Post-Vaccination, Implying Potential Evolution of Co-Protection during Vaccine-Virus-Bacterial Interplay. Viruses. 2024 Jan 31;16(2):227. doi: 10.3390/v16020227. PMID: 38400003; PMCID: PMC10893479.

Marcinkiewicz J. Increase in the incidence of invasive bacterial infections following the COVID-19 pandemic: potential links with decreased herd trained immunity – a novel concept in medicine. Pol Arch Intern Med. 2024; 134: 16794. doi:10.20452/pamw.16794

The post–COVID-19 pandemic incidence of invasive bacterial infections is increased.
I**nvasive group A streptococcal infections are marked by a secretion of various bacterial virulence factors, including superantigenic exotoxins (streptococcal superantigens) and M proteins—surface proteins encoded by *emm* genes.** Fatal outcome of these diseases is commonly associated with defects in host innate immunity. Impaired HTI (Herd Trained Immunity) can be improved by **bacillus Calmette–Guérin and yeast-derived β-glucans.**

ΕΠΙΔΡΑΣΗ ΤΩΝ COVID ΕΜΒΟΛΙΩΝ ΣΤΟ ΑΝΟΣΟΠΟΙΗΤΙΚΟ ΣΥΣΤΉΜΑ

Seneff S, Nigh G, Kyriakopoulos AM, McCullough PA. Innate immune suppression by SARS-CoV-2 mRNA vaccinations: The role of G-quadruplexes, exosomes, and MicroRNAs. Food Chem Toxicol. 2022 Jun;164:113008. doi:10.1016/j.fct.2022.113008. Epub 2022 Apr 15. PMID: 35436552; PMCID: PMC9012513. https://doi.org/10.1016/j.fct.2022.113008

Lozano-Ojalvo, D., Camara, C., Lopez-Granados, E., Nozal, P., Del Pino-Molina, L., Bravo-Gallego, L. Y., Paz-Artal, E., Pion, M., Correa-Rocha, R., Ortiz, A., Lopez-Hoyos, M., Iribarren, M. E., Portoles, J., Rojo-Portoles, M. P., Ojeda, G., Cervera, I., Gonzalez-Perez, M., Bodega-Mayor, I., Montes-Casado, M., Portoles, P., … Ochando, J. (2021). Differential effects of the second SARS-CoV-2 mRNA vaccine dose on T cell immunity in naive and COVID-19 recovered individuals. Cell reports, 36(8), 109570. https://doi.org/10.1016/j.celrep.2021.109570 PMID: 34390647 ; PMCID: PMC8332924 ; DOI: 10.1016/j.celrep.2021.109570

Mudd PA, Minervina AA, Pogorelyy MV, Turner JS, Kim W, Kalaidina E, et al. Sars-Cov-2 mrna vaccination elicits a robust and persistent T follicular helper cell response in humans. Cell (2022) 185(4):603–13.e15. doi: 10.1016/j.cell.2021.12.026 PubMed Abstract | CrossRef Full Text | Google Scholar

Cavazzoni CB, Hanson BL, Podestà MA, Bechu ED, Clement RL, Zhang H, et al. Follicular T cells optimize the germinal center response to sars-Cov-2 protein vaccination in mice. Cell Rep (2022) 38(8):110399. doi: 10.1016/j.celrep.2022.110399 PubMed Abstract | CrossRef Full Text | Google Scholar

Kuse N, Zhang Y, Chikata T, Nguyen HT, Oka S, Gatanaga H, et al. Long-term memory Cd8(+) T cells specific for sars-Cov-2 in individuals who received the Bnt162b2 mrna vaccine. Nat Commun (2022) 13(1):5251. doi: 10.1038/s41467-022-32989-4 PubMed Abstract | CrossRef Full Text | Google Scholar

Kalimuddin S, Tham CYL, Qui M, de Alwis R, Sim JXY, Lim JME, et al. Early T cell and binding antibody responses are associated with covid-19 rna vaccine efficacy onset. Med (N Y) (2021) 2(6):682–8.e4. doi: 10.1016/j.medj.2021.04.003 PubMed Abstract | CrossRef Full Text | Google Scholar

Rydyznski Moderbacher C, Kim CJ, Mateus J, Plested JS, Zhu M, Cloney-Clark S, et al. Nvx-Cov2373 vaccination induces functional sars-Cov-2-Specific Cd4+ and Cd8+ T cell responses. J Clin Invest (2022) 132(19):e160898. doi: 10.1172/jci160898 PubMed Abstract | CrossRef Full Text | Google Scholar

Reinscheid M, Luxenburger H, Karl V, Graeser A, Giese S, Ciminski K, et al. Covid-19 mrna booster vaccine induces transient Cd8+ T effector cell responses while conserving the memory pool for subsequent reactivation. Nat Commun (2022) 13(1):4631. doi: 10.1038/s41467-022-32324-x PubMed Abstract | CrossRef Full Text | Google Scholar

Oberhardt V, Luxenburger H, Kemming J, Schulien I, Ciminski K, Giese S, et al. Rapid and stable mobilization of Cd8(+) T cells by sars-Cov-2 mrna vaccine. Nature (2021) 597(7875):268–73. doi: 10.1038/s41586-021-03841-4 PubMed Abstract | CrossRef Full Text | Google Scholar

Popescu M, Cabrera-Martinez B, Winslow GM. Tnf-A contributes to lymphoid tissue disorganization and germinal center b cell suppression during intracellular bacterial infection. J Immunol (Baltimore Md 1950) (2019) 203(9):2415–24. doi: 10.4049/jimmunol.1900484 CrossRef Full Text | Google Scholar

Sokal A, Broketa M, Barba-Spaeth G, Meola A, Fernández I, Fourati S, et al. Analysis of mrna vaccination-elicited rbd-specific memory b cells reveals strong but incomplete immune escape of the sars-Cov-2 omicron variant. Immunity (2022) 55(6):1096–104.e4. doi: 10.1016/j.immuni.2022.04.002 PubMed Abstract | CrossRef Full Text | Google Scholar

Zhang Z, Mateus J, Coelho CH, Dan JM, Moderbacher CR, Gálvez RI, et al. Humoral and cellular immune memory to four covid-19 vaccines. Cell (2022) 185(14):2434–51.e17. doi: 10.1016/j.cell.2022.05.022 PubMed Abstract | CrossRef Full Text | Google Scholar

Qiugang Zhu ,Yan Xu, Ting Wang, Feiting Xie Innate and adaptive immune response in SARS-CoV-2 infection-Current perspectives REVIEW article. Front. Immunol., 22 November 2022 Sec. Viral Immunology. Volume 13 - 2022 | https://doi.org/10.3389/fimmu.2022.1053437

https://time.com/6265510/covid-19-weaken-immune-system/\

Covid-19 causes long-term damage to the immune system https://www.ddw-online.com/covid-19-causes-long-term-damage-to-the-immune-system-22671-202303/

Yuta Tani et al. Five doses of the mRNA vaccination potentially suppress ancestral-strain stimulated SARS-CoV2-specific cellular immunity: a cohort study from the Fukushima vaccination community survey, Japan. Front. Immunol. , 16 August 2023, Sec. Vaccines and Molecular Therapeutics,Volume 14 - 2023 | https://doi.org/10.3389/fimmu.2023.1240425

Azim Majumder, M. A., & Razzaque, M. S. (2022). Repeated vaccination and 'vaccine exhaustion': relevance to the COVID-19 crisis. Expert Review of Vaccines, 21(8), 1011–1014. https://doi.org/10.1080/14760584.2022.2071705

Wall, Emma C et al. Neutralising antibody activity against SARS-CoV-2 VOCs B.1.617.2 and B.1.351 by BNT162b2 vaccination The Lancet, Volume 397, Issue 10292, 2331 - 2333

COVID-19 vaccines don't destroy T cells or weaken immune system https://apnews.com/article/fact-checking-823830789386

Files JK, Boppana S, Perez MD, Sarkar S, Lowman KE, Qin K, Sterrett S, Carlin E, Bansal A, Sabbaj S, Long DM, Kutsch O, Kobie J, Goepfert PA, Erdmann N. Sustained cellular immune dysregulation in individuals recovering from SARS-CoV-2 infection. J Clin Invest. 2021 Jan 4;131(1):e140491. doi: 10.1172/JCI140491. PMID: 33119547; PMCID: PMC7773371.

Ryan, F.J., Hope, C.M., Masavuli, M.G. et al. Long-term perturbation of the peripheral immune system months after SARS-CoV-2 infection. BMC Med 20, 26 (2022). https://doi.org/10.1186/s12916-021-02228-6

ΑΥΞΗΜΕΝΗ ΕΠΙΡΡΕΠΕΙΑ ΣΕ ΜΟΛΥΝΣΗ ΜΕ SARS- CoV- 2 ΚΑΙ ΜΕΓΑΛΥΤΕΡΗ ΒΑΡΥΤΗΤΑ ΤΗΣ ΛΟΙΜΩΞΗΣ COVID ΜΕΤΑ ΕΜΒΟΛΙΑΣΜΟ

Mongin D., Burgisser N., Laurie G., Schimmel G., Vu D. L., Cullati S., et al. (2023). Effect of SARS-CoV-2 prior infection and mRNA vaccination on contagiousness and susceptibility to infection. Nat. Commun. 14 (1), 5452. 10.1038/s41467-023-41109-9 [DOI] [PMC free article] [PubMed] [Google Scholar]

Mendoza-Cano O, Trujillo X, Ríos-Silva M, Lugo-Radillo A, Benites-Godínez V, Bricio-Barrios JA, Cuevas-Arellano HB, Ríos-Bracamontes EF, Serrano-Moreno W, Cárdenas Y, Murillo-Zamora E. Association between Vaccination Status for COVID-19 and the Risk of Severe Symptoms during the Endemic Phase of the Disease. Vaccines (Basel). 2023 Sep 22;11(10):1512. doi: 10.3390/vaccines11101512. PMID: 37896916; PMCID: PMC10610663.

Murillo-Zamora E., Sanchez-Pina R.A., Trujillo X., Huerta M., Rios-Silva M., Mendoza-Cano O. *Independent risk factors of COVID-19 pneumonia in vaccinated Mexican adults. Int. J. Infect. Dis. 2022;118:244–246. doi: 10.1016/j.ijid.2022.02.003.* [DOI] [PMC free article] [PubMed] [Google Scholar]

https://www1.racgp.org.au/newsgp/clinical/why-are-fully-vaccinated-people-increasingly-being

https://bmjgroup.com/study-finds-gradual-increase-in-covid-infection-risk-after-second-vaccine-dose/

https://www.cbsnews.com/news/covid-19-vaccine-booster-shot-infection-rate/

https://www.kff.org/policy-watch/why-do-vaccinated-people-represent-most-covid-19-deaths-right-now/

https://www.ucdavis.edu/health/covid-19/news/viral-loads-similar-between-vaccinated-and-unvaccinated-people

ΑΝΑΦΥΛΑΚΤΙΚΕΣ ΑΝΤΙΔΡΑΣΕΙΣ – ΑΛΛΕΡΓΙΚΕΣ ΑΝΤΙΔΡΑΣΕΙΣ

Signs of a severe allergic reaction can include:

• Difficulty breathing • Swelling of the face and throat • A fast heartbeat • A bad rash all over the body • Dizziness and weakness

Shimabukuro T, Nair N. Allergic reactions including anaphylaxis after receipt of the first dose of Pfizer-BioNTech COVID-19 vaccine. JAMA. (2021) 325:780–1. 10.1001/jama.2021.0600 [DOI] [PMC free article] [PubMed] [Google Scholar]

Aleena Banerji, Paige G. Wickner, Rebecca Saff, Cosby A. Stone, Lacey B. Robinson, Aidan A. Long, Anna R. Wolfson, Paul Williams, David A. Khan, Elizabeth Phillips, Kimberly G. Blumenthal. mRNA Vaccines to Prevent COVID-19 Disease and Reported Allergic Reactions: Current Evidence and Suggested Approach, The Journal of Allergy and Clinical Immunology: In Practice, Volume 9, Issue 4, 2021, Pages 1423-1437, ISSN 2213-2198, https://doi.org/10.1016/j.jaip.2020.12.047.

Shimabukuro TT, Cole M, Su JR. Reports of anaphylaxis after receipt of mRNA COVID-19 caccines in the US — December 14, 2020 - January 18, 2021. JAMA 2021;325(11):1101-2.

Sokolowska, M., Eiwegger, T., Ollert, M., Torres, M. J., Barber, D., Del Giacco, S., Jutel, M., Nadeau, K. C., Palomares, O., Rabin, R. L., Riggioni, C., Vieths, S., Agache, I., & Shamji, M. H. (2021). EAACI statement on the diagnosis, management and prevention of severe allergic reactions to COVID-19 vaccines. Allergy, 76(6), 1629-1639. https://doi.org/10.1111/all.14739

Sampath, V., Rabinowitz, G., Shah, M., Jain, S., Diamant, Z., Jesenak, M., Rabin, R., Vieths, S., Agache, I., Akdis, M., Barber, D., Breiteneder, H., Chinthrajah, S., Chivato, T., Collins, W., Eiwegger, T., Fast, K., Fokkens, W., O'Hehir, R. E., ... Nadeau, K. C. (2021). Vaccines and Allergic reactions: The past, the current COVID-19 pandemic, and future perspectives. Allergy, 76(6), 1640-1660. https://doi.org/10.1111/all.14840

Mortz, C. G., Kjaer, H. F., Rasmussen, T. H., Rasmussen, H. M., Garvey, L. H., & Bindslev-Jensen, C. (2022). Allergy to polyethylene glycol and polysorbates in a patient cohort: Diagnostic work-up and decision points for vaccination during the COVID-19 pandemic. Clinical and Translational Allergy, 12(1), Article e12111. https://doi.org/10.1002/clt2.12111

Shimabukuro T.T., Cole M., Su J.R. Reports of Anaphylaxis After Receipt of MRNA COVID-19 Vaccines in the US—December 14, 2020-January 18, 2021. JAMA. 2021;325:1101–1102. doi: 10.1001/jama.2021.1967. [DOI] [PMC free article] [PubMed] [Google Scholar]

Hatziantoniou S., Maltezou H.C., Tsakris A., Poland G.A., Anastassopoulou C. Anaphylactic reactions to mRNA COVID-19 vaccines: A call for further study. Vaccine. 2021;39(19):2605–2607. doi: 10.1016/j.vaccine.2021.03.073. [DOI] [PMC free article] [PubMed] [Google Scholar]

Myles I.A., Vinciguerra J.S., Premus R.T. Specialist confirmed allergic reactions to COVID-19 mRNA vaccines at a mass vaccination site. Vaccine. 2021;39(32):4404–4406. doi: 10.1016/j.vaccine.2021.06.061. [DOI] [PMC free article] [PubMed] [Google Scholar]

Acute Allergic Reactions to mRNA COVID-19 Vaccines
https://pubmed.ncbi.nlm.nih.gov/33683290/

Greenhawt M., Abrams E.M., Shaker M., Chu D.K., Khan D., Akin C., et al. The risk of allergic reaction to SARS-CoV-2 vaccines and recommended evaluation and management: a systematic review, meta-analysis, GRADE assessment, and international consensus approach. J Allergy Clin Immunol Pract. 2021;9:3546–3567. doi: 10.1016/j.jaip.2021.06.006. [DOI] [PMC free article] [PubMed] [Google Scholar]

Marcelino J., Farinha S., Silva R., Didenko I., Proenca M., Tomaz E. Nonirritant concentrations for skin testing with SARS-CoV-2 mRNA vaccine. J Allergy Clin Immunol Pract. 2021;9:2476–2477. doi: 10.1016/j.jaip.2021.03.022. [DOI] [PMC free article] [PubMed] [Google Scholar]

Lamprinou M, Sachinidis A, Stamoula E, Vavilis T, Papazisis G. COVID-19 vaccines adverse events: potential molecular mechanisms. Immunol Res. 2023 Jun;71(3):356-372. doi: 10.1007/s12026-023-09357-5. Epub 2023 Jan 6. PMID: 36607502; PMCID: PMC9821369.

[Covid-19 vaccination and risk of anaphylaxis - Recommendations for practical management].

Worm M, Ring J, Klimek L, Jakob T, Lange L, Treudler R, Beyer K, Werfel T, Biedermann T, Bircher A, Fischer M, Fuchs T, Heller AR, Hoffmann F, Huttegger I, Kopp MV, Kugler C, Lommatzsch M, Pfaar O, Rietschel E, Rueff F, Schnadt S, Seifert R, Stöcker B, Vogelberg C, Sitter H, Gieler U, Brockow K. MMW Fortschr Med. 2021 Jan;163(1):48-51. doi: 10.1007/s15006-021-9530-6. PMID: 33464512 Free PMC article. Review. German. No abstract available.

Awaya T, Hara H, Moroi M. Cytokine Storms and Anaphylaxis Following COVID-19 mRNA-LNP Vaccination: Mechanisms and Therapeutic Approaches. Diseases. 2024 Oct 1;12(10):231. doi: 10.3390/diseases12100231. PMID: 39452475; PMCID: PMC11507195.

Kounis NG, Koniari I, de Gregorio C, Velissaris D, Petalas K, Brinia A, Assimakopoulos SF, Gogos C, Kouni SN, Kounis GN, Calogiuri G, Hung MY. Allergic Reactions to Current Available COVID-19 Vaccinations: Pathophysiology, Causality, and Therapeutic Considerations. Vaccines (Basel). 2021 Mar 5;9(3):221. doi: 10.3390/vaccines9030221. PMID: 33807579; PMCID: PMC7999280.

ΣΥΣΤΑΤΙΚΑ ΤΩΝ ΕΜΒΟΛΙΩΝ ΠΟΥ ΣΧΕΤΙΖΟΝΤΑΙ ΜΕ ΑΝΑΦΥΛΑΚΤΙΚΕΣ ΑΝΤΙΔΡΑΣΕΙΣ (INGREDIENTS RELATED TO ANAPHYLACTIC REACTIONS)

POLYETHYLENE GLYCOL (Peg)

Picard M, Drolet JP, Masse MS, Filion CA, ALMuhizi F, Fein M, Copaescu A, Isabwe GAC, Blaquière M, Primeau MN. Safety of COVID-19 vaccination in patients with polyethylene glycol allergy: A case series. J Allergy Clin Immunol Pract. 2022 Feb;10(2):620-625.e1. doi: 10.1016/j.jaip.2021.11.021. Epub 2021 Dec 20. PMID: 34949564; PMCID: PMC8685412.

Sellaturay P., Nasser S., Islam S., Gurugama P., Ewan P.W. Polyethylene glycol (PEG) is a cause of anaphylaxis to the Pfizer/BioNTech mRNA COVID-19 vaccine. Clin Exp Allergy. 2021;51:861–863. doi: 10.1111/cea.13874. [DOI] [PMC free article] [PubMed] [Google Scholar]

Troelnikov A., Perkins G., Yuson C., Ahamdie A., Balouch S., Hurtado P.R., et al. Basophil reactivity to BNT162b2 is mediated by PEGylated lipid nanoparticles in patients with PEG allergy. J Allergy Clin Immunol. 2021;148:91–95. doi: 10.1016/j.jaci.2021.04.032. [DOI] [PubMed] [Google Scholar]

Kozma GT, Mészáros T, Berényi P, Facskó R, Patkó Z, Oláh CZ, Nagy A, Fülöp TG, Glatter KA, Radovits T, Merkely B, Szebeni J. Role of anti-polyethylene glycol (PEG) antibodies in the allergic reactions to PEG-containing Covid-19 vaccines: Evidence for immunogenicity of PEG. Vaccine. 2023 Jul 12;41(31):4561-4570. doi: 10.1016/j.vaccine.2023.06.009. Epub 2023 Jun 5. PMID: 37330369; PMCID: PMC10239905.

Anti-PEG antibodies before and after a first dose of Comirnaty® (mRNA-LNP-based SARS-CoV-2 vaccine). J Control Release. 2023.

Evaluation of association of anti-PEG antibodies with anaphylaxis after mRNA COVID-19 vaccination. Vaccine. 2023.

Anti-PEG Antibodies Boosted in Humans by SARS-CoV-2 Lipid Nanoparticle mRNA Vaccine. ACS Nano. 2022.

Serum polyethylene glycol-specific IgE and IgG in patients with hypersensitivity to COVID-19 mRNA vaccines. Allergol Int. 2022.

Restivo V, Candore G, Barrale M, Caravello E, Graziano G, Onida R, Raineri M, Tiralongo S, Brusca I. Allergy to Polyethilenglicole of Anti-SARS CoV2 Vaccine Recipient: A Case Report of Young Adult Recipient and the Management of Future Exposure to SARS-CoV2. Vaccines (Basel). 2021 Apr 21;9(5):412. doi: 10.3390/vaccines9050412. PMID: 33919151; PMCID: PMC8143141.

ΔΕΡΜΑΤΙΚΕΣ ΑΝΤΙΔΡΑΣΕΙΣ ΔΙΑΦΟΡΩΝ ΤΥΠΩΝ ΚΑΙ ΑΝΤΙΔΡΑΣΕΙΣ ΥΠΕΡΕΥΑΙΣΘΗΣΙΑΣ

Wollina U, Chiriac A, Kocic H, et al. Cutaneous and hypersensitivity reactions associated with COVID-19 vaccination-a narrative review. Wien Med Wochenschr. 2022; 172(3-4): 63–69. doi:10.1007/s10354-021-00876-0.

Bogdanov G, Bogdanov I, Kazandjieva J, et al. Cutaneous adverse effects of the available COVID-19 vaccines. Clin Dermatol. 2021; 39(3):523–531. doi:10.1016/j.clindermatol.2021.04.001.

Temiz SA, Abdelmaksoud A, Wollina U. Cutaneous and allergic reactions due toCOVID-19 vaccinations: A review. J Cosmet Dermatol. 2022; 21(1): 4–12. doi: 10.1111/jocd.14613.

Cutaneous adverse events following COVID-19 vaccination: A case series of 30 Japanese patients and a review of 93 Japanese studies.

Baba A, Yamada K, Kanekura T. J Dermatol. 2024 Jun;51(6):827-838. doi: 10.1111/1346-8138.17188. Epub 2024 Apr 11. PMID: 38605482 Review.

Tan, S. W., Tam, Y. C., & Pang, S. M. (2022). Cutaneous reactions to COVID-19 vaccines: A review. *JAAD international*, *7*, 178–186. https://doi.org/10.1016/j.jdin.2022.01.011
Cutaneous reactions reported after Moderna and Pfizer COVID-19 vaccination: A registry-based study of 414 cases

COVID-19/SARS-CoV-2 virus spike protein-related delayed inflammatory reaction to hyaluronic acid dermal fillers: a challenging clinical conundrum in diagnosis and treatment
https://pubmed.ncbi.nlm.nih.gov/33559733/

'Blue toes' following vaccination with the BNT162b2 mRNA COVID-19 vaccine
https://pubmed.ncbi.nlm.nih.gov/33620081/

'COVID arm' - histological features of a delayed-type hypersensitivity reaction to Moderna mRNA-1273 SARS-CoV2 vaccine
https://pubmed.ncbi.nlm.nih.gov/34242422/

11 patients with Delayed skin reaction after mRNA-1273 vaccine against SARS-CoV-2: a rare clinical reaction
https://pubmed.ncbi.nlm.nih.gov/34433495

A case of generalized Sweet syndrome with vasculitis triggered by recent COVID-19 vaccination
https://pubmed.ncbi.nlm.nih.gov/34849386/

A case series of Bacillus Calmette-Guérin scar reactivation after administration of both mRNA and viral vector COVID-19 vaccines
https://pubmed.ncbi.nlm.nih.gov/36717367/

A new eruption of bullous pemphigoid following mRNA COVID-19 vaccination
https://pubmed.ncbi.nlm.nih.gov/36259862/'

A systematic review on mucocutaneous presentations after COVID-19 vaccination and expert recommendations about vaccination of important immune-mediated dermatologic disorders
https://pubmed.ncbi.nlm.nih.gov/35316551/

Abrupt onset of Sweet syndrome, pityriasis rubra pilaris, pityriasis lichenoides et varioliformis acuta and erythema multiforme: unravelling a possible common trigger, the COVID-19 vaccine
https://pubmed.ncbi.nlm.nih.gov/34617317/

Acute Onset of Remitting Seronegative Symmetrical Synovitis With Pitting Edema (RS3PE) Two Weeks After COVID-19 Vaccination With mRNA-1273 With Possible Activation of Parvovirus B19: A Case Report With Literature Review
https://pubmed.ncbi.nlm.nih.gov/35706724/

Acute urticarial rash after COVID-19 vaccination containing Polysorbate 80
https://pubmed.ncbi.nlm.nih.gov/34703816/

Acute vulvar ulcer as a possible adverse event of gene-based COVID-19 vaccines: A review of 14 cases
https://pubmed.ncbi.nlm.nih.gov/37069805/

Acute vulvar ulcers and the COVID-19 booster vaccine
https://pubmed.ncbi.nlm.nih.gov/35812079/

Cazzato G, Romita P, Foti C, Cimmino A, Colagrande A, Arezzo F, Sablone S, Barile A, Lettini T, Resta L, Ingravallo G. Purpuric Skin Rash in a Patient Undergoing Pfizer-BioNTech COVID-19 Vaccination: Histological Evaluation and Perspectives. Vaccines (Basel). 2021 Jul 8;9(7):760. doi: 10.3390/vaccines9070760. PMID: 34358176; PMCID: PMC8310051.

Tan SW, Tam YC, Pang SM. Cutaneous reactions to COVID-19 vaccines: A review. JAAD Int. 2022 Jun;7:178-186. doi: 10.1016/j.jdin.2022.01.011. Epub 2022 Feb 17. PMID: 35194586; PMCID: PMC8849859.

Yousefian M, Khadivi A. Occurrence of erythema multiforme following COVID-19 vaccination: a review. Clin Exp Vaccine Res. 2023 Apr;12(2):87-96. doi: 10.7774/cevr.2023.12.2.87. Epub 2023 Apr 30. PMID: 37214146; PMCID: PMC10193109.

Calabria E, Canfora F, Mascolo M, Varricchio S, Mignogna MD, Adamo D. Autoimmune mucocutaneous blistering diseases after SARS-Cov-2 vaccination: A Case report of Pemphigus Vulgaris and a literature review. Pathol Res Pract. 2022 Apr;232:153834. doi: 10.1016/j.prp.2022.153834. Epub 2022 Mar 5. PMID: 35278817; PMCID: PMC8896864.

Bălăceanu-Gurău B, Dumitrascu A, Giurcăneanu C, Tatar R, Gurău CD, Orzan OA. A

Comprehensive Review on the Intricate Interplay between COVID-19 Immunization and the New Onset of Pemphigus Foliaceus. Vaccines (Basel). 2024 Jul 30;12(8):857. doi: 10.3390/vaccines12080857. PMID: 39203983; PMCID: PMC11360219.

Rasner CJ, Schultz B, Bohjanen K, Pearson DR. Autoimmune bullous disorder flares following severe acute respiratory syndrome coronavirus 2 vaccination: a case series. J Med Case Rep. 2023 Sep 26;17(1):408. doi: 10.1186/s13256-023-04146-y. PMID: 37749657; PMCID: PMC10521391.

Seirafianpour F., Pourriyahi H., Gholizadeh Mesgarha M., Pour Mohammad A., Shaka Z., Goodarzi A. A systematic review on mucocutaneous presentations after COVID-19 vaccination and expert recommendations about vaccination of important immune-mediated dermatologic disorders. Dermatol Ther. 2022;35(6) - PMC - PubMed

Pour Mohammad A., Mashayekhi F., Seirafianpour F., Gholizadeh Mesgarha M., Goodarzi A. COVID-19 and COVID-19 vaccine-related dermatological reactions: an interesting case series with a narrative review of the potential critical and non-critical mucocutaneous adverse effects related to virus, therapy, and the vaccination. Clin Case Rep. 2022;10(4) - PMC - PubMed

de Montjoye, L.; Marot, L.; Baeck, M. Eosinophilic cellulitis after BNT162b2 mRNA COVID-19 vaccine. J. Eur. Acad. Dermatol. Venereol. **2022**, 36, e26–e28. [Google Scholar] [CrossRef]

Cinotti, E.; Perrot, J.L.; Bruzziches, F.; Tognetti, L.; Batsikosta, A.; Sorrentino, E.; Marzano, A.V.; Rubegni, P. Eosinophilic dermatosis after AstraZeneca COVID-19 vaccination. J. Eur. Acad. Dermatol. Venereol. **2022**, 36, e171–e172. [Google Scholar] [CrossRef]

Pearls and pitfalls: Adverse cutaneous reactions after COVID-19 vaccination

Mechelle Miller, Journal of Medical Imaging and Health Informatics, 2022

Pileri, A., Guglielmo, A., Raone, B., & Patrizi, A. (2021). Chilblain lesions after COVID-19 mRNA vaccine. *British Journal of Dermatology*, *185*(1), e3-e3.

Babazadeh A, Miladi R, Barary M, Shirvani M, Ebrahimpour S, Aryanian Z, Mohseni Afshar Z. COVID-19 vaccine-related new-onset lichen planus. Clin Case Rep. 2022 Feb 2;10(2):e05323. doi: 10.1002/ccr3.5323. PMID: 35140945; PMCID: PMC8810943.

Marcelino J, Vieira J, Ferreira F, Didenko I, Reis R, Silva R, Viseu R, Tomaz E. Stevens-Johnson syndrome related with Comirnaty® coronavirus disease 2019 vaccine. Asia Pac Allergy. 2022 Jul 22;12(3):e30. doi: 10.5415/apallergy.2022.12.e30. PMID: 35966160; PMCID: PMC9353208.

Cazzato G, Romita P, Foti C, Cimmino A, Colagrande A, Arezzo F, Sablone S, Barile A, Lettini T, Resta L, Ingravallo G. Purpuric Skin Rash in a Patient Undergoing Pfizer-BioNTech COVID-19 Vaccination: Histological Evaluation and Perspectives. Vaccines (Basel). 2021 Jul 8;9(7):760. doi: 10.3390/vaccines9070760. PMID: 34358176; PMCID: PMC8310051.

ΚΑΘΥΣΤΕΡΗΜΕΝΗ ΕΜΦΑΝΙΣΗ ΤΟΠΙΚΩΝ ΑΝΤΙΔΡΑΣΕΩΝ

Delayed Large Local Reactions to mRNA-1273 Vaccine against SARS-CoV-2.

Blumenthal KG, Freeman EE, Saff RR, Robinson LB, Wolfson AR, Foreman RK, Hashimoto D, Banerji A, Li L, Anvari S, Shenoy ES. N Engl J Med. 2021 Apr 1;384(13):1273-1277. doi: 10.1056/NEJMc2102131. Epub 2021 Mar 3. PMID: 33657292 Free PMC article. No abstract available.

PILOMATRICOMA

Nakazono M, Kawai M, Mizukami A, Kondoh A, Yamaoka H, Mabuchi T. Case of Pilomatricoma After Coronavirus Disease 2019 Vaccination. Tokai J Exp Clin Med. 2023 Apr 20;48(1):10-12. PMID: 36999388. PubMed

Yang Z, Song F, Winters L, Zhong J. Development of Pilomatrixoma at the Vaccination Site: A Rare Complication of COVID-19 Vaccination - A Case Report. Am J Case Rep. 2023 Dec 6;24:e942280. doi: 10.12659/AJCR.942280. PMID: 38055654; PMCID: PMC10711639.

ΛΕΜΦΑΔΕΝΟΠΑΘΕΙΑ

Schroeder DG, Jang S, Johnson DR, Takahashi H, Navin PJ, Broski SM, Thorpe MP, Johnson GB, Young JR. AJR Am J Roentgenol. Frequency and Characteristics of Nodal and Deltoid FDG and 11C-Choline Uptake on PET Performed After COVID-19 Vaccination. 2021 Nov;217(5):1206-1216. doi: 10.2214/AJR.21.25928. Epub 2021 May 19. PMID: 34009000

Kim B, Park Y, Kim EK, Lee SH. Supraclavicular lymphadenopathy after COVID-19 vaccination in Korea: serial follow-up using ultrasonography. Clin Imaging. 2021 Nov;79:201-203. doi: 10.1016/j.clinimag.2021.05.031. Epub 2021 Jun 5. PMID: 34116295

Jalani N, Tadj D. Aust J. COVID-19 vaccination-associated ipsilateral supraclavicular lymphadenopathy Gen Pract. 2021 Dec 10;50. doi: 10.31128/AJGP-COVID-54. PMID: 35398876

Veverková L, Mohelníková-Duchoňová B, Sedláčková Z, Löwová Ľ, Šišola I. Cent Eur J Public Health. Detection of axillary lymphadenopathy after Covid-19 vaccination during breast examination: Case series and review of the literature after one year. 2023 Jun;31(2):110-114. doi: 10.21101/cejph.a7426. PMID: 37451243 Review

Edmonds CE, Zuckerman SP, Conant EF. AJR Am J Roentgenol. Management of Unilateral Axillary Lymphadenopathy Detected on Breast MRI in the Era of COVID-19 Vaccination. 2021 Oct;217(4):831-834. doi: 10.2214/AJR.21.25604. Epub 2021 Feb 5. PMID: 33543649 Review.

Elverici E, Özsoy A, Sayın B, Gökhan MB, Özkan E. Balkan. Unilateral Axillary Lymphadenopathy after the Inactivated SARS-COV-2 (CoronaVac) Vaccine: Ultrasonographic Imaging. Med J. 2023 Jan 23;40(1):28-33. doi: 10.4274/balkanmedj.galenos.2022.2022-4-107. Epub 2022 Nov 24. PMID: 36421031

Hiller, N.; Goldberg, S.N.; Cohen-Cymberknoh, M.; Vainstein, V.; Simanovsky, N. Lymphadenopathy Associated with the COVID-19 Vaccine. Cureus **2021**, 13, e13524. [Google Scholar] [CrossRef]

Tintle, S.; Chen, M. Lymphadenopathy with florid lymphoid and Langerhans cell hyperplasia and hemophagocytosis mimicking lymphoma after COVID-19 mRNA vaccination. Ejhaem **2021**, 2, 845–847. [Google Scholar] [CrossRef]

Arens, A.I.J.; Hebeda, K.M.; Hutchings, M.; Plattel, W.J.; Stevens, W.B.C. Axillary lymph nodes on PET in Hodgkin lymphoma after COVID-19 vaccination. Ejhaem **2021**, 2, 885–886. [Google Scholar] [CrossRef] [PubMed]

Nurith Hiller, Shraga Nahum Goldberg, Malena Cohen-Cymberknoh, Vladimir Vainstein, Natalia Simanovsky. Lymphadenopathy associated with the COVID-19 vaccine Cureus, 13 (2) (2021), 10.7759/CUREUS.13524

Balraj Singh, Parminder Kaur, Vinod Kumar, Michael Maroules. COVID-19 vaccine induced axillary and pectoral lymphadenopathy on PET scan

Radiol Case Rep, 16 (7) (2021), pp. 1819-1821, 10.1016/J.RADCR.2021.04.053

Dan Cohen, Shir Hazut Krauthammer, Ido Wolf, Einat Even-Sapir. Hypermetabolic lymphadenopathy following administration of BNT162b2 mRNA Covid-19 vaccine: incidence assessed by [18 F]FDG PET-CT and relevance to study interpretation

Eur J Nucl Med Mol Imaging, 48 (6) (2021), pp. 1854-1863, 10.1007/S00259-021-05314-2

Christina Hagen, Miriam Nowack, Michael Messerli, Francesca Saro, Felix Mangold, Peter Karl Bode. Fine needle aspiration in COVID-19 vaccine-associated lymphadenopathy

Swiss Med Wkly, 151 (2021), p. w20557, 10.4414/SMW.2021.20557

Can Özutemiz, Luke Krystosek, An Church, Anil Chauhan, Jutta Ellermann, Evidio Domingo-Musibay, *et al.*Lymphadenopathy in COVID-19 vaccine recipients: diagnostic dilemma in oncologic patientsRadiology, 300 (1) (2021), pp. E290-E294, 10.1148/RADIOL.2021210275

Lacey McIntosh, Alexander Bankier, Gopal Vijayaraghavan, Robert Licho, Max Rosen

COVID-19 vaccination-related uptake on FDG PET/CT: an emerging dilemma and suggestions for management. AJR Am J Roentgenol (2021), pp. 1-9, 10.2214/AJR.21.25728

Constance Lehman, Helen Anne D'Alessandro, Dexter Mendoza, Marc Succi, Avinash Kambadakone, Leslie Lamb.Unilateral lymphadenopathy after COVID-19 vaccination: a practical management plan for radiologists across specialties

J Am Coll Radiol, 18 (6) (2021), pp. 843-852, 10.1016/J.JACR.2021.03.001

Anton Becker, Rocio Perez-Johnston, Sona Chikarmane, Melissa Chen, Maria El Homsi, Kimberly Feigin, *et al.* Multidisciplinary Recommendations Regarding Post-Vaccine Adenopathy and Radiologic Imaging: Radiology Scientific Expert Panel

Radiology, 300 (2) (2021), pp. E323-E327, 10.1148/RADIOL.2021210436

COVID-19 vaccine-associated lymphadenopathy: a review

2024, Infezioni in Medicina

COVID-19 post-vaccination lymphadenopathy: A review of the use of fine needle aspiration cytology

2023, Cytopathology

Multispectral optoacoustic tomography to differentiate between lymph node metastases and coronavirus-19 vaccine-associated lymphadenopathy

2023, Journal of the European Academy of Dermatology and Venereology

Unilateral Axillary Lymphadenopathy in Cancer Patients Post-COVID-19 Vaccination: Review and Case Series

2023, Case Reports in Oncology

Edmonds CE, Zuckerman SP, Conant EF. Management of Unilateral Axillary Lymphadenopathy Detected on Breast MRI in the Era of COVID-19 Vaccination. AJR Am J Roentgenol. 2021 Oct;217(4):831-834. doi: 10.2214/AJR.21.25604. Epub 2021 Feb 5. PMID: 33543649.

ΕΝΤΟΝΗ ΚΑΤΑΒΟΛΗ /ΕΥΚΟΛΗ ΚΟΠΩΣΗ

Το πιο συχνό σύμπτωμα

https://www.thehealthsite.com/news/covid-19-vaccine-side-effects-feeling-exhausted-and-tired-new-strategy-may-help-fight-fatigue-884315/

https://whyy.org/articles/i-got-the-covid-vaccine-are-my-side-effects-normal/

https://bond.edu.au/news/covid-vaccination-fatigue-hurts-most-vulnerable

https://www.healthshots.com/health-news/study-suggests-that-1-in-4-people-experience-mild-systemic-side-effects-from-covid-vaccines/

https://drjonsicu.com/can-you-still-feel-fatigue-6-months-after-the-covid-vaccine/

https://www.gov.uk/government/publications/freedom-of-information-responses-from-the-mhra-week-commencing-7-june-2021/freedom-of-information-request-on-how-

many-reports-of-fatigue-lasting-longer-than-4-weeks-following-covid-19-vaccines-were-associated-with-patients-wh

https://www.london.gov.uk/who-we-are/what-london-assembly-does/questions-mayor/find-an-answer/vaccine-fatigue

https://www.nursinginpractice.com/latest-news/fatigue-and-headaches-most-common-covid-vaccine-side-effects/

ΣΥΝΔΡΟΜΟ ΟΡΘΟΣΤΑΤΙΚΗΣ ΤΑΧΥΚΑΡΔΙΑΣ (ΣΥΝΔΡΟΜΟ POTS) Postural orthostatic tachycardia syndrome (POTS)

Πρέπει να εμβάλλει σε υποψία μυοκαρδίτιδας …

Για να γίνει διάγνωση, δεν αρκεί η κλινική εξέταση και ηλεκτροκαρδιογράφημα. Χρειάζεται μαγνητική τομογραφία με έγχυση παραμαγνητικής ουσίας.

Postural orthostatic tachycardia syndrome (POTS)

https://www.ninds.nih.gov/health-information/disorders/postural-tachycardia-syndrome-pots

https://www.healthdirect.gov.au/postural-orthostatic-tachycardia-syndrome-pots

https://myhealth.alberta.ca/Health/aftercareinformation/pages/conditions.aspx?hwid=abq2777

https://www.bhf.org.uk/informationsupport/heart-matters-magazine/medical/ask-the-experts/pot

https://www.health.harvard.edu/blog/pots-diagnosing-and-treating-this-dizzying-syndrome-202110062611

https://www.onmed.gr/ygeia/story/403453/an-niothete-etsi-mallon-exete-syndromo-orthostatikis-taxykardias

https://www.ninds.nih.gov/health-information/disorders/postural-tachycardia-syndrome-pots

https://www.bhf.org.uk/informationsupport/heart-matters-magazine/medical/ask-the-experts/pots

https://www.healthdirect.gov.au/postural-orthostatic-tachycardia-syndrome-pots

Αν νιώθετε έτσι μάλλον έχετε σύνδρομο ορθοστατικής ...

Σύνδρομο Ορθοστατικής Ταχυκαρδίας: Φταίει η πανδημία

Bushi G, Gaidhane S, Ballal S, Kumar S, Bhat M, Sharma S, Kumar MR, Rustagi S, Khatib MN, Rai N, Sah S, Shabil M. Postural orthostatic tachycardia syndrome after COVID-19 vaccination: A systematic review. BMC Cardiovasc Disord. 2024 Nov 13;24(1):643. doi: 10.1186/s12872-024-04315-x. PMID: 39538129; PMCID: PMC115623

Kwan AC, Ebinger JE, Wei J, Le CN, Oft JR, Zabner R, Teodorescu D, Botting PG, Navarrette J, Ouyang D, Driver M, Claggett B, Weber BN, Chen PS, Cheng S. Apparent Risks of Postural Orthostatic Tachycardia Syndrome Diagnoses After COVID-19 Vaccination and SARS-Cov-2 Infection. Nat Cardiovasc Res. 2022 Dec;1(12):1187-1194. doi: 10.1038/s44161-022-00177-8. Epub 2022 Dec 12. Erratum in: Nat Cardiovasc Res. 2023 Oct;2(10):956. doi: 10.1038/s44161-023-00339-2. PMID: 37303827; PMCID: PMC10254901.

Yong SJ, Halim A, Liu S, Halim M, Alshehri AA, Alshahrani MA, Alshahrani MM, Alfaraj AH, Alburaiky LM, Khamis F, Muzaheed, AlShehail BM, Alfaresi M, Al Azmi R, Albayat H, Al Kaabi NA, Alhajri M, Al Amri KAS, Alsalman J, Algosaibi SA, Al Fares MA, Almanaa TN, Almutawif YA, Mohapatra RK, Rabaan AA. Pooled rates and demographics of POTS following SARS-CoV-2 infection versus COVID-19 vaccination: Systematic review and meta-analysis. Auton Neurosci. 2023 Dec;250:103132. doi: 10.1016/j.autneu.2023.103132. Epub 2023 Nov 23. PMID: 38000119.

Gómez-Moyano E, Rodríguez-Capitán J, Gaitán Román D, Reyes Bueno JA, Villalobos Sánchez A, Espíldora Hernández F, González Angulo GE, Molina Mora MJ, Thurnhofer-Hemsi K, Molina-Ramos AI, Romero-Cuevas M, Jiménez-Navarro M, Pavón-Morón FJ. Postural orthostatic tachycardia syndrome and other related dysautonomic disorders after SARS-CoV-2 infection and after COVID-19 messenger RNA vaccination. Front Neurol. 2023 Aug 16;14:1221518. doi: 10.3389/fneur.2023.1221518. PMID: 37654428; PMCID: PMC10467287.

Teodorescu DL, Kote A, Reaso JN, Rosenberg C, Liu X, Kwan AC, Cheng S, Chen PS. Postural orthostatic tachycardia syndrome after COVID-19 vaccination. Heart Rhythm. 2024 Jan;21(1):74-81. doi: 10.1016/j.hrthm.2023.09.012. Epub 2023 Nov 11. PMID: 38176772; PMCID: PMC10767226.

Comment in

- To the Editor-COVID-19 vaccine and postural orthostatic tachycardia syndrome.

Daungsupawong H, Wiwanitkit V. Heart Rhythm. 2024 May;21(5):702-703. doi: 10.1016/j.hrthm.2024.01.059. Epub 2024 Feb 13. PMID: 38360253 No abstract available.

- To the Editor-Small fiber neuropathy is responsible for POTS in SARS-CoV-2 vaccines.

Finsterer J. Heart Rhythm. 2024 May;21(5):702. doi: 10.1016/j.hrthm.2024.01.060. Epub 2024 Feb 13. PMID: 38360255 No abstract available.

ΝΕΥΡΟΛΟΓΙΚΕΣ ΔΙΑΤΑΡΑΧΕΣ

Όπως και με όλες τις άλλες ανεπιθύμητες ενέργειες των εμβολίων, απαιτείται γνώση, προσοχή και διάκριση για να μην αποδίδονται στα εμβόλια κάποιες νευρολογικές επιπλοκές που προκαλεί ο ίδιος ο ιός SARS-CoV-2 σε ασθενείς με λοίμωξη COVID-19. Υπάρχει όμως άφθονη βιβλιογραφία (και αφθονώτερες μαρτυρίες παθόντων) σε όλον τον κόσμο για εμφάνιση επιπλοκών σε εμβολιασθέντες χωρίς λοίμωξη COVID-19.

Πολύ σοβαρές νευρολογικές επιπλοκές, όπως αγγειακά ισχαιμικά εγκεφαλικά επεισόδια και εγκεφαλική αιμορραγία παρατίθενται σε αυτό το κεφάλαιο, ενώ οι διαταραχές όσφρησης και γεύσης καθώς και ακουολογικές διαταραχές (εμβοές, έκπτωση ακοής) σε επόμενα.κεφάλαια.

Η θρόμβωση φλεβωδών κόλπων του εγκεφάλου, χαρακτηρίζεται από νευρολογική σημειολογία, αλλά θεωρήθηκε σκόπιμο να παρατεθεί η σχετική βιβλιογραφία στο κεφάλαιο ΘΡΟΜΒΩΣΗ.

Σε ξεχωριστό κεφάλαιο παρατίθενται αναφορές σε μυοσίτιδα και ραβδομυόλυση.

R. Alonso Castillo, J.C. Martínez Castrillo. Neurological manifestations associated with COVID-19 vaccine. S2173-5808(22). Neurologia (Engl Ed) (2022) 00141 9 Google Scholar

Rastogi A., Bingeliene A., Strafella A.P., Tang-Wai D.F., Wu P.E., Mandell D.M. Reversible neurological and brain MRI changes following COVID-19 vaccination: A case report. J. Neuroradiol. 2022;49:428–430. doi: 10.1016/j.neurad.2022.03.011. [DOI] [PMC free article] [PubMed] [Google Scholar]

J. Finsterer. Neurological adverse reactions to SARS-CoV-2 vaccines. Clin. Psychopharmacol. Neurosci., 21 (2) (2023), pp. 222-239 View at publisher CrossrefView in ScopusGoogle Scholar

Lee KW, Yap SF, Amin-Nordin S, Ngeow YF. Cardiac and Neurological Complications Post COVID-19 Vaccination: A Systematic Review of Case Reports and Case Series. Vaccines (Basel). 2024 May 24;12(6):575. doi: 10.3390/vaccines12060575. PMID: 38932303; PMCID: PMC11209191.

Hosseini R, Askari N. A review of neurological side effects of COVID-19 vaccination. Eur J Med Res. 2023;28:102. doi: 10.1186/s40001-023-00992-0. [DOI] [PMC free article] [PubMed] [Google Scholar]

Sriwastava S, Sharma K, Khalid SH, et al. COVID-19 vaccination and neurological manifestations: a review of case reports and case series. Brain Sci. 2022;12:407. doi: 10.3390/brainsci12030407. [DOI] [PMC free article] [PubMed] [Google Scholar]

Butler M, Tamborska A, Wood GK, Ellul M, Thomas RH, Galea I, et al. Neurological manifestations of immune origin after COVID-19 vaccination: retrospective case study Front Pharmacol 2024

Considerations for causality assessment of neurological and neuropsychiatric complications of SARS-CoV-2 vaccines: From cerebral venous sinus thrombosis to functional neurological disorder. J Neurol Neurosurg Psychiatry. 2021;92(11):1144–51. doi: 10.1136/jnnp-2021-326924. [DOI] [PMC free article] [PubMed] [Google Scholar]

Goss AL, Samudralwar RD, Das RR, Nath A. ANA investigates: Neurological complications of COVID-19 vaccines. Ann Neurol. 2021;89(5):856–7. doi: 10.1002/ana.26065. [DOI] [PMC free article] [PubMed] [Google Scholar]

Patone M, Handunnetthi L, Saatci D, Pan J, Katikireddi SV, Razvi S, et al. Neurological complications after first dose of COVID-19 vaccines and SARS-CoV-2 infection. Nat Med. 2021;27(12):2144–53. doi: 10.1038/s41591-021-01556-7. [DOI] [PMC free article] [PubMed] [Google Scholar]

Finsterer J. Neurological side effects of SARS-CoV-2 vaccinations. Acta Neurol Scand. 2022;145(1):5–9. doi: 10.1111/ane.13550. [DOI] [PMC free article] [PubMed] [Google Scholar]

Chen PJ, Chang YS, Lim CC, Lee YK. Susac syndrome following COVID-19 vaccination: a case report. Vaccines (Basel). 2022;10(3):363. doi: 10.3390/vaccines10030363. [DOI] [PMC free article] [PubMed] [Google Scholar]

Wraith DC, Goldman M, Lambert PH. Vaccination and autoimmune disease: what is the evidence? Lancet. 2003;362(9396):1659–1666. doi: 10.1016/S0140-6736(03)14802-7. [DOI] [PubMed] [Google Scholar]

Gross CC, Meyer C, Bhatia U, et al. CD8+ T cell-mediated endotheliopathy is a targetable mechanism of neuro-inflammation in Susac syndrome. Nat Commun. 2019;10(1):5779. doi: 10.1038/s41467-019-13593-5. [DOI] [PMC free article] [PubMed] [Google Scholar]

Rennebohm RM, Asdaghi N, Srivastava S, Gertner E. Guidelines for treatment of Susac syndrome—an update. Int J Stroke. 2020;15(5):484–494. doi: 10.1177/1747493017751737. [DOI] [PubMed] [Google Scholar]

Otero-Losada M, Petrovsky N, Alami A, Crispo JA, Mattison D, Capani F, Goetz C, Krewski D, Perez-Lloret S. Disproportionality analysis of adverse neurological and psychiatric reactions with the ChAdOx1 (Oxford-AstraZeneca) and BNT162b2 (Pfizer-BioNTech) COVID-19 vaccines in the United Kingdom. Expert Opin Drug Saf. 2023 Apr;22(4):343-349. doi: 10.1080/14740338.2022.2120607. Epub 2022 Sep 7. PMID: 36043937.

Patone M, Handunnetthi L, Saatci D, Pan J, Katikireddi SV, Razvi S, Hunt D, Mei XW, Dixon S, Zaccardi F, Khunti K, Watkinson P, Coupland CAC, Doidge J, Harrison DA, Ravanan R, Sheikh A, Robertson C, Hippisley-Cox J. Neurological complications after first dose of COVID-19 vaccines and SARS-CoV-2 infection. Nat Med. 2021 Dec;27(12):2144-2153. doi: 10.1038/s41591-021-01556-7. Epub 2021 Oct 25. Erratum in: Nat Med. 2021 Dec;27(12):2249. doi: 10.1038/s41591-021-01644-8. PMID: 34697502; PMCID: PMC8629105.

Finsterer J, Korn M. 2021 Aphasia seven days after second dose of an mRNA-based SARS-CoV-2 vaccine [published online ahead of print, 2021 Jun 24]. Brain Hemorrhages. 10.1016/j.hest.2021.06.001. [DOI] [PMC free article] [PubMed]

Butler M, Tamborska A, Wood GK, Ellul M, Thomas RH, Galea I, et al. Considerations for causality assessment of neurological and neuropsychiatric complications of SARS-CoV-2 vaccines: From cerebral venous sinus thrombosis to functional neurological disorder. J Neurol Neurosurg Psychiatry. 2021;92(11):1144–51. doi: 10.1136/jnnp-2021-326924. [DOI] [PMC free article] [PubMed] [Google Scholar]

Mythri G, Prashanth Kumar M, Pooja S, Anil Kumar H. Coronavirus disease-19 vaccination and chemosensory dysfunction. Natl J Physiol Pharm Pharmacol. 2022; 12(3):296–300. https://doi.org/10.5455/njppp.2022.12.08283202104092021

Dutta S, Kaur R, Charan J, Bhardwaj P, Ambwani SR, Babu S, et al. Analysis of neurological adverse events reported in VigiBase from COVID-19 vaccines. Cureus. 2022;14(1):e21376. https://doi.org/10.7759/cureus.21376

Eslait-Olaciregui S, Llinas-Caballero K, Patino-Manjarres D, Urbina-Ariza T, Cediel-Becerra JF, Dominguez-Dominguez CA. Serious neurological adverse events following immunization against SARS-CoV-2: A narrative review of the literature. Ther Adv Drug Saf. 2023;14:20420986231165674. doi: 10.1177/20420986231165674. [DOI] [PMC free article] [PubMed] [Google Scholar]

A review of neurological side effects of COVID-19 vaccination

European Journal of Medical Research
https://eurjmedres.biomedcentral.com › articles

R Hosseini · 2023 · Cited by 90 — ... *vaccination* [13]. According to a *recent* report on the Sputnik *vaccine*, *side effects* are included headache, joint pain, fever, and flu-like ...
Disproportionality analysis of adverse neurological and psychiatric reactions with the ChAdOx1 (Oxford-AstraZeneca) and BNT162b2 (Pfizer-BioNTech) COVID-19 vaccines in the United Kingdom.

Otero-Losada M, Petrovsky N, Alami A, Crispo JA, Mattison D, Capani F, Goetz C, Krewski D, Perez-Lloret S. Expert Opin Drug Saf. 2023 Apr;22(4):343-349. doi: 10.1080/14740338.2022.2120607. Epub 2022 Sep 7. PMID: 36043937

Sodhi M, Samii A, Etminan M. A comparative safety study of reported neurological adverse events with three COVID-19 vaccines. J Neurol 2022;269:2301–3. 10.1007/s00415-021-10919-6 Google Scholar Crossref PubMed WorldCat

Samudralwar RD*. Commentary: The spectrum of neurological manifestations related to COVID-19 and vaccinations. J Neuroimmunol. Epub ahead of print 10 July 2021. DOI: 10.1016/j.jneuroim.2021.577660.* [DOI] [PMC free article] [PubMed]

Walker JL, Schultze A, Tazare J, Tamborska A, Singh B, Donegan K, Stowe J, Morton CE, Hulme WJ, Curtis HJ, Williamson EJ, Mehrkar A, Eggo RM, Rentsch CT, Mathur R, Bacon S, Walker AJ, Davy S, Evans D, Inglesby P, Hickman G, MacKenna B, Tomlinson L, Ca Green A, Fisher L, Cockburn J, Parry J, Hester F, Harper S, Bates C, Evans SJ, Solomon T, Andrews NJ, Douglas IJ, Goldacre B, Smeeth L, McDonald HI. Safety of COVID-19 vaccination and acute neurological events: A self-controlled case series in England using the OpenSAFELY platform. Vaccine. 2022 Jul 30;40(32):4479-4487. doi: 10.1016/j.vaccine.2022.06.010. Epub 2022 Jun 7. PMID: 35715350; PMCID: PMC9170533.

Frontera J. A.*, Tamborska A. A., Doheim M. F., Garcia-Azorin D., Gezegen H., Guekht A., et al. (2022). Neurological events reported after COVID-19 vaccines: an analysis of VAERS. Ann. Neurol. 91, 756–771. 10.1002/ana.26339* [DOI] [PMC free article] [PubMed] [Google Scholar]

Garcia-Grimshaw M*, Ceballos-Liceaga SE, Hernandez-Vanegas LE, Nunez I, Hernandez-Valdivia N, Carrillo-Garcia DA, et al. Systemic and neurologic adverse events among 704,003 first-dose recipients of the Pfizer-Biontech (BNT162b2) mRNA COVID-19 vaccine in Mexico [Online] [cited 2021]. Available from: URL:* [DOI] [PMC free article] [PubMed]

Acute haemorrhagic necrotizing encephalopathy in the setting of SARS-CoV-2 vaccination: a case report and literature review
https://pubmed.ncbi.nlm.nih.gov/35098489/

Neuromuscular diseases associated with COVID-19 vaccines: a systematic review and pooled analysis of 258 patients. BMC Neurol. 2023.

Li X, Raventós B, Roel E, Pistillo A, Martinez-Hernandez E, Delmestri A, Reyes C, Strauss V, Prieto-Alhambra D, Burn E, Duarte-Salles T. Association between covid-19 vaccination, SARS-CoV-2 infection, and risk of immune mediated neurological events: population based cohort and self-controlled case series analysis. BMJ. 2022 Mar 16;376:e068373. doi: 10.1136/bmj-2021-068373. PMID: 35296468; PMCID: PMC8924704.

Neurological Disorders following COVID-19 Vaccination.

Yang Y, Huang L. Vaccines (Basel). 2023 Jun 19;11(6):1114. doi: 10.3390/vaccines11061114. PMID: 37376503 Free PMC article. Review.

Patone M, Handunnetthi L, Saatci D, Pan J, Katikireddi SV, Razvi S, et al. *Neurological complications after first dose of COVID-19 vaccines and SARS-CoV-2 infection. [Erratum in:*

Nat Med 2021;27:2249];Nat Med. 2021 27:2144–2153. doi: 10.1038/s41591-021-01556-7. [DOI] [PMC free article] [PubMed] [Google Scholar]

Neurovascular Adverse Effects of Sars-Cov-2 Vaccination.

Panos LD, Bargiotas P, Hadjigeorgiou G, Panos GD. Drug Des Devel Ther. 2024 May 30;18:1891-1905. doi: 10.2147/DDDT.S464394. eCollection 2024. PMID: 38836116 Free PMC article. Review**.**

Acute Transient Encephalopathy after Moderna COVID-19 Vaccine
https://pubmed.ncbi.nlm.nih.gov/35702446/

Kim Y, Kim MH, Chun E, Cho D. Association of Coronavirus Disease 2019 Vaccination with Facial-Related Neurological Disorders: A Nationwide Retrospective Cohort Study. J Pers Med. 2024 Jun 21;14(7):671. doi: 10.3390/jpm14070671. PMID: 39063925; PMCID: PMC11277844.

Shafiq A, Salameh MA, Laswi I, Mohammed I, Mhaimeed O, Mhaimeed N, Mhaimeed N, Paul P, Mushannen M, Elshafeey A, Fares A, Holroyd S, Zakaria D. Neurological Immune-Related Adverse Events After COVID-19 Vaccination: A Systematic Review. J Clin Pharmacol. 2022 Mar;62(3):291-303. doi: 10.1002/jcph.2017. Epub 2022 Feb 10. PMID: 34921562.

Eslait-Olaciregui S, Llin⟨s-Caballero K, Pati⟩o-Manjarr╒s D, Urbina-Ariza T, Cediel-Becerra JF, Dom⎨nguez-Dom⎨nguez CA. Serious neurological adverse events following immunization against SARS-CoV-2: a narrative review of the literature. Ther Adv Drug Saf. 2023 May 21;14:20420986231165674. doi: 10.1177/20420986231165674. PMID: 37223456; PMCID: PMC10201278.

Otero-Losada M, Petrovsky N, Alami A, Crispo JA, Mattison D, Capani F, Goetz C, Krewski D, Perez-Lloret S. Disproportionality analysis of adverse neurological and psychiatric reactions with the ChAdOx1 (Oxford-AstraZeneca) and BNT162b2 (Pfizer-BioNTech) COVID-19 vaccines in the United Kingdom. Expert Opin Drug Saf. 2023 Apr;22(4):343-349. doi: 10.1080/14740338.2022.2120607. Epub 2022 Sep 7. PMID: 36043937.

Chatterjee A, Chakravarty A. Neurological Complications Following COVID-19 Vaccination. Curr Neurol Neurosci Rep. 2023 Jan;23(1):1-14. doi: 10.1007/s11910-022-01247-x. Epub 2022 Nov 29. PMID: 36445631; PMCID: PMC9707152.

Garg RK, Paliwal VK. Spectrum of neurological complications following COVID-19 vaccination. Neurol Sci. 2022 Jan;43(1):3-40. doi: 10.1007/s10072-021-05662-9. Epub 2021 Oct 31. PMID: 34719776; PMCID: PMC8557950.

ΚΕΦΑΛΑΛΓΙΑ

Ekizoglu E, Gezegen H, Yalınay Dikmen P, Orhan EK, Ertaş M, Baykan B. The characteristics of COVID-19 vaccine-related headache: clues gathered from the health- care personnel in the pandemic. Cephalalgia. 2022;42(4–5):366–75. https://doi.org/10.1177/03331024211042390

González-Celestino A, González-Osorio Y, García-Iglesias C, Echavarría-Iñiguez A, Sierra-Mencía A, Recio-García A, et al. Differences and similarities between COVID-19 related-headache and COVID-19 vaccine related-headache. A case-control study. Rev Neurol. 2023;77(10):229–39. https://doi.org/10.33588/rn.7710.2023063

***Jameie M**, Togha M, Looha MA, Hemmati N, Jafari E, Nasergivehchi S, et al. Clinical characteristics and factors associated with headaches following COVID-19 vaccination: A cross-sectional cohort study (P14-12.003) Neurology. 2023;100(17_Suppl_2):4105. doi: 10.3389/fneur.2023.1214501.* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΛΕΙΤΟΥΡΓΙΚΗ ΝΕΥΡΟΛΟΓΙΚΗ ΔΙΑΤΑΡΑΧΗ

FUNCTIONAL NEUROLOGICAL DISORDER (FND)

Θεωρείται ότι ανήκουν στην κατηγορία της λεγόμενης λειτουργικής νευρολογικής διαταραχής (FND), βασανιστικά συμπτώματα όπως δυναμία άνω ή κάτω άκρου (limb weakness), προβλήματα βάδισης (gait problems), σπαστικές κινήσεις (jerky movements), τρόμος (tremor) και σπασμοί προσώπου (facial spasms), παραισθησίες στο πρόσωπο ή στα άκρα, δυσανεξία στην ζέστη, αίσθημα παλμών, διακύμανση στην αρτηριακή πίεση, ορθοστατική υπόταση, που εμφανίζουν κάποιοι ασθενείς μετά την πρώτη ή τη δεύτερη δόση κάποιου εμβολίου COVID. Κάποιοι σχυρίζονται ότι τα εμβόλια εκλύουν μια νευροψυχιατρική διαταραχή που για την θεραπεία της χρειάζεται εκπαίδευση και ψυχοθεραπεία, ενώ άλλοι αποδίδουν σε αυτοάνοση διαταραχή τα συμπτώματα και χορηγούν κορτικοειδή ή γ σφαιρίνη, συχνά με καλή ανταπόκριση. Τουλάχιστον όλοι αναγνωρίζουν ότι δεν οι ασθενείς υποκρίνονται …

Ανεύρεση εναποθέσεων C4d στα ενδοθηλιακά κύτταρα, και άλλα αντικειμενικά ευρήματα από βιοψία δέρματος κάτω άκρων, παραπέμπουν σε ανοσολογικό μηχανισμό small fiber neuropathy σε σημαντικό ποσοστό ασθενών (Farinaz Safavi et al, 2022 doi: https://doi.org/10.1101/2022.05.16.22274439).

Οι δημοσιευμένες μελέτες αφορούν σε πολύ μικρό αριθμό ασθενών, και αφήνεται έντεχνα η εντύπωση ότι πρόκειται για σπανιώτατες περιπτώσεις, πράγμα που απέχει πολύ από την πραγματικότητα…

N. Lim, N. Wood, A. Prasad, K. Waters, D. Singh-Grewal, R.C. Dale, J. Elkadi, S. Scher, K. Kozlowska. COVID-19 vaccination in young people with functional neurological disorder: a case-control study. Vaccines (Basel), 10 (12) (2022) Google Scholar

A. Alonso-Canovas, M.M. Kurtis, V. Gomez-Mayordomo, D. Macías-García, Á. Gutiérrez Viedma, E. Mondragón Rezola, J. Pagonabarraga, L. Aranzabal Orgaz, J. Masjuan, J.C. Martinez-Castrillo, I. Pareés

Functional neurological disorders after COVID-19 and SARS-CoV-2 vaccines: a national multicentre observational study
J. Neurol. Neurosurg. Psychiatry, 94 (9) (2023), pp. 776-777
View at publisher
CrossrefView in ScopusGoogle Scholar

M. Hallett, S. Aybek, B.A. Dworetzky, L. McWhirter, J.P. Staab, J. Stone
Functional neurological disorder: new subtypes and shared mechanisms
Lancet Neurol., 21 (6) (2022), pp. 537-550
View PDFView articleView in ScopusGoogle Scholar

A. Chouksey, S. Pandey
Functional movement disorders in elderly
Tremor. Hyperkinet. Mov. (N Y), 9 (2019)
Google Scholar

A.J. Espay, S. Aybek, A. Carson, M.J. Edwards, L.H. Goldstein, M. Hallett, K. LaFaver, W.C. LaFrance Jr., A.E. Lang, T. Nicholson, G. Nielsen, M. Reuber, V. Voon, J. Stone, F. Morgante. Current concepts in diagnosis and treatment of functional neurological disorders. JAMA Neurol., 75 (9) (2018), pp. 1132-1141
View in Scopus Google Scholar

Masayuki Ohira, Takashi Osada, Hiroaki Kimura, Terunori Sano, Masaki Takao. Clinical characteristics of motor functional neurological disorder manifesting as limb weakness after vaccination against coronavirus disease 2019: A case series, eNeurologicalSci, Volume 33, 2023,100487, ISSN 2405-6502, https://doi.org/10.1016/j.ensci.2023.100487. (https://www.sciencedirect.com/science/article/pii/S240565022300045X)

Kim, D.D., *et al.* (2021) Helping the Public Understand Adverse Events Associated With COVID-19 Vaccinations. Lessons Learned From Functional Neurological Disorder. *JAMA Neurology.* doi.org/10.1001/jamaneurol.2021.1042.

Stefanie C Linden, Alan J Carson, Simon Wessely. Functional neurological disorder after vaccination: a balanced approach informed by history. J R Coll Physicians Edinb 2021; 51: 330–1 | doi: 10.4997/JRCPE.2021.403

Butler M, Coebergh J, Safavi F et al. Functional neurological disorder after SARS-CoV-2 vaccines: two case reports and discussion of potential public health implications. J Neuropsychiatry Clin Neurosci 2021; 33: 345.

Ercoli T, Lutzoni L, Orofino G, Muroni A, Defazio G. Functional neurological disorder after COVID-19 vaccination. *Neurol. Sci.* 2021 Oct; 42: 3989–3990. View PubMedWeb of Science®Google Scholar

Sanjeev OP, Verma A, Mani VE, Singh RK. COVID-19 vaccine-related functional neurological disorders in the emergency department. *CJEM* 2022; 24: 455–456. View PubMedGoogle Scholar

de Souza A, Jacques R, Mohan S. Vaccine-Induced Functional Neu-

rological Disorders in the Covid-19 Era. Can J Neurol Sci. 2022 [Epub ahead of print]: 1–5, doi: 10.1017/cjn.2022.48, indexed in Pubmed: 35466898.

Sonja Hochmeister, Martin Rakusa, Elena Moro, Daniel Bereczki, Francesco Cavallieri, Alessandra Fanciulli, Saša R. Filipović, Alla Guekht, Raimund Helbok, Filippo Martinelli Boneschi, Serefnur Özturk, Alberto Priori, Barbara Willekens, Dauren Ramankulov, Johann Sellner. Is there still hesitancy towards SARS-CoV-2 vaccination among people with neurological disease– a survey of the NeuroCOVID-19 task force of the European Academy of Neurology, Neurological Sciences, (2025).https://doi.org/10.1007/s10072-025-08017-w Crossref

M. Butler, J. Coebergh, F. Safavi, A. Carson, M. Hallett, B. Michael, T.A. Pollak, T. Solomon, J. Stone, T.R. Nicholson. Functional neurological disorder after SARS-CoV-2 vaccines: two case reports and discussion of potential public health implications. J. Neuropsychiatr. Clin. Neurosci., 33 (4) (2021), pp. 345-348
View at publisher CrossrefView in ScopusGoogle Scholar

Farinaz Safavi, Lindsey Gustafson, Brian Walitt, Tanya Lehky, Sara Dehbashi, Amanda Wiebold, Yair Mina, Susan Shin, Baohan Pan, Michael Polydefkis, Anne Louise Oaklander, Avindra Nath. Neuropathic symptoms with SARS-CoV-2 vaccination . medRxiv 2022.05.16.22274439; doi:https://doi.org/10.1101/2022.05.16.22274439
52% (12/23) of patients had objective evidence of small-fiber peripheral neuropathy.

Al-Kuraishy H.M., Al-Gareeb A.I., Qusti S., Alshammari E.M., Gyebi G.A., Batiha G.E. *Covid-19-Induced Dysautonomia: A Menace of Sympathetic Storm. ASN Neuro. 2021;13:17590914211057635. doi: 10.1177/17590914211057635.* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΚΙΝΗΤΙΚΕΣ ΔΙΑΤΑΡΑΧΕΣ (MOVEMENT DISORDERS)

Ημιχορεία (hemichorea). Γενικευμένη χορεία με μυόκλονο (generalized chorea with myoclonus), αυχενική δυστονία (cervical dystonia), και ακαθησία (akathisia), εντός 12 έως 40 ημερών μετά την πρώτη ή δεύτερη δόση ενός COVID εμβολίου.

Schneider SA, Hennig A, Martino D. Relationship between COVID-19 and movement disorders: a narrative review. Eur J Neurol 2022;29:1243–1253.ArticlePubMedPDF

Grace Elysse D. Angeles, Lowrence Precious C. Dichoso, Roland Dominic G. Jamora COVID-19 Vaccine-Related Movement Disorders: A Systematic Review Journal of Movement Disorders 2024;17(3):322-327. DOI:https://doi.org/10.14802/jmd.24001 Published online: March 19, 2024

Shahali H, Farahani RH, Asgari A, Hazrati E. Thalamic hemi-chorea: a rare complication after receiving the adenoviral vector-based COVID-19 vaccine: a case report. Clin Exp Vaccine Res 2022;11:217–221.ArticlePubMedPMCPDF

Dulanto J, Chu D, Saffari P, Abdelshahid M, Xu P, Hauser J, et al. Three patients with chorea and positive voltage-gated potassium channel antibody: is this the link between hyperkinetic von Economo disease and COVID-19? Cureus 2023;15:e35666.ArticlePubMedPMC

Batot C, Chea M, Zeidan S, Mongin M, Pop G, Mazoyer J, et al. Clinical and radiological follow-up of a Pfizer-BioNTech COVID-19 vaccine-induced hemichorea-hemiballismus. Tremor Other Hyperkinet Mov (N Y) 2022;12:16.ArticlePubMedPMC

Algahtani HA, Shirah BH, Alwafi E. Acute cervical dystonia following the BNT162b2 mRNA COVID-19 vaccine. Clin Neurol Neurosurg 2022;218:107304.ArticlePubMedPMC

Salinas MR, Dieppa M. Transient akathisia after the SARS-Cov-2 vaccine. Clin Park Relat Disord 2021;4:100098.ArticlePubMedPMC

Matar E, Manser D, Spies JM, Worthington JM, Parratt KL. Acute hemichorea-hemiballismus following COVID-19 (AZD1222) vaccination. Mov Disord 2021;36:2714–2715.PubMedPMC

Salari M, Etemadifar M. Two cousins with acute hemichorea after BBIBPCorV (Sinopharm) COVID-19 vaccine. Mov Disord 2022;37:1101–1103.PubMedPMC

Ryu DW, Lim EY, Cho AH. A case of hemichorea following administration of the Pfizer-BioNTech COVID-19 vaccine. Neurol Sci 2022;43:771–773.ArticlePubMedPMCPDF

Angeles GED, et al. COVID-19 Vaccine-Related Movement Disorders. J Mov Disord 2024;17(3):322-327. pISSN 2005-940X / eISSN 2093-4939. https://doi.org/10.14802/jmd.24001 /

Salinas MR, Dieppa M. Transient akathisia after the SARS-Cov-2 vac-

cine. Clin Park Relat Disord 2021;4:100098.

ΕΠΙΚΤΗΤΗ ΝΕΥΡΟΜΥΟΤΟΝΙΑ Η' ΣΥΝΔΡΟΜΟ ΙΣΑΑΚ (ACQUIRED NEUROMYOTONIA OR ISAACS' SYNDROME)

Shivangi Shivangi, Amit Shankar Singh, Jeenendra Prakash Singhvi, Namit Bansal, and Rajat Gupta *Post COVID-19 Vaccination Associated Acquired Neuromyotonia* **Neurology, December 5, 2022 issue 99 (23_Supplement_2) S30-S31. https://doi.org/10.1212/01.wnl.0000903264.64985.38**

Sarraf P, Shafie M, Farahmand G, Mayeli M, Shahbazi M, Magrouni H, Jameie M, Ghelichnia Emrani B, Rashidi-Jazani M. Isaacs' syndrome: Clinical and paraclinical

perspectives in a series of cases. Curr J Neurol. 2024 Jan 5;23(1):1-14. doi: 10.18502/cjn.v23i1.16428. PMID: 39431227; PMCID: PMC11489630.

ΤΡΟΜΟΣ (uncontrollable tremors, shaking, involuntary spasms, convulsions)

https://www.wral.com/story/fact-check-women-claim-covid-vaccine-causes-uncontrollable-shaking/19483907/

https://www.sciencealert.com/videos-of-severe-reactions-to-covid-19-vaccines-aren-t-what-they-seem-scientists-say

ΕΣΩΤΕΡΙΚΗ ΑΙΣΘΗΣΗ ΤΡΟΜΟΥ ΚΑΙ ΚΡΑΔΑΣΜΩΝ (Internal Tremors and Vibrations)

Asya T, Liah M, Anna W, et al. A case of new-onset orthostatic tremor post SARS-CoV-2 infection and vaccination. Journal of Neurology, Neurosurgery & Psychiatry 2023;94:A13.

Massey D, Sawano M, Baker AD, et al
Characterisation of internal tremors and vibration symptoms
BMJ Open 2023;13:e077389 https://doi.org/10.1136/bmjopen-2023-077389

https://medicine.yale.edu/news-article/internal-tremors-adding-to-the-list-of-long-covid-symptoms/

ΤΡΟΜΟΣ ΤΗΣ ΥΠΕΡΩΑΣ (PALATAL TREMOR)

Toumi K, Naji Y, Laadami S, Adali N. Essential Palatal Tremor Following COVID-19 Vaccine: A Case Report. Cureus. 2024 Sep 29;16(9):e70420. doi: 10.7759/cureus.70420. PMID: 39479097; PMCID: PMC11522943.

ΔΥΣΚΙΝΗΣΙΑ ΤΗΣ ΓΛΩΣΣΑΣ ΟΜΟΙΑΖΟΥΣΑ ΜΕ ΤΡΟΜΟ (TONGUE TREMOR-LIKE DYSKINESIA)

Demartini B, et al. Letter to the editor: A case of functional isolated tongue tremor-like dyskinesia after COVID-19 vaccine. Psychiatry and Clinical Neurosciences 77: 122-123, No. 2, Feb 2023. Available from: URL: http://doi.org/10.1111/pcn.13477

Functional dyskinesia of the tongue: case report. Elasomeran. *Reactions Weekly* **1946**, 219 (2023). https://doi.org/10.1007/s40278-023-34820-9

ΕΠΙΛΗΠΤΙΚΟΙ ΣΠΑΣΜΟΙ

Aladdin Y, *Shirah B. New-onset refractory status epilepticus following the ChAdOx1 nCoV-19 vaccine. J Neuroimmunol. 2021;357:577629. doi: 10.1016/j.jneuroim.2021.577629.* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΑΔΥΝΑΜΙΑ ΣΤΗΡΙΞΗΣ

https://www.dailymail.co.uk/news/article-9825965/Videos-people-struggling-walk-getting-Covid-vaccine-NOT-result-jab.html

https://www.bbc.com/news/articles/c1d5d6nng67o

https://coronavirus-yellowcard.mhra.gov.uk/

https://www.youtube.com/watch?app=desktop&v=8aAk36PovnU&t=49s

ΠΑΡΑΛΥΣΗ

ΠΑΡΑΛΥΣΗ ΚΑΤΩ ΑΚΡΩΝ

Diaz-Segarra N, Edmond A, Gilbert C, et al. Painless idiopathic neuralgic amyotrophy after COVID-19 vaccination: A case report. PM R. Epub ahead of print 22 April 2021. DOI: 10.1002/pmrj.12619. [DOI] [PMC free article] [PubMed]

Kim SI, Seok HY, Yi J, Cho JH. Leg paralysis after AstraZeneca COVID-19 vaccination diagnosed as neuralgic amyotrophy of the lumbosacral plexus: a case report. J Int Med Res. 2021 Nov;49(11):3000605211056783. doi: 10.1177/03000605211056783. PMID: 34816739; PMCID: PMC8649466
.
Mahajan S, Zhang F, Mahajan A, et al . Parsonage Turner syndrome after COVID-19 vaccination. Muscle Nerve 2021; 64: E3–E4. [DOI] [PMC free article] [PubMed] [Google Scholar]

ΑΝΙΟΥΣΑ ΠΑΡΑΛΥΣΗ Guillain-Barre Syndrome

Οξεία ή υποξεία ανοσολογικής αρχής πολυριζονευροπάθεια (acute or subacute immune-mediated polyradiculoneuropathy) που χαρακτηρίζεται από διαφορετικού βαθμού αδυναμία των άκρων ή των κρανιακών νεύρων, αισθητηριακές διαταραχές και δυσαυτονομία λόγω απομυελίνωσης περιφερικών νεύρων και ριζών, με ή χωρίς αξονική βλάβη (sensory and dysautonomia symptoms due to peripheral nerves and root demyelination with or without axonal damage)

Incidence of Guillain-Barré Syndrome After COVID-19 Vaccination in the Vaccine Safety Datalink.
Hanson KE, Goddard K, Lewis N, Fireman B, Myers TR, Bakshi N, Weintraub E, Donahue JG, Nelson JC, Xu S, Glanz JM, Williams JTB, Alpern JD, Klein NP
JAMA Netw Open, 5(4):e228879, 01 Apr 2022
Cited by: 77 articles | PMID: 35471572 | PMCID: PMC9044108

Free full text in Europe PMC

Finsterer J. *Exacerbating Guillain-Barré syndrome eight days after vector-based COVID-19 vaccination. Case Rep Infect Dis. 2021;2021:3619131. doi: 10.1155/2021/3619131.* [DOI] [PMC free article] [PubMed] [Google Scholar **neuralgic amyotrophy of the lumbosacral plexus**

Lunn MP*, Cornblath DR, Jacobs BC, Querol L, van Doorn PA, Hughes RA, et al. COVID-19 vaccine and Guillain-Barré syndrome: let's not leap to associations. Brain. 2021;144:357–360. doi: 10.1093/brain/awaa444.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Woo EJ*, Mba-Jonas A, Dimova RB, Alimchandani M, Zinderman CE, Nair N. Association of receipt of the Ad26.COV2.S COVID-19 vaccine with presumptive Guillain-Barré syndrome. JAMA. 2021 February-July;326:1606–1613. doi: 10.1001/jama.2021.16496.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Finsterer J, *Scorza FA, Scorza CA. Post SARS-CoV-2 vaccination Guillain-Barre syndrome in 19 patients. Clinics (Sao Paulo) 2021;76:e3286. doi: 10.6061/clinics/2021/e3286.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Allen CM*, Ramsamy S, Tarr AW, Tighe PJ, Irving WL, Tanasescu R, et al. Guillain-Barré syndrome variant occurring after SARS-CoV-2 vaccination. Ann Neurol. 2021;90:315–318. doi: 10.1002/ana.26144.* [DOI] [PubMed] [Google Scholar]

McKean N*, Chircop C. Guillain-Barré syndrome after COVID-19 vaccination. BMJ Case Rep. 2021;14:e244125. doi: 10.1136/bcr-2021-244125. Latin.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Arce Gálveza L*, Ramírez Abadía LA, de los Reyes Guevara CA, Hernández Orozco JF. [Guillain-Barre syndrome after vaccination for COVID-19. The first report in Latin America] Neurol Perspect. 2021;1:236–238. doi: 10.1016/j.neurop.2021.09.002.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Gunawan PY, Tiffani P, Lalisang L. Guillain-Barre Syndrome Following SARS-CoV-2 Vaccination: A Case Report. Clin Psychopharmacol Neurosci. 2022 Nov 30;20(4):777-780. doi: 10.9758/cpn.2022.20.4.777. PMID: 36263653; PMCID: PMC9606431.

Lamprinou M, Sachinidis A, Stamoula E, Vavilis T, Papazisis G. COVID-19 vaccines adverse events: potential molecular mechanisms. Immunol Res. 2023 Jun;71(3):356-372. doi: 10.1007/s12026-023-09357-5. Epub 2023 Jan 6. PMID: 36607502; PMCID: PMC9821369.

Gunawan PY, Tiffani P, Lalisang L. Guillain-Barre Syndrome Following SARS-CoV-2 Vaccination: A Case Report. Clin Psychopharmacol Neurosci. 2022 Nov 30;20(4):777-780. doi: 10.9758/cpn.2022.20.4.777. PMID: 36263653; PMCID: PMC9606431.

Guillain-Barr⎾ Syndrome Following the BNT162b2 mRNA COVID-19 Vaccine. Acta Neurol Taiwan. 2023

A Case Report of Guillain-Barr⎾ Syndrome In Association with SARS-CoV-2 Vaccination in Malaysia. Acta Neurol Taiwan. 2023

SARS-CoV-2 Vaccination Related, Pediatric Guillain-Barre Syndrome Requires the Same Management as in Adults. Clin Psychopharmacol Neurosci. 2023

Meo SA, Shaikh N, Abukhalaf FA, Meo AS. Exploring the adverse events of Oxford-AstraZeneca, Pfizer-BioNTech, Moderna, and Johnson and Johnson COVID-19 vaccination on Guillain-Barr⎾ Syndrome. Sci Rep. 2024 Aug 13;14(1):18767. doi: 10.1038/s41598-024-66999-7. PMID: 39138276; PMCID: PMC11322667.

K.E. Hanson, K. Goddard, N. Lewis, B. Fireman, T.R. Myers, N. Bakshi, *et al.*
Incidence of Guillain-Barré syndrome after COVID-19 vaccination in the vaccine safety datalink
JAMA Netw Open, 5 (2022), Article E228879, 10.1001/JAMANETWORKOPEN.2022.8879
View at publisherView in ScopusGoogle Scholar

Finsterer J. *Exacerbating Guillain-Barr⎾ syndrome eight days after vector-based COVID-19 vaccination. Case Rep Infect Dis. 2021;2021:3619131. doi: 10.1155/2021/3619131.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Lunn MP*, Cornblath DR, Jacobs BC, Querol L, van Doorn PA, Hughes RA, et al. COVID-19 vaccine and Guillain-Barr⎾ syndrome: let's not leap to associations. Brain. 2021;144:357□360. doi: 10.1093/brain/awaa444.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Diagnostic Pitfalls in Guillain-Barr⎾ Syndrome: Case Report and Literature Review. Children (Basel). 2022.

Onset of Guillain-Barre Syndrome and Transverse Myelitis Following COVID-19 Vaccination.

Cureus. 2023.

Woo EJ, *Mba-Jonas A, Dimova RB, Alimchandani M, Zinderman CE, Nair N. Association of receipt of the Ad26.COV2.S COVID-19 vaccine with presumptive Guillain-Barr⎾ syndrome. JAMA. 2021 February-July;326:1606□1613. doi: 10.1001/jama.2021.16496.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Finsterer J,** Scorza FA, Scorza CA. Post SARS-CoV-2 vaccination Guillain-Barre syndrome in 19 patients. Clinics (Sao Paulo) 2021;76:e3286. doi: 10.6061/clinics/2021/e3286.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Allen CM,** Ramsamy S, Tarr AW, Tighe PJ, Irving WL, Tanasescu R, et al. Guillain-Barr⎾ syndrome variant occurring after SARS-CoV-2 vaccination. Ann Neurol. 2021;90:315□318. doi: 10.1002/ana.26144.* [DOI] [PubMed] [Google Scholar]

***McKean N**, Chircop C. Guillain-Barr⎾ syndrome after COVID-19 vaccination. BMJ Case Rep. 2021;14:e244125. doi: 10.1136/bcr-2021-244125. Latin.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Arce G⟨lveza L**, Ram⟨rez Abad⟨a LA, de los Reyes Guevara CA, Hern⟨ndez Orozco JF. [Guillain-Barre syndrome after vaccination for COVID-19. The first report in Latin America] Neurol Perspect. 2021;1:236□238. doi: 10.1016/j.neurop.2021.09.002.* [DOI] [PMC free article] [PubMed] [Google Scholar]

12 cases of GBS Acute-onset polyradiculoneuropathy after SARS-CoV2 vaccine in the West and North Midlands, United Kingdom
https://pubmed.ncbi.nlm.nih.gov/34786740/

K.E. Hanson, K. Goddard, N. Lewis, B. Fireman, T.R. Myers, N. Bakshi, *et al.*
Incidence of Guillain-Barré syndrome after COVID-19 vaccination in the vaccine safety datalink
JAMA Netw Open, 5 (2022), Article E228879, 10.1001/JAMANETWORKOPEN.2022.8879
View at publisherView in ScopusGoogle Scholar

World Health Organization. Statement of the WHO Global Advisory Committee on Vaccine Safety (GACVS) COVID-19 subcommittee on reports of Guillain-Barré Syndrome (GBS) following adenovirus vector COVID-19 vaccines n.d.
https://www.who.int/news/item/26-07-2021-statement-of-the-who-gacvs-covid-19-subcommittee-on-gbs
(accessed October 23, 2023).
Google Scholar

Overview of Guillain-Barré syndrome after COVID-19 vaccination
https://www.lareb.nl/Knowledge/FilePreview?id=40496&p=33552

***Waheed S**, Bayas A, Hindi F, Rizvi Z, Espinosa PS. Neurological complications of COVID-19: Guillain-Barre syndrome following Pfizer COVID-19 vaccine. Cureus. 2021;13(2):e13426. doi: 10.7759/cureus.13426.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Márquez Loza AM**, Holroyd KB, Johnson SA, Pilgrim DM, Amato AA. 2021 Guillain-Barré syndrome in the placebo and active arms of a COVID-19 vaccine clinical trial: temporal associations do not imply causality [published online ahead of print, 2021 Apr 6]. Neurology. 10.1212/WNL.0000000000011881.* [DOI] [PubMed]

***Patel SU**, Khurram R, Lakhani A, Quirk B. Guillain-Barre syndrome following the first dose of the chimpanzee adenovirus-vectored COVID-19 vaccine, ChAdOx1. BMJ Case Rep. 2021;14(4):e242956. doi: 10.1136/bcr-2021-242956.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Razok A, *Shams A, Almeer A et al. 2021 Post-COVID-19 vaccine Guillain-Barré syndrome; first reported case from Qatar. Authorea. May 07,. DOI: 10.22541/au.162041666.65803989/v1* [DOI] [PMC free article] [PubMed]

Ogbebor O, *Seth H, Min Z, Bhanot N. Guillain-Barré syndrome following the first dose of SARS-CoV-2 vaccine: a temporal occurrence, not a causal association. IDCases. 2021;24:e01143. doi: 10.1016/j.idcr.2021.e01143.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Finsterer J. *Exacerbating Guillain-Barré syndrome eight days after vector-based COVID-19 vaccination. Case Rep Infect Dis. 2021;2021:3619131. doi: 10.1155/2021/3619131.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Maramattom BV, *Krishnan P, Paul R, et al. Guillain-Barré syndrome following ChAdOx1-S/nCoV-19 vaccine. Ann Neurol. 2021;90(2):312–314. doi: 10.1002/ana.26143.* [DOI] [PubMed] [Google Scholar] • *Allen CM, Ramsamy S, Tarr AW, Tighe PJ, Irving WL, Tanasescu R, Evans JR. Guillain-Barré syndrome variant occurring after SARS-CoV-2 vaccination. Ann Neurol. 2021 doi: 10.1002/ana.26144.* [DOI] [PubMed] [Google Scholar]

Kohli S, *Varshney M, Mangla S, Jaiswal B, Chhabra PH. Guillain-Barré syndrome after COVID-19 vaccine: should we assume a causal Link? International Journal of Medical and Pharmaceutical Case Reports. 2021;14(1):20–24. doi: 10.9734/ijmpcr/2021/v14i130124.* [DOI] [Google Scholar]

Azam S, *Khalil A, Taha A. Guillain-Barré syndrome in a 67-year-old male post COVID-19 vaccination (Astra Zeneca) American Journal of Medical Case Reports. 2021;9(8):424–427. doi: 10.12691/ajmcr-9-8-10.* [DOI] [Google Scholar]

Hasan T, *Khan M, Khan F, Hamza G. Case of Guillain-Barré syndrome following COVID-19 vaccine. BMJ Case Rep. 2021;14(6):e243629. doi: 10.1136/bcr-2021-243629.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Theuriet J, *Richard C, Becker J, Pegat A, Bernard E, Vukusic S. 2021 Guillain-Barré syndrome following first injection of ChAdOx1 nCoV-19 vaccine: First report. Rev Neurol (Paris) S0035–3787(21)00585–3 doi:10.1016/j.neurol.2021.04.005* [DOI] [PubMed]*Narasimhalu K, Lee WC, Salkade PR, De Silva DA. Trigeminal and cervical radiculitis after tozinameran vaccination against COVID-19. BMJ Case Rep. 2021;14(6):e242344. doi: 10.1136/bcr-2021-242344.* [DOI] [PMC free article] [PubMed] [Google Scholar]

McKean N, *Chircop C. Guillain-Barré syndrome after COVID-19 vaccination. BMJ Case Rep. 2021;14(7):e244125. doi: 10.1136/bcr-2021-244125.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Exploring the adverse events of Oxford-AstraZeneca, Pfizer-BioNTech, Moderna, and Johnson and Johnson COVID-19 vaccination on Guillain-Barré Syndrome.

Meo SA, Shaikh N, Abukhalaf FA, Meo AS. Sci Rep. 2024 Aug 13;14(1):18767. doi: 10.1038/s41598-024-66999-7. PMID: 39138276 Free PMC article.

Guillain-Barré syndrome and COVID-19 vaccination: a systematic review and meta-analysis.

Censi S, Bisaccia G, Gallina S, Tomassini V, Uncini A. J Neurol. 2024 Mar;271(3):1063-1071. doi: 10.1007/s00415-024-12186-7. Epub 2024 Jan 17. PMID: 38233678 Free PMC article.

ΠΑΡΑΛΥΣΗ ΠΡΟΣΩΠΙΚΟΥ ΝΕΥΡΟΥ (BELL'S PALSY)

***Wan EYF**, Chui CSL, Lai FTT, Chan EWY, Li X, Yan VKC, et al. Bell's palsy following vaccination with mRNA (BNT162b2) and inactivated (CoronaVac) SARS-CoV-2 vaccines: a case series and nested case-control study. Lancet Infect Dis. 2022;22:64□72. doi: 10.1016/S1473-3099(21)00451-5.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Burrows A,** Bartholomew T, Rudd J, Walker D. Sequential contralateral facial nerve palsies following COVID-19 vaccination first and second doses. BMJ Case Rep. 2021;14:e243829. doi: 10.1136/bcr-2021-243829.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Yoon, D., Jung, K., Kim, J., Ko, H., Yoon, B., & Shin, J. (2024). Risk for Facial Palsy after COVID-19 Vaccination, South Korea, 2021–2022. *Emerging Infectious Diseases*, *30*(11), 2313-2322. https://doi.org/10.3201/eid3011.240610.

Shibli R, Barnett O, Abu-Full Z, Gronich N, Najjar-Debbiny R, Doweck I, Rennert G, Saliba W. Association between vaccination with the BNT162b2 mRNA COVID-19 vaccine and Bell's palsy: a population-based study. Lancet Reg Health Eur. 2021 Dec;11:100236. doi: 10.1016/j.lanepe.2021.100236. Epub 2021 Nov 4. PMID: 34751262; PMCID: PMC8566165.

Kim S, Kang M, Park JS, Seok HY. Risk and characteristics of Bell's palsy in adults as an adverse event following COVID-19 vaccination: a retrospective study. Acta Neurol Belg. 2023 Dec;123(6):2185-2193. doi: 10.1007/s13760-023-02204-2. Epub 2023 Feb 12. PMID: 36781626; PMCID: PMC9924857.

Kim HJ, Jeong S, Song J, Park SJ, Oh YH, Jung J, Choi NK, Park SM. Risk of Bell's palsy following SARS-CoV-2 infection: a nationwide cohort study. Clin Microbiol Infect. 2023 Dec;29(12):1581-1586. doi: 10.1016/j.cmi.2023.08.014. Epub 2023 Aug 21. PMID: 37611865.

***Ozonoff A,** Nanishi E, Levy O. Bell's palsy and SARS-CoV-2 vaccines. Lancet Infect Dis. 2021;21(4):450–452. doi: 10.1016/S1473-3099(21)00076-1.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Rafati A, Pasebani Y, Jameie M, Yang Y, Jameie M, Ilkhani S, Amanollahi M, Sakhaei D, Rahimlou M, Kheradmand A. Association of SARS-CoV-2 Vaccination or Infection With Bell Palsy: A Systematic Review and Meta-analysis. JAMA Otolaryngol Head Neck Surg. 2023 Jun 1;149(6):493-504. doi: 10.1001/jamaoto.2023.0160. PMID: 37103913; PMCID: PMC10141297.

Gordon AJ, Varelas A, Eytan DF. Bell's Palsy After Vaccination Against Covid-19: A Systematic Review and Meta-analysis. Otolaryngol Head Neck Surg. 2023 Nov;169(5):1114-1121. doi: 10.1002/ohn.385. Epub 2023 Jun 5. PMID: 37272720.

***Shemer A**, Pras E, Hecht I. Peripheral facial nerve palsy following BNT162b2 (COVID-19) vaccination. Isr Med Assoc J. 2021;23(3):143–144.* [PubMed] [Google Scholar]

Repajic M*, Lai XL, Xu P, Liu A. Bell's Palsy after second dose of Pfizer COVID-19 vaccination in a patient with history of recurrent Bell's palsy. Brain Behav Immun Health. 2021;13:100217. doi: 10.1016/j.bbih.2021.100217.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Colella G, *Orlandi M, Cirillo N. 2021 Bell's palsy following COVID-19 vaccination [published online ahead of print, 2021 Feb 21]. J Neurol. 1–3. doi:10.1007/s00415-021-10462-4* [DOI] [PMC free article] [PubMed]

Martin-Villares C, *Vazquez-Feito A, Gonzalez-Gimeno MJ, de la Nogal-Fernandez B. 2021 Bell's palsy following a single dose of mRNA SARS-CoV-2 vaccine: a case report [published online ahead of print, 2021 May 25]. J Neurol. 1–2. doi:10.1007/s00415-021-10617-3* [DOI] [PMC free article] [PubMed]

Nishizawa Y, *Hoshina Y, Baker V. 2021 Bell's palsy following the Ad26.COV2.S COVID-19 vaccination [published online ahead of print, 2021 May 20]. QJM.;hcab143. doi:10.1093/qjmed/hcab143* [DOI] [PMC free article] [PubMed]

Burrows A, *Bartholomew T, Rudd J, Walker D. Sequential contralateral facial nerve palsies following COVID-19 vaccination first and second doses. BMJ Case Rep. 2021;14(7):e243829. doi: 10.1136/bcr-2021-243829.* [DOI] [PMC free article] [PubMed] [Google Scholar•

Obermann M*, Krasniqi M, Ewers N, Fayad J, Haeberle U. Bell's palsy following COVID-19 vaccination with high CSF antibody response. Neurol Sci. 2021;42(11):4397–4399. doi: 10.1007/s10072-021-05496-5.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Iftikhar H, *Noor SU, Masood M, et al. Bell's palsy after 24 hours of mRNA-1273 SARS-CoV-2 vaccine. Cureus. 2021;13(6):e15935. doi: 10.7759/cureus.15935.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Ozonoff A*, Nanishi E, Levy O. 2021 Bell's palsy and SARS-CoV-2 vaccines-an unfolding story – authors' reply [published online ahead of print, 2021 Jun 7]. Lancet Infect Dis S1473–3099(21)00323–6. doi:10.1016/S1473-3099(21)00323-6* [DOI] [PMC free article] [PubMed]

Shemer A, *Pras E, Einan-Lifshitz A, Dubinsky-Pertzov B, Hecht I. Association of COVID-19 vaccination and facial nerve palsy: a case-control study. JAMA Otolaryngol Head Neck Surg. 2021;147(8):739–743. doi: 10.1001/jamaoto.2021.1259.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Rafati A, *Pasebani Y, Jameie M, Yang Y, Jameie M, Ilkhani S, et al. Association of SARS-CoV-2 vaccination or infection with bell palsy: A systematic review and meta-analysis. JAMA Otolaryngol Head Neck Surg. 2023;149(6):493□504. doi: 10.1001/jamaoto.2023.0160.* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΔΙΠΛΗΓΙΑ ΤΟΥ ΠΡΟΣΩΠΙΚΟΥ ΝΕΥΡΟΥ – ΑΤΥΠΗ ΠΑΡΑΛΛΑΓΗ ΤΟΥ ΣΥΝΔΡΟΜΟΥ GUILLAIN BARRE (FACIAL DIPLEGIA - ATYPICAL VARIANT OF GUILLAIN BARRE)

Bonifacio GB, *Patel D, Cook S, et al. 2021 Bilateral facial weakness with paraesthesia variant of Guillain-Barré syndrome following Vaxzevria COVID-19 vaccine [published online ahead of print, 2021 Jul 14]. J Neurol Neurosurg Psychiatry jnnp-2021–327027. doi:10.1136/jnnp-2021-327027* [DOI] [PubMed]

Nasuelli NA, *De Marchi F, Cecchin M, et al. A case of acute demyelinating polyradiculoneuropathy with bilateral facial palsy after ChAdOx1 nCoV-19 vaccine. Neurol Sci. 2021;42(11):4747–4749. doi: 10.1007/s10072-021-05467-w.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Jain E, *Pandav K, Regmi P, et al. Facial diplegia: a rare, atypical variant of Guillain-Barré syndrome and Ad26.COV2.S Vaccine. Cureus. 2021;13(7):e16612. doi: 10.7759/cureus.16612.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Bonifacio GB, *Patel D, Cook S, et al. 2021 Bilateral facial weakness with paraesthesia variant of Guillain-Barré syndrome following Vaxzevria COVID-19 vaccine [published online ahead of print, 2021 Jul 14]. J Neurol Neurosurg Psychiatry jnnp-2021–327027. doi:10.1136/jnnp-2021-327027* [DOI] [PubMed]

ΠΡΟΣΒΟΛΗ ΑΛΛΩΝ ΚΡΑΝΙΑΚΩΝ ΝΕΥΡΩΝ, ΠΕΡΑΝ ΤΟΥ ΠΡΟΣΩΠΙΚΟΥ

Woo E.J., Winiecki S.K., Ou A.C. Motor palsies of cranial nerves (excluding VII) after vaccination: reports to the US Vaccine Adverse Event Reporting System. Hum Vaccin Immunother. 2014;10:301–305. - PMC - PubMed

ΠΑΡΑΛΥΣΗ ΤΟΥ ΑΠΑΓΩΓΟΥ ΝΕΥΡΟΥ (ΣΥΓΚΛΙΝΩΝ ΣΤΡΑΒΙΣΜΟΣ) (ABDUCENS NERVE PALSY)

Reyes-Capo DP, Stevens SM, Cavuoto KM. Acute abducens nerve palsy following COVID-19 vaccination. J AAPOS. 2021 Oct;25(5):302-303. doi: 10.1016/j.jaapos.2021.05.003. Epub 2021 May 24. PMID: 34044114; PMCID: PMC8142812.

Acute abducens nerve palsy after COVID-19 vaccination in a young adult.

Pawar N, Ravindran M, Padmavathy S, Chakrabarty S. Indian J Ophthalmol. 2021 Dec;69(12):3764-3766. doi: 10.4103/ijo.IJO_1968_21. PMID: 34827043 Free PMC article.

Acute Abducens Nerve Palsy Following the Second Dose of the AstraZeneca COVID-19 Vaccine.

Pereira A, Haslett RS. J Pediatr Ophthalmol Strabismus. 2021 Nov-Dec;58(6):e49-e50. doi: 10.3928/01913913-20210920-01. Epub 2021 Nov 1. PMID: 34851785

Acute abducens nerve palsy following coronavirus disease 2019 vaccination: a case report.

Wang CT, Li JY. J Med Case Rep. 2024 Aug 6;18(1):364. doi: 10.1186/s13256-024-04681-2. PMID: 39103960 Free PMC article.

Ocular motility disorders following coronavirus disease-19 vaccination.

Park KA, Jeon H, Choi DG, Jung JH, Shin HJ, Lee BJ, Moon Y, Lee SY, Lee DC, Cho SY, Kim SJ, Oh SY, Moon S, Oh SY, Choi DD, Choi MY, Kim WJ, Kim US, Lee HJ, Kim Y. Graefes Arch Clin Exp Ophthalmol. 2023 Apr;261(4):1127-1139. doi: 10.1007/s00417-022-05888-z. Epub 2022 Nov 16. PMID: 36383278 Free PMC article.

Bilateral Sequential Abducens Nerve Palsy After Pfizer-BioNTech COVID-19 Vaccine (BNT162b2): A Case Report and Literature Review.

Albattah MF, Al-Hayk K, Albattah M, Alshrouf MA. Cureus. 2024 Jan 5;16(1):e51682. doi: 10.7759/cureus.51682. eCollection 2024 Jan. PMID: 38313970 Free PMC article.

ΡΙΖΙΤΙΣ ΤΟΥ ΤΡΙΔΥΜΟΥ ΝΕΥΡΟΥ ΚΑΙ ΑΥΧΕΝΙΚΩΝ ΝΕΥΡΩΝ (TRIGEMINAL AND CERVICAL RADICULITIS)

A case of trigeminal neuritis developing after a COVID-19 vaccination https://pubmed.ncbi.nlm.nih.gov/34870807/

Taylor ZC, Nunna RS, Tran A, Costa M, Gruber M, Godolias P, Litvack Z. COVID-19 Vaccine Related Cervical Radiculitis and Parsonage-Turner Syndrome: Case Report and Review of the Literature. Turk Neurosurg. 2024;34(2):367-375. doi: 10.5137/1019-5149.JTN.44533-23.2. PMID: 38497190.

ΘΟΛΩΣΗ *(BRAIN FOG)*

έλλειψη πνευματικής διαύγειας, αδυναμία συγκέντρωσης, εύκολη διανοητική κόπωση

https://www.medpagetoday.com/neurology/generalneurology/107644

https://www.science.org/content/article/rare-cases-coronavirus-vaccines-may-cause-long-covid-symptoms

https://breakthroughsforphysicians.nm.org/neurosciences-covid-19-article-impact-of-vaccination-on-long-covid-symptoms.html

https://news.nm.org/new-research-finds-covid-19-vaccination-prior-to-infection-does-not-affect-the-neurological-symptoms-of-long-covid/

https://www.cidrap.umn.edu/covid-19/researchers-identify-mechanism-behind-brain-fog-long-covid

https://www.theguardian.com/society/2024/feb/22/long-covid-brain-fog-may-be-due-to-leaky-blood-brain-barrier-stud

https://www.mayoclinichealthsystem.org/hometown-health/featured-topic/brain-fog-from-long-covid-19

ΔΙΑΤΑΡΑΧΕΣ ΜΝΗΜΗΣ

https://www.nebraskamed.com/COVID/do-the-covid-19-vaccines-cause-memory-loss

https://neurosciencenews.com/covid-vaccine-memory-26381/

https://psychcentral.com/coronavirus/covid-and-memory-loss

https://www.mdpi.com/2076-393X/11/6/1114

https://www.nejm.org/doi/full/10.1056/NEJMc2311200

ΑΙΦΝΙΔΙΑ ΑΠΩΛΕΙΑ ΑΙΣΘΗΣΕΩΝ (SYNCOPE)

Takase B, Hisada T, Masaki N, Nagata M, Shimizu W. Frequency of vaccine-associated syncope after COVID-19 vaccination in adolescents. J Arrhythm. 2022 Apr 21;38(3):448-450. doi: 10.1002/joa3.12721. PMID: 35785378; PMCID: PMC9237291.

Ghoweba M, Sabayon MD. Syncope With Sinus Arrest Following a Single Dose of a COVID-19 Vaccine. Cureus. 2023 Jan 28;15(1):e34309. doi: 10.7759/cureus.34309. PMID: 36860236; PMCID: PMC9970110.

Darrell O. Ricke, Jessica Rose. Signatures of neurological adverse events after vaccination. *Advanced Neurology* 2024, 3(1), 2258. https://doi.org/10.36922/an.2258

Okuyama M, Morino S, Tanaka K, *et al*. Vasovagal reactions after COVID-19 vaccination in Japan. *Vaccine*. 2022;40(41):5997-6000. doi: 10.1016/j.vaccine.2022.08.056

ΠΑΡΟΔΙΚΑ ΙΣΧΑΙΜΙΚΑ ΕΠΕΙΣΟΔΙΑ (TRANSIENT ISCHEMIC ATTACKS - TIA)

https://publichealth.jmir.org/2024/1/e53807

Lu Y, Matuska K, Nadimpalli G, et al. Stroke Risk After COVID-19 Bivalent Vaccination Among US Older Adults. *JAMA.* 2024;331(11):938–950. doi:10.1001/jama.2024.1059
https://www.wjgnet.com/2307-8960/full/v10/i27/9929.htm

Chang CH, Kao SP, Ding DC. Transient ischemic attack after mRNA-based COVID-19 vaccination during pregnancy: A case report. *World J Clin Cases* 2022; 10(27): 9929-9935 [PMID: 36186193 DOI: 10.12998/wjcc.v10.i27.9929]
https://www.mayoclinic.org/diseases-conditions/transient-ischemic-attack/diagnosis-treatment/drc-20355684

ΑΓΓΕΙΑΚΑ ΕΓΚΕΦΑΛΙΚΑ ΕΠΕΙΣΟΔΙΑ - STROKE

Kakovan M, Ghorbani Shirkouhi S, Zarei M, Andalib S. Stroke Associated with COVID-19 Vaccines. J Stroke Cerebrovasc Dis. 2022 Jun;31(6):106440. doi: 10.1016/j.jstrokecerebrovasdis.2022.106440. Epub 2022 Mar 4. PMID: 35339857; PMCID: PMC8894799.

Hiam Chemaitelly, Naveed Akhtar, Salman Al Jerdi, Saadat Kamran, Sujatha Joseph, Deborah Morgan, Ryan Uy, Fatma B. Abid, Abdullatif Al-Khal, Roberto Bertollini, Abdul-Badi Abou-Samra, Adeel A. Butt, Laith J. Abu-Raddad, Association between COVID-19 vaccination and stroke: a nationwide case-control study in Qatar, International Journal of Infectious Diseases, Volume 145, 2024, 107095, ISSN 1201-9712, https://doi.org/10.1016/j.ijid.2024.107095.

No evidence of an increased risk of stroke following vaccination was observed.

Yoshida K, Tanaka K, Suto Y, Fukuda H. Repeated cardioembolic stroke after COVID-19 mRNA vaccination: a case report. *J Stroke Cerebrovasc Dis*. 2022;31:106233. doi: 10.1016/j.jstrokecerebrovasdis.2021.106233 Crossref Google Scholar

GBNews. STROKE Cases SKYROCKET Among Healthy People since COVID - Medical Experts ALARMED [Internet]. YouTube. 2024. Available from: https://www.youtube.com/watch?v=YmvFwrszUMs

Wolfisz F. Thousands apply for government compensation over alleged harm caused by Covid vaccines - with 97 per cent of successful claims related to AstraZeneca jabs [Internet]. 2024 Aug 18; Available from: https://www.dailymail.co.uk/news/article-13754021/thousands-apply-for-government-compensation-over-alleged-harm-caused-by-covid-vaccines-with-97-per-cent-of-successful-claims-related-to-astrazeneca-jabs.html

Schwenk TL. No Evidence of Greater Stroke Risk with Bivalent COVID-19 Vaccines [Internet]. March 2024. Available from: https://www.jwatch.org/na57256/2024/03/21/no-evidence-greater-stroke-risk-with-bivalent-covid-19

Hinojosa IG/ E. Stroke cases in Malaga province have risen by 32% since the outbreak of Covid-19 pandemic. Sur in English [Internet]. Available from: https://www.surinenglish.com/malaga/stroke-cases-malaga-have-risen-since-the-20250210075544-nt.html

Ihle-Hansen H, Bøås H, Tapia G, Hagberg G, Ihle-Hansen H, Berild JD, Selmer R, Karlstad Ø, Gulseth HL, Ariansen I. Stroke After SARS-CoV-2 mRNA Vaccine: A Nationwide Registry Study. Stroke. 2023 May;54(5):e190-e193. doi: 10.1161/STROKEAHA.122.040430. Epub 2023 Mar 30. PMID: 36994734.

The authors stated that they did not find any temporal association between SARS-CoV-2 mRNA-based vaccine and stroke.

Stroke Risk After COVID-19 Bivalent Vaccination Among ...

JAMA Network

https://jamanetwork.com › ...

· Μετάφραση αυτής της σελίδας

από **Y Lu** · **2024** · Γίνεται αναφορά σε 10 — The risk of *stroke* was not significantly elevated during the 1- to 21-day or 22- to 42-day risk window *after vaccination* compared with the 43- to 90-day

Kolahchi, Z., *Khanmirzaei, M. & Mowla, A. Acute ischemic stroke and vaccine-induced immune thrombotic thrombocytopenia post COVID-19 vaccination; A systematic review. J. Neurol. Sci.* ***439***, *120327. 10.1016/j.jns.2022.120327 (2022).* [DOI] [PMC free article] [PubMed] [Google Scholar]

Majidi, S. *et al. Emergent large vessel occlusion stroke during New York City's COVID-19 outbreak: Clinical characteristics and paraclinical findings. Stroke* ***51***, *2656–2663. 10.1161/STROKEAHA.120.030397 (2020).* [DOI] [PMC free article] [PubMed] [Google Scholar]

Nannoni, S., *de Groot, R., Bell, S. & Markus, H. S. Stroke in COVID-19: A systematic review and meta-analysis. Int. J. Stroke* ***16***, *137–149. 10.1177/1747493020972922 (2021).* [DOI] [PMC free article] [PubMed] [Google Scholar]

Kim, B. H. *& Yoo, M. C. Intracranial hemorrhage due to potential rupture of an arteriovenous malformation after BNT162b2 COVID-19 mRNA vaccination in a young korean woman: Case report. Vaccines (Basel)10.3390/vaccines10030362 (2022).* [DOI] [PMC free article] [PubMed] [Google Scholar]

Choi, J. K. *et al. Intracerebral hemorrhage due to thrombosis with thrombocytopenia syndrome after vaccination against COVID-19: the first fatal case in Korea. J. Korean Med. Sci.* ***36***, *e223. 10.3346/jkms.2021.36.e223 (2021).* [DOI] [PMC free article] [PubMed] [Google Scholar]

Takeyama, R. *et al. Intracerebral hemorrhage due to vasculitis following COVID-19 vaccination: A case report. Acta Neurochir. (Wien)* ***164***, *543–547. 10.1007/s00701-021-05038-0 (2022).* [DOI] [PMC free article] [PubMed] [Google Scholar]

Stefanou, M. I. *et al. Acute arterial ischemic stroke following COVID-19 vaccination: A systematic review and meta-analysis. Neurology* ***99***, *e1465–e1474. 10.1212/WNL.0000000000200996 (2022).* [DOI] [PubMed] [Google Scholar]

Kakovan, *M., Ghorbani Shirkouhi, S., Zarei, M. & Andalib, S. Stroke associated with COVID-19 vaccines. J. Stroke Cerebrovasc. Dis.* ***31***, *106440. 10.1016/j.jstrokecerebrovasdis.2022.106440 (2022).* [DOI] [PMC free article] [PubMed] [Google Scholar]

Liu, J., *Cao, F., Luo, C., Guo, Y. & Yan, J. stroke following coronavirus disease 2019 vaccination: Evidence based on different designs of real-world studies. J. Infect. Dis.* ***228***, *1336–1346. 10.1093/infdis/jiad306 (2023).* [DOI] [PubMed] [Google Scholar]

Stroke After SARS-CoV-2 mRNA Vaccine: A Nationwide ...

American Heart Association Journals
https://www.ahajournals.org › ...

· Μετάφραση αυτής της σελίδας
από H Ihle-Hansen · 2023 · Γίνεται αναφορά σε 12 — During the first 28 days *after* an mRNA *vaccine*, 2104 people experienced a *stroke* (82% ischemic *stroke*, 13% intracerebral hemorrhage, and 5% .

Freedom of Information request on Incidence of stroke/TIA ...

GOV.UK
https://www.gov.uk › f...

Incidence of ischemic stroke after COVID-19 bivalent ...

National Institutes of Health (NIH) (.gov)
https://pubmed.ncbi.nlm.nih.gov › ...

· Μετάφραση αυτής της σελίδας
από KA Sharff — The incidence of ischemic *stroke* or TIA was 34.3 per 100,000 (95 % CI, 17.7-59.9) in patients 65 years or older who received the bivalent Pfizer ..

Blood group may predict the risk of stroke when receiving ...

Imperial College Healthcare NHS Trust
https://www.imperial.nhs.uk › ...
Association between COVID-19 vaccination and stroke

Μετάφραση αυτής της σελίδας
13 Δεκ 2023 — *Blood groups could help predict the risk of a blood clot on the brain*, known as a venous stroke, after receiving the Oxford-AstraZeneca Covid-19 vaccine

· Μετάφραση αυτής της σελίδας
από H Chemaitelly · 2024 · Γίνεται αναφορά σε 1 — Conclusion. *There was no evidence of an increased risk of stroke following vaccination*, both in the short term and in the long term, extending beyond a year ...

Journal of Stroke and Cerebrovascular Diseases
https://www.strokejournal.org › ...

· Μετάφραση αυτής της σελίδας

από M Kakovan · 2022 · Γίνεται αναφορά σε 50 — This review paper summarizes *reports of stroke after COVID-19 vaccination* and gives account of its clinical picture, management, and treatment.

· [Μετάφραση αυτής της σελίδας]
από MI Stefanou · 2022 · Γίνεται αναφορά σε 31 — Stefanou and colleagues conducted the first meta-analysis to estimate the prevalence of acute arterial ischemic *stroke* (AIS) *following COVID*-19

ΟΞΥ ΕΓΚΕΦΑΛΙΚΟ ΙΣΧΑΙΜΙΚΟ ΕΠΕΙΣΟΔΙΟ

Rizzo, P.A.; Bellavia, S.; Scala, I.; Colò, F.; Broccolini, A.; Antonica, R.; Vitali, F.; Angeloni, B.M.; Brunetti, V.; Di Iorio, R.; et al. COVID-19 Vaccination Is Associated with a Better Outcome in Acute Ischemic Stroke Patients: A Retrospective Observational Study. J.Clin. Med. 2022, 11, 6878. https://doi.org/10.3390/jcm11236878

Stefanou MI, Palaiodimou L, Aguiar de Sousa D, Theodorou A, Bakola E, Katsaros DE, Halvatsiotis P, Tzavellas E, Naska A, Coutinho JM, Sandset EC, Giamarellos-Bourboulis EJ, Tsivgoulis G. Acute Arterial Ischemic Stroke Following COVID-19 Vaccination: A Systematic Review and Meta-analysis. Neurology. 2022 Oct 3;99(14):e1465-e1474. doi: 10.1212/WNL.0000000000200996. PMID: 36002319.

McMillan N, Rosenberg HJ, Anderson MP, Pal P, Stephenson K, Fehnel CR. Fatal Post COVID mRNA-Vaccine Associated Cerebral Ischemia. Neurohospitalist. 2023 Apr;13(2):156-158. doi: 10.1177/19418744221136898. Epub 2022 Dec 5. PMID: 37064937; PMCID: PMC10091442.

Dr. John Campbell. Stroke and death after Moderna [Internet]. YouTube.May 2024. Available from: https://www.youtube.com/watch?v=OLD3JIWqr6w

ΕΓΚΕΦΑΛΙΚΗ ΑΙΜΟΡΡΑΓΙΑ

Bjørnstad-Tuveng TH, Rudjord A, Anker P. Fatal cerebral haemorrhage after COVID- 19 vaccine. Tidsskr Nor Laegeforen 2021;141:33928772.

Choi J-K, Kim S, Kim SR, et al. Intracerebral hemorrhage due to thrombosis with thrombocytopenia syndrome after vaccination against COVID-19: the first fatal case in Korea. J Korean Med Sci 2021;36.

Covid Shots May Slightly Raise Stroke Risk in the Oldest ...

University of Nebraska Medical Center
https://www.unmc.edu › ...

· Μετάφραση αυτής της σελίδας

24 Οκτ 2023 — The Covid vaccines made by Pfizer-BioNTech and Moderna may be linked to a slight increase in the risk of stroke when administered along with a high-dose flu ...

· Μετάφραση αυτής της σελίδας
1 Ιουν 2022 — No association between COVID-19 vaccination and other types of strokes without thrombocytopenia has been identified following over 140 million

Covid shots may slightly raise stroke risk in the oldest recipients [Internet]. The Transmission. Oct 2023. Available from: https://www.unmc.edu/healthsecurity/transmission/2023/10/24/covid-shots-may-slightly-raise-stroke-risk-in-the-oldest-recipients/

ΒΛΑΒΗ ΒΡΑΧΙΟΝΙΟΥ ΠΛΕΓΜΑΤΟΣ/ ΣΥΝΔΡΟΜΟ PARSONAGE-TURNER

Εκδηλώνεται με οξύ μονόπλευρο πόνο στον ώμο και ακολουθεί παράλυση/ατροφία του άνω άκρου από βλάβη του βραχιονίου πλέγματος

A Rare Case of Brachial Plexus Neuropraxia After COVID-19 Vaccination
https://pubmed.ncbi.nlm.nih.gov/35186534

Mahajan S, *Zhang F, Mahajan A, Zimnowodzki S. Parsonage Turner syndrome after COVID-19 vaccination. Muscle Nerve. 2021;64(1):E3–E4. doi: 10.1002/mus.27255.* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΜΗΝΙΓΓΙΤΙΣ

Atefi A, Ghanaatpisheh A, Ghasemi A, Haghshenas H, Eyvani K, Bakhshi A, Esfandiari MA, Aram C, Saberi A. Meningitis after COVID-19 vaccination, a systematic review of case reports and case series. BMC Infect Dis. 2024 Oct 10;24(1):1138. doi: 10.1186/s12879-024-10043-6. Erratum in: BMC Infect Dis. 2024 Nov 5;24(1):1244. doi: 10.1186/s12879-024-10087-8. PMID: 39390499; PMCID: PMC11468859.

Aseptic meningitis after SARS-CoV-2 Pfizer/BioNTech vaccination

Dupon, Journal of Nanoscience and Nanotechnology, 2022

ΕΓΚΕΦΑΛΙΤΙΔΑ, ΕΓΚΕΦΑΛΟΜΥΕΛΙΤΙΔΑ ADEM (ACUTE DISSEMINATED ENCEPHALOMYELITIS)

Morgan H, Clothier H, Kattan G, et al. Acute disseminated encephalomyelitis and transverse myelitis following covid-19 vaccination—a self controlled case series analysis. Vaccine 2024 Feb 12:S0264-410X(24)00126-9.

A case report of ChAdOx1 nCoV-19 vaccine-associated encephalitis https://pubmed.ncbi.nlm.nih.gov/34903200/

Acute Vaccine-Related Encephalopathy and Acute Disseminated Encephalomyelitis (ADEM) After COVID-19 Vaccination: A Case Series From Bangladesh https://pubmed.ncbi.nlm.nih.gov/37398807/

Torrealba-Acosta G, *Martin JC, Huttenbach Y, et al. Acute encephalitis, myoclonus and Sweet syndrome after mRNA-1273 vaccine. BMJ Case Rep. 2021;14(7):e243173. doi: 10.1136/bcr-2021-243173.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Baldelli L, *Amore G, Montini A, et al. Hyperacute reversible encephalopathy related to cytokine storm following COVID-19 vaccine. J Neuroimmunol. 2021;358:577661. doi: 10.1016/j.jneuroim.2021.577661.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Vogrig A, *Janes F, Gigli GL. Acute disseminated encephalomyelitis after SARS-CoV-2 vaccination. Clin Neurol Neurosurg. 2021;208:106839. doi: 10.1016/j.clineuro.2021.106839.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Zuhorn F, *Graf T, Klingebiel R, Schäbitz WR, Rogalewski A. Postvaccinal encephalitis after ChAdOx1 nCov-19. Ann Neurol. 2021;90(3):506–511. doi: 10.1002/ana.26182.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Jarius S, Bieber N, Haas J, Wildemann B. MOG encephalomyelitis after vaccination against severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2): case report and comprehensive review of the literature. J Neurol. 2022 Oct;269(10):5198-5212. doi: 10.1007/s00415-022-11194-9. Epub 2022 Jun 23. PMID: 35737110; PMCID: PMC9219396

Nakano H, Yamaguchi K, Hama N, Matsumoto Y, Shinohara M, Ide H. Relapsing Anti-MOG Antibody-associated Disease following COVID-19 Vaccination: A Rare Case Report and Review of the Literature. Intern Med. 2023 Mar 15;62(6):923-928. doi: 10.2169/internalmedicine.0504-22. Epub 2022 Dec 28. PMID: 36575011; PMCID: PMC10076135.

Yoshino F, Ozaki Y, Shibahara T, Matsuoka M, Tachibana M, Ago T, Kitazono T, Kuroda J, Nakane H. FLAIR hyperintense cortical lesions in anti-myelin oligodendrocyte glycoprotein antibody-associated encephalitis with seizure following SARS-CoV-2 mRNA vaccination. eNeurologicalSci. 2023 Dec 22;34:100492. doi: 10.1016/j.ensci.2023.100492. PMID: 38469372; PMCID: PMC10926202.

Y. Kobayashi, S. Karasawa, N. Ohashi, K. Yamamoto.
A case of encephalitis following COVID-19 vaccine.
J Infect Chemother, 28 (2022), pp. 975-977
http://dx.doi.org/10.1016/j.jiac.2022.02.009 | Medline

M. Viscasillas Sancho, C. Moreno Loscertales, S. García Rubio, D. Sagarra Mur. Hashimoto encephalopathy after vaccination against SARS-CoV-2
Encefalopatía de Hashimoto post-vacuna frente a SARS-CoV-2. Neurología (English Edition) Vol. 38. Issue 8. Pages 601-602 (October 2023) DOI: 10.1016/j.nrleng.2022.09.005

Ahn SJ, Lee ST, Chu K. Postvaccinal GABA-B receptor antibody encephalitis after ChAdOx1 nCoV-19 vaccination. *Ann Clin Transl Neurol*. 2022;9(10):1673-1678. PMID: **36053935** PMCID: PMC9537891 DOI: 10.1002/acn3.51659

ΜΥΕΛΙΤΙΣ

Malhotra SH, *Gupta P, Prabhu V, Garg RK, Dandu H, Agarwal V. COVID-19 vaccination-associated myelitis [published online ahead of print, 2021 Mar 31]. QJM. 2021;hcab069. 10.1093/qjmed/hcab069* [DOI] [PMC free article] [PubMed]

- ***Fitzsimmons, William and Nance,*** *Christopher S., Sudden onset of myelitis after COVID-19 vaccination: an under-recognized severe rare adverse event (May 5, 2021). Available at SSRN: https://ssrn.com/abstract=3841558 or 10.2139/ssrn.3841558*

ΟΞΕΙΑ ΕΓΚΑΡΣΙΑ ΜΥΕΛΙΤΙΣ (ACUTE TRANSVERSE MYELITIS)

Morgan H, Clothier H, Kattan G, et al. Acute disseminated encephalomyelitis and transverse myelitis following covid-19 vaccination—a self controlled case series analysis. Vaccine 2024 Feb 12:S0264-410X(24)00126-9.

Tahir N, *Koorapati G, Prasad S, et al. SARS-CoV-2 vaccination-induced transverse myelitis. Cureus. 2021;13(7):e16624. doi: 10.7759/cureus.16624.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Román GC*, Gracia F, Torres A, Palacios A, Gracia K, Harris D. Acute transverse myelitis (ATM):clinical review of 43 patients with COVID-19-associated ATM and 3 post-vaccination ATM serious adverse events with the ChAdOx1 nCoV-19 vaccine (AZD1222) Front Immunol. 2021;26(12):653786. doi: 10.3389/fimmu.2021.653786.PMID:33981305;PMCID:PMC8107358.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Acute transverse myelitis following SARS-CoV-2 vaccination: a case report and review of literature
https://pubmed.ncbi.nlm.nih.gov/34482455/

Acute autoimmune transverse myelitis following COVID-19 vaccination: A case report
https://pubmed.ncbi.nlm.nih.gov/34941191/
A case report of longitudinal extensive transverse myelitis: immunotherapy related adverse effect vs. COVID-19 related immunization complications
https://pubmed.ncbi.nlm.nih.gov/35369847/

Acute Transverse Myelitis (ATM):Clinical Review of 43 Patients With COVID-19-Associated ATM and 3 Post-Vaccination ATM Serious Adverse Events With the ChAdOx1 nCoV-19 Vaccine (AZD1222)
https://pubmed.ncbi.nlm.nih.gov/33981305/

Acute transverse myelitis after BNT162b2 vaccination against COVID-19: Report of a fatal case and review of the literature
https://pubmed.ncbi.nlm.nih.gov/34953348/

Acute Transverse Myelitis after COVID-19 Vaccination
https://pubmed.ncbi.nlm.nih.gov/34684047/

Maroufi SF, Naderi Behdani F, Rezania F, Tanhapour Khotbehsara S, Mirzaasgari Z. Longitudinally extensive transverse myelitis after Covid-19 vaccination: case report and review of literature. Hum Vaccin Immunother. 2022 Dec 31;18(1):2040239. doi: 10.1080/21645515.2022.2040239. Epub 2022 Mar 3. PMID: 35240927; PMCID: PMC9009891.

ΔΙΑΜΗΚΗΣ ΕΚΤΕΤΑΜΕΝΗ ΕΓΚΑΡΣΙΑ ΜΥΕΛΙΤΙΣ (LETM, LONGITUDINALLY EXTENSIVE TRANSVERSE MYELITIS)

***Pagenkopf C**, Südmeyer M. A case of longitudinally extensive transverse myelitis following vaccination against Covid-19. J Neuroimmunol. 2021;358:577606. doi: 10.1016/j.jneuroim.2021.577606.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Helmchen C**, Buttler GM, Markewitz R, Hummel K, Wiendl H, Boppel T. 2021 Acute bilateral optic/chiasm neuritis with longitudinal extensive transverse myelitis in longstanding stable multiple sclerosis following vector-based vaccination against the SARS-CoV-2 [published online ahead of print, Jun 15]. J Neurol. 2021;1–6. 10.1007/s00415-021-10647-x* [DOI] [PMC free article] [PubMed]

ΔΙΑΤΑΡΑΧΕΣ ΣΤΟ ΦΑΣΜΑ ΟΠΤΙΚΗΣ ΝΕΥΡΟΜΥΕΛΙΤΙΔΑΣ (NMOSD - NEUROMYELITIS OPTICA SPECTRUM DISORDERS)

***Helmchen C**, Buttler GM, Markewitz R, Hummel K, Wiendl H, Boppel T. 2021 Acute bilateral optic/chiasm neuritis with longitudinal extensive transverse myelitis in longstanding stable multiple sclerosis following vector-based vaccination against the SARS-CoV-2 [published online ahead of print, Jun 15]. J Neurol. 2021;1–6. 10.1007/s00415-021-10647-x* [DOI] [PMC free article] [PubMed]

***Chen S**, Fan XR, He S, Zhang JW, Li SJ. Watch out for neuromyelitis optica spectrum disorder after inactivated virus vaccination for COVID-19. Neurol Sci. 2021;42(9):3537–3539. doi: 10.1007/s10072-021-05427-4.* [DOI] [PMC free article] [PubMed] [Google Scholar

Bianco A, Di Sante G, Colò F, De Arcangelis V, Cicia A, Del Giacomo P, De Bonis M, Morganti TG, Carlomagno V, Lucchini M, Minucci A, Calabresi P, Mirabella M. Multiple Sclerosis Onset before and after COVID-19 Vaccination: Can HLA Haplotype Be Determinant? Int J Mol Sci. 2024 Apr 22;25(8):4556. doi: 10.3390/ijms25084556. PMID: 38674141; PMCID: PMC11050425.

***Mirmosayyeb O,** Ghaffary EM, Vaheb S, Pourkazemi R, Shaygannejad V. Multiple sclerosis (MS) and neuromyelitis optica spectrum disorder (NMOSD) following COVID-19 vaccines: A systematic review. Rev Neurol (Paris) 2023;179(4):265–81. doi: 10.1016/j.neurol.2022.11.004.* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΣΥΝΔΡΟΜΟ ΟΠΙΣΘΙΑΣ ΑΝΑΣΤΡΕΨΙΜΗΣ ΕΓΚΕΦΑΛΟΠΑΘΕΙΑΣ (PRES - POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME)

Zelaya JE, Al-Khoury L. Posterior Reversible Encephalopathy Syndrome. [Updated 2024 Oct 11]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK554492/

McCullough J, Ahmad M, Tam I, Portnoy R, Ng J, Zachary K, Kaell A. Posterior Reversible Encephalopathy Syndrome Onset Within 24 Hours Following Moderna mRNA Booster COVID-19 Vaccination: Vaccine Adverse Event Vs. Hypertension? Cureus. 2022 May 11;14(5):e24919. doi: 10.7759/cureus.24919. PMID: 35706738; PMCID: PMC9187357.

Srichawla BS, Fang T, Kipkorir V, Garcia-Dominguez MA. Reversible cerebral vasoconstriction syndrome and posterior reversible encephalopathy syndrome following vaccination: analysis of the VAERS database and systematic review. Ann Med Surg (Lond). 2023 Oct 18;86(3):1251-1260. doi: 10.1097/MS9.0000000000001407. PMID: 38463101; PMCID: PMC10923363.

Huq M, Kawnayn G, Kabir H, et al. (May 30, 2023) Acute Vaccine-Related Encephalopathy and Acute Disseminated Encephalomyelitis (ADEM) After COVID-19 Vaccination: A Case Series From Bangladesh. Cureus 15(5): e39724. **DOI:** 10.7759/cureus.39724

ΚΑΚΟΗΘΕΣ ΝΕΥΡΟΛΗΠΤΙΚΟ ΣΥΝΔΡΟΜΟ (NEUROLEPTIC MALIGNANT SYNDROME)

Alfishawy M, *Bitar Z, Elgazzar A, Elzoueiry M. 2021 Neuroleptic malignant syndrome following COVID-19 vaccination [published online ahead of print, Feb 20]. Am J Emerg Med. 2021;S0735–6757(21)00117–0. 10.1016/j.ajem.2021.02.011* [DOI] [PMC free article] [PubMed]

Mizuno T, Takahashi R, Kamiyama T, Suzuki A, Suzuki M. Neuroleptic Malignant Syndrome with Adrenal Insufficiency After BNT162b2 COVID-19 Vaccination in a Man Taking Valproate: A Case Report. Am J Case Rep. 2022 May 6;23:e936217. doi: 10.12659/AJCR.936217. PMID: 35514081; PMCID: PMC9087139

ΝΕΥΡΟΠΑΘΕΙΑ ΜΙΚΡΩΝ ΝΕΥΡΙΚΩΝ ΙΝΩΝ (SMALL FIBER NEUROPATHY)

Acute small fiber neuropathy after Oxford-AstraZeneca ChAdOx1-S vaccination: A report of three cases and review of the literature
https://pubmed.ncbi.nlm.nih.gov/35962630/

Waheed W*, Carey ME, Tandan SR, Tandan R. Post COVID-19 vaccine small fiber neuropathy. Muscle Nerve. 2021;64(1):E1–E2. doi: 10.1002/mus.27251.* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΝΕΥΡΑΛΓΙΚΗ ΑΜΥΟΤΡΟΦΙΑ (NEURALGIC AMYOTROPHY)

Diaz-Segarra N, *Edmond A, Gilbert C, Mckay O, Kloepping C, Yonclas P. 2021 Painless idiopathic neuralgic amyotrophy after COVID-19 vaccination: a case report [published online ahead of print, 2021 Apr 22]. PM R.;10.1002/pmrj.12619* [DOI] [PMC free article] [PubMed

Kim JE, Park J, Min YG, Hong YH, Song TJ. Associations of neuralgic amyotrophy with COVID-19 vaccination: Disproportionality analysis using the World Health Organization pharmacovigilance database. Muscle Nerve. 2022 Dec;66(6):766-770. doi: 10.1002/mus.27734. Epub 2022 Oct 26. PMID: 36214181; PMCID: PMC9874732.

ΠΡΟΩΡΗ Ή ΤΑΧΕΩΣ ΕΞΕΛΙΣΣΟΜΕΝΗ ΑΝΟΙΑ

***Chakrabarti S**. S., Tiwari A., Jaiswal S., Kaur U., Kumar I., Mittal A., et al. (2022). Rapidly progressive dementia with asymmetric rigidity following ChAdOx1 nCoV-19 vaccination. Aging Dis. 13 (3), 633–636. 10.14336/AD.2021.1102* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Idrees D**., Kumar V. (2021). SARS-CoV-2 spike protein interactions with amyloidogenic proteins: potential clues to neurodegeneration. Biochem. Biophys. Res. Commun. 554, 94□98. 10.1016/j.bbrc.2021.03.100* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΝΕΟΕΜΦΑΝΙΖΟΜΕΝΕΣ ΑΠΟΜΥΕΛΙΝΩΤΙΚΕΣ ΒΛΑΒΕΣ DEMYELINATING BRAIN LESIONS, ΜΕ Η ΧΩΡΙΣ ΑΝΙΧΝΕΥΣΗ ΕΙΔΙΚΩΝ ΑΝΤΙΣΩΜΑΤΩΝ

A Case of Multiple Sclerosis Uncovered Following Moderna SARS-CoV-2 Vaccination https://pubmed.ncbi.nlm.nih.gov/36694492/

A Case of Multiple Sclerosis Uncovered Following Moderna SARS-CoV-2 Vaccination https://www.cureus.com/articles/85770-a-case-of-multiple-sclerosis-uncovered-following-moderna-sars-cov-2-vaccination#!

Acute Multiple Sclerosis Exacerbation After Vaccination With the Johnson & Johnson COVID-19 Vaccine: Novel Presentation and First Documented Case Report https://pubmed.ncbi.nlm.nih.gov/35547449/

Havla J, Schultz Y, Zimmermann H, Hohlfeld R, Danek A, Kümpfel T. *2021 First manifestation of multiple sclerosis after immunization with the Pfizer-BioNTech COVID-19 vaccine [published online ahead of print, 2021 Jun 11]. J Neurol. 1–4. 10.1007/s00415-021-10648-w* [DOI] [PMC free article] [PubMed]

Idrees D, Kumar V. SARS-CoV-2 spike protein interactions with amyloidogenic proteins: Potential clues to neurodegeneration. Biochem Biophys Res Commun. 2021;554:94-98. doi:10.1016/j.bbrc.2021.03.100

Tetz, G.; Tetz, V. SARS-CoV-2 Prion-Like Domains in Spike Proteins Enable Higher Affinity to ACE2. Preprints 2020, 2020030422 (doi:10.20944/preprints202003.0422.v1).

Liu S, Hossinger A, Heumüller SE, Hornberger A, Buravlova O, Konstantoulea K, Müller SA, Paulsen L, Rousseau F, Schymkowitz J, Lichtenthaler SF, Neumann M, Denner P, Vorberg IM. *Highly efficient intercellular spreading of protein misfolding mediated by viral ligand-receptor interactions. Nat Commun. 2021 Oct 19;12(1):5739*. https://doi.org/10.1038/s41467-021-25855-2. PubMed.

https://www.alzforum.org/news/research-news/viral-proteins-help-shuttle-tau-aggregates-among-cells

Kim KH, Kim SH, Park NY, Hyun JW, Kim HJ. *Onset of various CNS inflammatory demyelination diseases following COVID-19 vaccinations. Mult Scler Relat Disord. 2022;68:104141. doi: 10.1016/j.msard.2022.104141.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Ebrahimi N, Mazdak M, Shaygannejad V, Mirmosayyeb O. *CNS demyelinating disease following inactivated or viral vector SARS-CoV-2 vaccines: A case series. Vaccine. 2023;41(5):1003–8. doi: 10.1016/j.vaccine.2023.01.003.* [DOI] [PMC free article] [PubMed] [Google Scholar]

CNS demyelinating disease following inactivated or viral vector SARS-CoV-2 vaccines: A case series.

Vaccine. 2023.

Sedaghat N, Etemadifar M, Lotfi N, Sayahi F, Chitsaz A, Salari M, Ghasemi Movaghar A. *Third COVID-19 vaccine dose for people with multiple sclerosis who did not seroconvert following two doses of BBIBP-CorV (Sinopharm) inactivated vaccine: A pilot study on safety and immunogenicity*. Front Immunol. 2023 Feb 21;14:952911. doi: 10.3389/fimmu.2023.952911. PMID: 36895555; PMCID: PMC9989190.

Idrees D., Kumar V. *SARS-CoV-2 spike protein interactions with amyloidogenic proteins: Potential clues to neurodegeneration. Biochem. Biophys. Res. Commun. 2021;554:94–98. doi: 10.1016/j.bbrc.2021.03.100.* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΠΟΛΛΑΠΛΗ ΣΚΛΗΡΥΝΣΗ Ή ΣΚΛΗΡΥΝΣΗ ΚΑΤΑ ΠΛΑΚΑΣ (MS - MULTIPLE SCLEROSIS)

Kaulen L.D., Doubrovinskaia S., Mooshage C., Jordan B., Purrucker J., Haubner C., Seliger C., Lorenz H.-M., Nagel S., Wildemann B., et al. *Neurological Autoimmune Diseases Following Vaccinations against SARS-CoV-2: A Case Series. Eur. J. Neurol. 2022;29:555–563. doi: 10.1111/ene.15147.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Li X., Raventós B., Roel E., Pistillo A., Martinez-Hernandez E., Delmestri A., Reyes C., Strauss V., Prieto-Alhambra D., Burn E., et al. *Association between Covid-19 Vaccination, SARS-CoV-2 Infection, and Risk of Immune Mediated Neurological Events: Population Based Cohort and Self-Controlled Case Series Analysis. BMJ. 2022;376:e068373. doi: 10.1136/bmj-2021-068373.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Patone M., Handunnetthi L., Saatci D., Pan J., Katikireddi S.V., Razvi S., Hunt D., Mei X.W., Dixon S., Zaccardi F., et al. *Neurological Complications after First Dose of COVID-19 Vaccines and SARS-CoV-2 Infection. Nat. Med. 2021;27:2144–2153. doi: 10.1038/s41591-021-01556-7.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Paybast S, Jameie M, Shahbazi M, Habibi MA, Mohammadianinejad SE, Harirchian MH. New diagnosis of multiple sclerosis in the setting of recent Sinopharm COVID-19 vaccine (BBIBP-CorV) exposure: A series of clinical cases and updated review of the literature. Curr J Neurol. 2024 Jan 5;23(1):21-38. doi: 10.18502/cjn.v23i1.16430. PMID: 39431229; PMCID: PMC11489623.

***Toljan K**, Amin M, Kunchok A, Ontaneda D. New diagnosis of multiple sclerosis in the setting of mRNA COVID-19 vaccine exposure. J Neuroimmunol. 2022;362:577785. doi: 10.1016/j.jneuroim.2021.577785.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Khayat-Khoei M**, Bhattacharyya S, Katz J, Harrison D, Tauhid S, Bruso P, et al. COVID-19 mRNA vaccination leading to CNS inflammation: A case series. J Neurol. 2022;269(3):1093–106. doi: 10.1007/s00415-021-10780-7.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Havla J,** Schultz Y, Zimmermann H, Hohlfeld R, Danek A, Kumpfel T. First manifestation of multiple sclerosis after immunization with the Pfizer-BioNTech COVID-19 vaccine. J Neurol. 2022;269(1):55–8. doi: 10.1007/s00415-021-10648-w.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Fujimori J, Miyazawa K, Nakashima I. *Initial clinical manifestation of multiple sclerosis after immunization with the Pfizer-BioNTech COVID-19 vaccine. J Neuroimmunol. 2021;361:577755. doi: 10.1016/j.jneuroim.2021.577755.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Ismail II, Salama S. *A systematic review of cases of CNS demyelination following COVID-19 vaccination. J Neuroimmunol. 2022;362:577765. doi: 10.1016/j.jneuroim.2021.577765.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Tagliaferri AR, *Horani G, Stephens K, Michael P. A rare presentation of undiagnosed multiple sclerosis after the COVID-19 vaccine. J Community Hosp Intern Med Perspect. 2021;11(6):772–5. doi: 10.1080/20009666.2021.1979745.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Mathew T, John SK. *COVID-19 vaccine (ChAdOx1 nCoV-19 Corona virus vaccine (Recombinant) – COVISHIELD related MS relapse. Neuroimmunology Reports. 2021;1:100006.* [Google Scholar]

Abara WE, *Gee J, Marquez P, Woo J, Myers TR, DeSantis A, et al. Reports of Guillain-Barre syndrome after COVID-19 vaccination in the United States. JAMA Netw Open. 2023;6(2):e2253845. doi: 10.1001/jamanetworkopen.2022.53845.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Mirmosayyeb O**, Ghaffary EM, Vaheb S, Pourkazemi R, Shaygannejad V. Multiple sclerosis (MS) and neuromyelitis optica spectrum disorder (NMOSD) following COVID-19 vaccines: A systematic review. Rev Neurol (Paris) 2023;179(4):265–81. doi: 10.1016/j.neurol.2022.11.004.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Di Filippo M, Ferraro D, Ragonese P, Prosperini L, Maniscalco GT, Gallo A et al (2024) SARS-CoV-2 vaccination and multiple sclerosis: a large multicentric study on relapse risk after the third booster dose. J Neurol 271:24–31. https://doi.org/10.1007/s00415-023-12034-0
Article CAS PubMed Google Scholar

Pugliatti M, Hartung HP, Oreja-Guevara C, Pozzilli C, Airas L, Alkhawajah M et al (2022) Anti-SARS-CoV-2 vaccination in people with multiple sclerosis: lessons learnt a year in. Front Immunol 13:1045101. https://doi.org/10.3389/fimmu.2022.1045101
Article CAS PubMed PubMed Central Google Scholar

Inojosa H, Schriefer D, Atta Y, Dillenseger A, Proschmann U, Schleussner K et al (2024) Insights from real-world practice: the dynamics of SARS-CoV-2 infections and vaccinations

in a large German multiple sclerosis cohort. Vaccines (Basel) 12.
https://doi.org/10.3390/vaccines12030265

Principi N, Esposito S (2020) Do vaccines have a role as a cause of Autoimmune neurological syndromes? Front Public Health 8:361.
https://doi.org/10.3389/fpubh.2020.00361
Article PubMed PubMed Central Google Scholar

Ning F, Cao XQ, Wang QQ, Li ZY, Ruan Z, Chang T (2024) Safety of SARS-CoV-2 vaccine in patients with autoimmune neurological conditions: a systematic review and meta-analysis. Heliyon 10:e23944. https://doi.org/10.1016/j.heliyon.2023.e23944
Article CAS PubMed Google Scholar

ΕΠΙΔΕΙΝΩΣΗ ΠΡΟΫΠΑΡΧΟΥΣΩΝ ΝΕΥΡΟΛΟΓΙΚΩΝ ΔΙΑΤΑΡΑΧΩΝ (ΠΟΛΛΑΠΛΗ ΣΚΛΗΡΥΝΣΗ, ΕΠΙΛΗΨΙΑ)

Alroughani R, Al-Hashel J, Abokalawa F, AlMojel M, Farouk AS. *COVID-19 vaccination in people with multiple sclerosis, real-life experience. Clin Neurol Neurosurg. 2022;220:107374. doi: 10.1016/j.clineuro.2022.107374.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Paybast S, Jameie M, Shahbazi M, Habibi MA, Mohammadianinejad SE, Harirchian MH. Curr J Neurol. 2024 Jan 5;23(1):21-38. doi: 10.18502/cjn.v23i1.16430. PMID: 39431229 Free PMC article.

Watad A, *De Marco G, Mahajna H, Druyan A, Eltity M, Hijazi N, et al. Immune-mediated disease flares or new-onset disease in 27 subjects following mRNA/DNA SARS-CoV-2 vaccination. Vaccines (Basel) 2021;9(5):435. doi: 10.3390/vaccines9050435.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Nistri R, *Barbuti E, Rinaldi V, Tufano L, Pozzilli V, Ianniello A, et al. Case report: Multiple sclerosis relapses after vaccination against SARS-CoV2: A series of clinical cases. Front Neurol. 2021;12:765954. doi: 10.3389/fneur.2021.765954.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Nabizadeh F*, Ramezannezhad E, Kazemzadeh K, Khalili E, Ghaffary EM, Mirmosayyeb O. Multiple sclerosis relapse after COVID-19 vaccination: A case report-based systematic review. J Clin Neurosci. 2022;104:118–25. doi: 10.1016/j.jocn.2022.08.012.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Immunogenicity, clinical efficacy, and safety of the sinopharm (BBIBP-CorV) SARS-CoV-2 vaccine among people with multiple sclerosis receiving disease-modifying therapies: a prospective cohort study. BMC Neurol. 2024.

Rachel Russell, Brian Quinn. Acute Worsening of Atypical Parkinson's Syndrome After Receiving Second Dose of Moderna COVID-19 Vaccine. WMJ • E1 Published online September 30, 2022.

ΕΡΠΗΣ ΖΩΣΤΗΡ (HERPES zoster)

A case of varicella zoster virus meningitis following BNT162b2 mRNA COVID-19 vaccination in an immunocompetent patient
https://pubmed.ncbi.nlm.nih.gov/34587536/

Chen, W.-P.; Chen, M.-H.; Shang, S.-T.; Kao, Y.-H.; Wu, K.-A.; Chiang, W.-F.; Chan, J.-S.; Shyu, H.-Y.; Hsiao, P.-J. Investigation of Neurological Complications after COVID-19 Vaccination: Report of the Clinical Scenarios and Review of the Literature. Vaccines 2023, 11, 425. https://doi.org/10.3390/vaccines11020425

Garg RK, Paliwal VK. Spectrum of neurological complications following COVID-19 vaccination. Neurol Sci. 2022 Jan;43(1):3-40. doi: 10.1007/s10072-021-05662-9. Epub 2021 Oct 31. PMCID: PMC8557950 PMID: 34719776

Chatterjee A, Chakravarty A. Neurological Complications Following COVID-19 Vaccination. Curr Neurol Neurosci Rep. 2023 Jan;23(1):1-14. doi: 10.1007/s11910-022-01247-x. Epub 2022 Nov 29. PMID: 36445631; PMCID: PMC9707152.
Comment in :The Number of Neurological Side Effects of SARS-CoV-2 Vaccinations is Increasing. Finsterer J. Neurol India. 2023 Jul-Aug;71(4):790-791. doi: 10.4103/0028-3886.383838. PMID: 37635524

Aliasin MM, Yazdanpanah N, Rezaei N.Neurological and neuropsychological adverse effects of SARS-CoV-2 vaccines - where do we stand? Rev Neurosci. 2022; 33(7): 721–743. doi:
10.1515/revneuro-2022-0006.

Chen F, Cao P, Liu H, et al. The impact of COVID-19 and vaccine on the human nervous system. Neuroendocrinology. 2022; 112(11):1046–1057. doi: 10.1159/000524234.

Hosseini R, Askari N. A review of neurological side effects of COVID-19 vaccination. Eur J Med Res. 2023; 28(1): 102. doi: 10.1186/s40001-023-00992-0. Finsterer J. Neurological side effects of SARS-CoV-2 vaccinations. Acta Neurol Scand. 2022; 145(1): 5–9. doi: 10.1111/ane.13550.

Eslait-Olaciregui S, Llinás-Caballero K, Patiño-Manjarrés D, Urbina-Ariza T, Cediel-Becerra JF, Domínguez-Domínguez CA. Serious neurological adverse events following immunization against SARS-CoV-2: a narrative review of the literature. Ther Adv Drug Saf. 2023 May 21;14:20420986231165674. PMID: **37223456** PMCID: PMC10201278 DOI: 10.1177/20420986231165674

- Surveillance of Safety of 3 Doses of COVID-19 mRNA Vaccination Using Electronic Health Records

  JAMA Netw Open 2022

Safety of COVID-19 vaccination and acute neurological events: A self-controlled case series in England using the OpenSAFELY platform .Vaccine 2022

Vaccine-induced immune thrombotic thrombocytopenia and cerebral venous sinus thrombosis post COVID-19 vaccination; a systematic review .J Neurol Sci 2021

García-Azorín D, Do TP, Gantenbein AR, Hansen JM, Souza MNP, Obermann M, et al. Delayed headache after COVID-19 vaccination: a red flag for vaccine induced cerebral venous thrombosis. J Headache Pain. 2021;22(1):108. https://doi.org/10.1186/s10194-021-01324-5

This article provides strong evidence in favor of ruling out cerebral venous sinus thrombosis in patients with delayed onset headaches after adenoviral vaccines.

Dias L, Soares-Dos-Reis R, Meira J, et al.. Cerebral venous thrombosis after BNT162b2 mRNA SARS-CoV-2 vaccine. J Stroke Cerebrovasc Dis 2021

Chen, W.-P.; Chen, M.-H.; Shang, S.-T.; Kao, Y.-H.; Wu, K.-A.; Chiang, W.-F.; Chan, J.-S.; Shyu, H.-Y.; Hsiao, P.-J. Investigation of Neurological Complications after COVID-19 Vaccination: Report of the Clinical Scenarios and Review of the Literature. Vaccines 2023, 11, 425. https://doi.org/10.3390/vaccines11020425

Garg RK, Paliwal VK. Spectrum of neurological complications following COVID-19 vaccination. Neurol Sci. 2022 Jan;43(1):3-40. doi: 10.1007/s10072-021-05662-9. Epub 2021 Oct 31. PMCID: PMC8557950 PMID: 34719776

Koumaki D, Krueger-Krasagakis SE, Papadakis M, Katoulis A, Koumaki V, Evangelou G, Stefanidou M, Mylonakis D, Zografaki K, Krasagakis K. Herpes zoster viral infection after AZD1222 and BNT162b2 coronavirus disease 2019 mRNA vaccines: a case series. J Eur Acad Dermatol Venereol. 2022 Feb;36(2):e85-e86. doi: 10.1111/jdv.17720. Epub 2021 Oct 10. PMID: 34606142 PMCID: PMC9088565 DOI: 10.1111/jdv.17720

10 cases Reactivation of Herpes Zoster Virus After COVID-19 Vaccination: Is There Any Association? https://pubmed.ncbi.nlm.nih.gov/35746994; 30: 105906. - PMC - PubMed

Lee JH, Kim YY, Heo HJ, Park JH, Cho HG, Kim G. Herpes zoster after COVID-19 vaccination, aspect of pain medicine: a retrospective, single-center study. Anesth Pain Med (Seoul). 2023 Jan;18(1):57-64. Epub 2023 Jan 16. PMID: 36746903 PMCID: PMC9902632 DOI: 10.17085/apm.22207

Potestio L, Megna M, Villani A, Cacciapuoti S, Scalvenzi M, Martora F. Herpes Zoster and COVID-19 Vaccination: A Narrative Review. Clin Cosmet Investig Dermatol. 2023 **Nov 16;16:3323-3331. PMID: 38021418 PMCID: PMC10658959 DOI: 10.2147/CCID.S441898**

ΑΠΩΤΕΡΕΣ ΝΕΥΡΟΛΟΓΙΚΕΣ ΔΙΑΤΑΡΑΧΕΣ ΛΟΓΩ ΔΡΑΣΗΣ ΠΕΡΙΟΧΩΝ ΤΗΣ ΠΡΩΤΕΙΝΗΣ S ΩΣ PRIONS

Heneka MT, Golenbock D, Latz E, Morgan D, Brown R. Immediate and long-term consequences of COVID-19 infections for the development of neurological disease. *Alzheimers Res Ther. 2020 Jun 4;12(1):69.* PubMed.

***Classen J**. COVID-19 RNA based vaccines and the risk of prion disease. Microbiol. Infect. Dis. 2021;5:1–3. doi: 10.33425/2639-9458.1109.* [DOI] [Google Scholar]

***Kuvandik A**., Özcan E., Serin S., Sungurtekin H. Creutzfeldt-Jakob Disease After the COVID-19 Vaccination. Turk. J. Intensive Care. 2021;20:61–64. doi: 10.4274/tybd.galenos.2021.91885.* [DOI] [Google Scholar]

Cascarina, S.M.,and Ross, E.D. (2020). A proposed role for the SARS-CoV-2 nucleocapsid protein in the formation and regulation of biomolecular condensates. FASEB J. 34, 9832–9842 .https://doi.org/10.1096/fj.202001351.View in Publisher's site

The potential hindrance of SARS-COV2 spike proteins, prions misfolded proteins and other infected proteineous molecule incorporating toxic genomes of pathogenic microbes from gaining access into the human body cells. through the use of a new biomimetic nanoparticle coated cell membrane

Amen Ugochukwu Ikeh, Abdulhakeem Babatunde Sobodun, Sonaya Oluwadamilola Emmanuella European Journal of Biology and Medical Science Research
Vol.9, No.2, pp.1-71, 2021
Print ISSN: ISSN 2053-406X, Online ISSN: ISSN 2053-4078

https://cen.acs.org/pharmaceuticals/vaccines/tiny-tweak-behind-COVID-19/98/i38

https://foundationforhealthresearch.org/review-of-covid-19-vaccines-and-the-risk-of-chronic-adverse-events/2021.03.04.430128. https://doi.org/10.1101/2021.03.04.430128

Classen, J. B. (2021). Review of COVID-19 Vaccines and the Risk of Chronic Adverse Events Including Neurological Degeneration. Journal of Medical-Clinical Research and Reviews 5(4):1-7

Και κάποιες προσπάθειες διάψευσης:

Fact check: COVID-19 vaccine not associated with prion disease
https://www.usatoday.com › factcheck › 2021/03/31 › f...
Ισχυρισμός: COVID-19 vaccines are associated with prion disease
Ισχυρίζεται ο/η: social media users, J. Bart Classen
Επαλήθευση πληροφοριών από USA Today: **False**
Μετάφραση αυτής της σελίδας
12 Μαΐ 2021 — Prions are misfolded brain proteins that can cause mad cow disease or bovine
spongiform encephalopathy, Creutzfeldt Jakob disease, or CJD, ...

Review of Covid-19 Vaccines and the Risk of Chronic Adverse ...
https://media.ellinikahoaxes.gr › MCRR-21-484

PDF από JB Classen · 2021 · Γίνεται αναφορά σε 12 — vaccines contain the spike protein and or
the mRNA/DNA encoding for ... the virus that causes COVID-19 has prion regions that are…

Are spike proteins in the covid 19 virus actually prions? – Quora
https://www.quora.com › ...
Μετάφραση αυτής της σελίδας
Question: Are the spike proteins in the Covid 19 virus actually prions? No they are not prions.
They are proteins that have normal folding and are used as a ...

ΨΥΧΙΑΤΡΙΚΕΣ ΔΙΑΤΑΡΑΧΕΣ

A novel adverse effect of the BNT162b2 mRNA vaccine: First episode of acute mania with psychotic features
https://pubmed.ncbi.nlm.nih.gov/34632429/

Acute Psychosis Due to Anti-N-Methyl D-Aspartate Receptor Encephalitis Following COVID-19 Vaccination: A Case Report
https://pubmed.ncbi.nlm.nih.gov/34803896/

Acute psychosis induced by mRNA-based COVID-19 vaccine in adolescents: A pediatric case report
https://pubmed.ncbi.nlm.nih.gov/36641359/

Otero-Losada M, Petrovsky N, Alami A, Crispo JA, Mattison D, Capani F, Goetz C, Krewski D, Perez-Lloret S. Disproportionality analysis of adverse neurological and psychiatric reactions with the ChAdOx1 (Oxford-AstraZeneca) and BNT162b2 (Pfizer-BioNTech) COVID-19 vaccines in the United Kingdom. Expert Opin Drug Saf. 2023 Apr;22(4):343-349. doi: 10.1080/14740338.2022.2120607. Epub 2022 Sep 7. PMID: 36043937.

COVID-19 Vaccination Is Not Associated with Psychiatric Adverse Events: A Meta-Analysis.
Lee SE, Shim SR, Youn JH, Han HW. Vaccines (Basel). 2023 Jan 16;11(1):194. doi: 10.3390/vaccines11010194. PMID: 36680038 Free PMC article. Review.

Ryoo S, Choi M, Choi NK, Shin HS, Woo JH, Park BJ, Oh S. Psychiatric adverse events associated with the COVID-19 vaccines approved in the Republic of Korea: a systematic review. Osong Public Health Res Perspect. 2024 Apr;15(2):107-114. doi: 10.24171/j.phrp.2023.0325. Epub 2024 Mar 28. PMID: 38621764; PMCID: PMC11082440.

Butler M, *Tamborska A, Wood GK, Ellul M, Thomas RH, Galea I, et al. Considerations for causality assessment of neurological and neuropsychiatric complications of SARS-CoV-2 vaccines: From cerebral venous sinus thrombosis to functional neurological disorder. J Neurol Neurosurg Psychiatry. 2021;92(11):1144–51. doi: 10.1136/jnnp-2021-326924.* [DOI] [PMC free article] [PubMed] [Google Scholar]

M. Butler, J. Coebergh, F. Safavi, A. Carson, M. Hallett, B. Michael, T.A. Pollak, T. Solomon, J. Stone, T.R. Nicholson. Functional neurological disorder after SARS-CoV-2 vaccines: two case reports and discussion of potential public health implications. J. Neuropsychiatr. Clin. Neurosci., 33 (4) (2021), pp. 345-348 View at publisher CrossrefView in ScopusGoogle Scholar

ΚΑΡΔΙΑΓΓΕΙΑΚΕΣ ΑΝΕΠΙΘΥΜΗΤΕΣ ΕΝΕΡΓΕΙΕΣ ΤΩΝ COVID ΕΜΒΟΛΙΩΝ

Yiyi Xu, Huiqi Li, Ailiana Santosa, Björn Wettermark, Tove Fall, Jonas Björk, Mats Börjesson, Magnus Gisslén, Fredrik Nyberg, Cardiovascular events following coronavirus disease 2019 vaccination in adults: a nationwide Swedish study, European Heart Journal,

Volume 46, Issue 2, 7 January 2025, Pages 147–157, https://doi.org/10.1093/eurheartj/ehae639

***Lee KW**, Yap SF, Amin-Nordin S, Ngeow YF. Cardiac and Neurological Complications Post COVID-19 Vaccination: A Systematic Review of Case Reports and Case Series. Vaccines (Basel). 2024 May 24;12(6):575. doi: 10.3390/vaccines12060575. PMID: 38932303; PMCID: PMC11209191.*

Long-term cardiovascular safety of COVID-19 vaccination ...

mR

medRxiv

https://www.medrxiv.org › content

από S Ip · 2024 — The incidence of common arterial thrombotic events (mainly acute myocardial infarction and ischaemic stroke) was generally lower after each ...

Ho JS, Sia CH, Ngiam JN, Loh PH, Chew NW, Kong WK, Poh KK. A review of COVID-19 vaccination and the reported cardiac manifestations. Singapore Med J. 2021 doi: 10.11622/smedj.2021210. [DOI] [PMC free article] [PubMed] [Google Scholar]

Shiravi AA, Ardekani A, Sheikhbahaei E, Heshmat-Ghahdarijani K. Cardiovascular Complications of SARS-CoV-2 Vaccines: An Overview. Cardiol Ther. 2022;11:13–21. doi: 10.1007/s40119-021-00248-0. [DOI] [PMC free article] [PubMed] [Google Scholar]

Block J.P., Boehmer T.K., Forrest C.B., et al. Cardiac complications after SARS-CoV-2 infection and mRNA COVID-19 vaccination - PCORnet, United States, January 2021-January 2022. MMWR Morb Mortal Wkly Rep. 2022;71(14):517–523. - PMC - PubMed

Patone M., Mei X.W., Handunnetthi L., et al. Risks of myocarditis, pericarditis, and cardiac arrhythmias associated with COVID-19 vaccination or SARS-CoV-2 infection. Nat Med. 2022;28(2):410–422. - PMC - PubMed

Cardiac complications of COVID-19 vaccination: now we know more. Eur Heart J Suppl. 2022.

K Parmar, S Subramanyam, G del Rio-Pertuz, P Sethi, E Argueta-Sosa. Cardiac adverse events after vaccination-a systematic review. Vaccines (Basel), 10 (2022), p. 700
View at publisher

Mueller C,. Myocardial Injury after COVID-19 mRNA booster vaccination [Oral presentation]. European Society of Cardiology conference, August 2022, Barcelona. https://esc365.escardio.org/presentation/255414?query=Myocardial%20Injury%20after%20COVID-19%20mRNA%20booster%20vaccination [Accessed 1 August 2023]. Google Scholar

RD Mitrani, N Dabas, JJ Goldberger COVID-19 cardiac injury: implications for long-term surveillance and outcomes in survivors. Heart Rhythm, 17 (2020), pp. 1984-1990

Avolio E, Carrabba M, Milligan R, Kavanagh Williamson M, Beltrami AP, Gupta K, Elvers KT, Gamez M, Foster RR, Gillespie K, et al. The SARS-CoV-2 Spike protein disrupts human cardiac pericytes function through CD147 receptor-mediated signalling: a potential non-infective mechanism of COVID-19 microvascular disease. Clin Sci (Lond). 2021;135:2667–2689. doi: 10.1042/CS20210735 [DOI] [PMC free article] [PubMed] [Google Scholar

Kawamura Y, Yoshimachi F, Nanao T, Kasai S, Ikari Y. A case of ST segment elevation myocardial infarction within 24 h of a third dose of COVID-19 mRNA vaccine. Cardiovasc Revasc Med. 2023;53:S313-16. https://doi.org/10.1016/j.carrev.2022.06.012.

Raul D. Mitrani, Nitika Dabas, Jeffrey J. Goldberger. COVID-19 cardiac injury: Implications for long-term surveillance and outcomes in survivors, Heart Rhythm, Volume 17, Issue 11, 2020, Pages 1984-1990, ISSN 1547-5271, https://doi.org/10.1016/j.hrthm.2020.06.026.

Hana D, Patel K, Roman S, Gattas B, Sofka S. Clinical Cardiovascular Adverse Events Reported Post-COVID-19 Vaccination: Are They a Real Risk? Curr Probl Cardiol. 2022;47:101077. doi: 10.1016/j.cpcardiol.2021.101077. [DOI] [PMC free article] [PubMed] [Google Scholar]

Jabagi MJ, Botton J, Bertrand M, Weill A, Farrington P, Zureik M, Dray-Spira R. Myocardial Infarction, Stroke, and Pulmonary Embolism After BNT162b2 mRNA COVID-19 Vaccine in People Aged 75 Years or Older. JAMA. 2022;327:80–82. doi: 10.1001/jama.2021.21699. [DOI] [PMC free article] [PubMed] [Google Scholar]

Fazlollahi A, Zahmatyar M, Noori M, Nejadghaderi SA, Sullman MJM, Shekarriz-Foumani R, Kolahi AA, Singh K, Safiri S. Cardiac complications following mRNA COVID-19 vaccines: A systematic review of case reports and case series. Rev Med Virol. 2022;32:e2318. doi: 10.1002/rmv.2318. [DOI] [PubMed] [Google Scholar]

Jeet Kaur R, Dutta S, Charan J, Bhardwaj P, Tandon A, Yadav D, Islam S, Haque M. Cardiovascular Adverse Events Reported from COVID-19 Vaccines: A Study Based on WHO Database. Int J Gen Med. 2021;14:3909–3927. doi: 10.2147/IJGM.S324349. [DOI] [PMC free article] [PubMed] [Google Scholar]

Review of the current literature regarding cardiac adverse ...

SciELO Brasil

https://www.scielo.br › ramb

PDF από T Çınar · 2021 · Γίνεται αναφορά σε 2 — Our review was restricted to only *cardiac* adverse events reported after *COVID*-19 *vaccination*. In total, 68 *relevant* cases were found in the literature.

[Takotsubo syndrome after receiving the COVID-19 vaccine](#)

[Journal of Cardiology Cases](#)

https://www.journalofcardiologycases.com › article › pdf

από C Fearon · 2021 · Γίνεται αναφορά σε 47 — ... *COVID*-19 *vaccine*. A 73-year-old woman with recently diagnosed *myocardial infarction* with no obstructive coronary atherosclerosis (MINOCA)

Excess Cardiopulmonary Arrest and Mortality after COVID ...

Preprints.org

https://www.preprints.org › ...

· Μετάφραση αυτής της σελίδας

27 Μαΐ 2024 — *COVID*-19 *vaccines* have since been linked to several cardiovascular adverse events such as myocarditis [2,3,4], *myocardial infarction* [5,6,7], ..

UK to pay out over £11.5m in Covid-19 vaccine damages

Research Professional News
https://www.researchprofessionalnews.com › ...

· Μετάφραση αυτής της σελίδας
14 Ιουν 2023 — ... *vaccine*-damage payment until *then* were, in this order: *Vaccine*-induced immune thrombocytopenia and *thrombosis*/cerebral venous sinus *thrombosis* .

Pfizer's Classified List of Side-Effects – It's Worse Than You ...

[Sunny's Journal](#)
https://sunnysjournal.com › ...

Freise NF, Kivel M, Grebe O, Meyer C, Wafaisade B, Peiper M, Zeus T, Schmidt J, Neuwahl J, Jazmati D, Luedde T, Bölke E, Feldt T, Jensen BEO, Bode J, Keitel V, Haussmann J, Tamaskovics B, Budach W, Fischer JC, Knoefel WT, Schneider M, Gerber PA, Pedoto A, Häussinger D, van Griensven M, Rezazadeh A, Flaig Y, Kirchner J, Antoch G, Schelzig H, Matuschek C. Acute cardiac side effects after COVID-19 mRNA vaccination: a case series. Eur J Med Res. 2022 Jun 2;27(1):80. doi: 10.1186/s40001-022-00695-y. PMID: 35655235; PMCID: PMC9160507.

ΑΡΡΥΘΜΙΑ

Pari B, Babbili A, Kattubadi A, Thakre A, Thotamgari S, Gopinathannair R, Olshansky B, Dominic P. COVID-19 Vaccination and Cardiac Arrhythmias: A Review. Curr Cardiol Rep. 2023 Sep;25(9):925-940. doi: 10.1007/s11886-023-01921-7. Epub 2023 Aug 2. PMID: 37530946.

Ruggiero R, Donniacuo M, Mascolo A, Gaio M, Cappetta D, Rafaniello C, Docimo G, Riccardi C, Izzo I, Ruggiero D, Paolisso G, Rossi F, De Angelis A, Capuano A. COVID-19 Vaccines and Atrial Fibrillation: Analysis of the Post-Marketing Pharmacovigilance European Database. Biomedicines. 2023 May 30;11(6):1584. doi: 10.3390/biomedicines11061584. PMID: 37371680; PMCID: PMC10295866.

Cocco N, Leibundgut G, Pelliccia F, et al. Arrhythmias after COVID-19 vaccination: Have we left all stones unturned? Int J Mol Sci. 2023;24(12): 10405. doi: 10.3390/ijms241210405

Patone M, Mei XW, Handunnetthi L, et al. Risks of myocarditis, pericarditis, and cardiac arrhythmias associated with COVID-19 vaccination or SARS-CoV-2 infection. Nat Med. 2022;28(2):410-422. doi:10.1038/s41591-021-01630-0

Gundry SR. Observational findings of PULS cardiac test findings for inflammatory markers in patients receiving mRNA vaccines. Circulation. 2021;144(Suppl1):A10712–1071241.

Jeet Kaur R, Dutta S, Charan J, Bhardwaj P, Tandon A, Yadav D, et al. Cardiovascular adverse events reported from COVID-19 vaccines: a study based on WHO database. Int J Gen Med. 2021;14:3909–27.

Sadiq W, Waleed MS, Suen P, Chalhoub MN. Cardiopulmonary arrest after COVID-19 vaccination: a case report. Cureus. 2022;14(1). https://doi.org/10.7759/cureus.21141

Chen CY, Hsieh MT, Wei CT, Lin CW. Atrial fibrillation after mRNA-1273 SARS-CoV-2 vaccination: case report with literature review. Risk Manag Healthc Policy 2023;16:209–14. 10.2147/RMHP.S402007 Google Scholar Crossref PubMed WorldCat

Kumar A, Shariff M, Bhat V, DeSimone C, Deshmukh A. Atrial fibrillation after vaccination for COVID-19: analysis of the vaccine adverse event reporting system. J Interv Card

Electrophysiol 2022; 65:1–2. 10.1007/s10840-022-01263-4 Google Scholar Crossref PubMed WorldCa

Tachycardia following Pfizer-BioNTech COVID-19 vaccine

www.elsevier.com

https://www.elsevier.es › ...

... *related* to cardiovascular manifestation. ... Studies with potential overlapping populations were excluded and deaths from cardiac arrest or *myocardial infarction* ...

Abutaleb MH, Makeen HA, Meraya AM, Alqahtani SS, Al-Mass BI, Aljazaeri RO, Alhazmi BD, Kalakattawi AMN, Alajam AA. Risks of Cardiac Arrhythmia Associated with COVID-19 Vaccination: A Systematic Review and Meta-Analysis. Vaccines (Basel). 2023 Jan 3;11(1):112. doi: 10.3390/vaccines11010112. PMID: 36679957; PMCID: PMC9862670

ΕΜΦΡΑΓΜΑ ΜΥΟΚΑΡΔΙΟΥ ΑΠΟ ΕΜΒΟΛΙΑ COVID

Showkathali R, Yalamanchi R, Narra L, Vinayagamoorthy N, Gunasekaran S, Nayak R, et al. Coronary thrombo-embolic events after covid-19 vaccination-a single centre study. Indian Heart J. 2022;74(2):131–4.

Botros MB, Narvaez-Guerra O, Aurigemma GP, Harrington C. STEMI following MRNA COVID-19 vaccination. J Am Coll Cardiol. 2022;79(9Supplement):2341–234140.

Aye YN, Mai AS, Zhang A, Lim OZH, Lin N, Ng CH, Chan MY, Yip J, Loh PH, Chew NWS. Acute Myocardial Infarction and Myocarditis following COVID-19 Vaccination. QJM. 2021 doi: 10.1093/qjmed/hcab252. [DOI] [PMC free article] [PubMed] [Google Scholar]

Maadarani O, Bitar Z, Elzoueiry M, Nader M, Abdelfatah M, Zaalouk T, Mohsen M, Elhabibi M. Myocardial infarction post COVID-19 vaccine - coincidence, Kounis syndrome or other explanation - time will tell. JRSM Open. 2021;12:20542704211025259. doi: 10.1177/20542704211025259. [DOI] [PMC free article] [PubMed] [Google Scholar]

Şancı E, Örçen C, Çelik OM, Özen MT, Bozyel S. Kounis syndrome associated with BNT162b2 mRNA COVID-19 vaccine presenting as ST-elevation acute myocardial infarction. Anatol J Cardiol. 2022;26:69–74. doi: 10.5152/AnatolJCardiol.2021.1212. [DOI] [PMC free article] [PubMed] [Google Scholar]

Chatterjee S, Ojha UK, Vardhan B, Tiwari A. Myocardial infarction after COVID-19 vaccination-casual or causal? Diabetes Metab Syndr. 2021;15:1055–1056. doi: 10.1016/j.dsx.2021.04.006. [DOI] [PMC free article] [PubMed] [Google Scholar]

Iqbal S, Adnan G, Farhad A, Ahmed I, Rahman MN. Acute Myocardial Infarction After Coronavirus Vaccine: A Rare Adverse Effect. Cureus. 2022;14:e21544. doi: 10.7759/cureus.21544. [DOI] [PMC free article] [PubMed] [Google Scholar]

Tajstra M, Jaroszewicz J, Gąsior M. Acute Coronary Tree Thrombosis After Vaccination for COVID-19. JACC Cardiovasc Interv. 2021;14:e103–e104. doi: 10.1016/j.jcin.2021.03.003. [DOI] [PMC free article] [PubMed] [Google Scholar]

Flower L, Bares Z, Santiapillai G, Harris S. Acute ST-segment elevation myocardial infarction secondary to vaccine-induced immune thrombosis with thrombocytopaenia (VITT) BMJ Case Rep. 2021;14 doi: 10.1136/bcr-2021-245218. [DOI] [PMC free article] [PubMed] [Google Scholar]

Chiang CY, Chen CY, Yu WL, Kan WC, Feng YH. Myocardial Infarction and Azygos Vein Thrombosis After ChAdOx1 nCoV-19 Vaccination in a Hemodialysis Patient. Cureus. 2021;13:e18390. doi: 10.7759/cureus.18390. [DOI] [PMC free article] [PubMed] [Google Scholar]

Fialho I, Mateus C, Martins-Dos-Santos G, Pita J, Cabanelas N, Baptista SB, Roque D. Recurrent Kounis syndrome - a life-threatening event after COVID-19 vaccine administration. J Cardiol Cases. 2022;25:400–403. doi: 10.1016/j.jccase.2022.01.014. [DOI] [PMC free article] [PubMed] [Google Scholar]

Hsu MH, Lee CP, Huang YC. Acute ST-Segment Elevation Myocardial Infarction After ChAdOx1 nCoV-19 Vaccination in a 33-Year-Old Man. Ann Emerg Med. 2022;79:220–221. doi: 10.1016/j.annemergmed.2021.12.002. [DOI] [PMC free article] [PubMed] [Google Scholar]

Showkathali R, Yalamanchi R, Narra L, Vinayagamoorthy N, Gunasekaran S, Nayak R, Vijayachandra Reddy Y, Mahilmaran A, Srinivasan KN, Oomman A, Kaliyamoorthy D. Coronary thrombo-embolic events after Covid-19 vaccination- a single centre study. Indian Heart J. 2022;74:131–134. doi: 10.1016/j.ihj.2022.01.002. [DOI] [PMC free article] [PubMed] [Google Scholar]

Boivin Z, Martin J. Untimely Myocardial Infarction or COVID-19 Vaccine Side Effect. Cureus. 2021;13:e13651. doi: 10.7759/cureus.13651. [DOI] [PMC free article] [PubMed] [Google Scholar]

Edler C, Klein A, Schröder AS, Sperhake JP, Ondruschka B. Deaths associated with newly launched SARS-CoV-2 vaccination (Comirnaty®) Leg Med (Tokyo) 2021;51:101895. doi: 10.1016/j.legalmed.2021.101895. [DOI] [PMC free article] [PubMed] [Google Scholar]

Sung JG, Sobieszczyk PS, Bhatt DL. Acute Myocardial Infarction Within 24 Hours After COVID-19 Vaccination. Am J Cardiol. 2021;156:129–131. doi: 10.1016/j.amjcard.2021.06.047. [DOI] [PMC free article] [PubMed] [Google Scholar]

Memon S, Chhabra L, Masrur S, Parker MW. Allergic acute coronary syndrome (Kounis syndrome) Proc (Bayl Univ Med Cent) 2015;28:358–362. doi: 10.1080/08998280.2015.11929274. [DOI] [PMC free article] [PubMed] [Google Scholar]

Jabagi MJ, Botton J, Bertrand M, Weill A, Farrington P, Zureik M, et al. Myocardial infarction, stroke, and pulmonary embolism after BNT162b2 mRNA COVID-19 vaccine in people aged 75 years or older. JAMA 2022;327:80–2. 10.1001/jama.2021.21699 Google Scholar Crossref PubMed WorldCat

Kim YE, Huh K, Park YJ, Peck KR, Jung J.Association between vaccination and acute myocardial infarction and ischemic stroke after COVID-19 infection.JAMA 2022; 328:887–9. 10.1001/jama.2022.12992 Google Scholar Crossref PubMed WorldCat

Ana Blasco, Ana Royuela, Sergio García-Gómez, Natalia Gómez-Lozano, Alberto Sánchez-Arjona, Jorge de la Fuente, Jorge Anel, Icíar Sánchez-Galarraga, Marina Pérez-Redondo, **Elisa González,** Lorenzo Silva . Association of SARS-CoV-2 immunoserology and vaccination status with myocardial infarction severity and outcome. Vaccine Volume 42, Issue 26, 2 December 2024, 126305 https://doi.org/10.1016/j.vaccine.2024.126305

Risk of acute myocardial infarction and ischaemic stroke ...

The Lancet

https://www.thelancet.com › ...

· Μετάφραση αυτής της σελίδας

από I Katsoularis · 2021 · Γίνεται αναφορά σε 459 — Our findings suggest that *COVID-19 is a risk factor for acute myocardial infarction* and ischaemic stroke. This indicates that acute myocardial .

COVID-19 vaccination and myocardial infarction

International Journal of Cardiology

https://www.internationaljournalofcardiology.com › ...

· Μετάφραση αυτής της σελίδας

από KW Koay · 2022 — A young man was admitted for acute inferior *myocardial infarction* after receiving the booster dose of mRNA *COVID*-19 *vaccination*.

Cardiovascular Disease and COVID-19 Vaccines

European Cardiology Review

https://www.ecrjournal.com › ...

· Μετάφραση αυτής της σελίδας

13 Σεπ 2023 — ... cardiac-*related* adverse events resulting from the *COVID*-19 *vaccines*. ... *Myocardial infarction* in young adults: risk factors and pattern of ...

Spontaneous" Coronary Artery Dissection After SARS ...

JSCAI

https://www.jscai.org › ...

· Μετάφραση αυτής της σελίδας

από A Mohammed · 2023 · Γίνεται αναφορά σε 3 — ... *similar* risk is present with other types of *COVID*-19 ... *COVID*-19 *vaccination*, with fast diagnosis and prevention of *myocardial infarction*.

Current evidence of COVID-19 vaccination-related ...

Taylor & Francis Online

https://www.tandfonline.com › ...

· Μετάφραση αυτής της σελίδας

από S Khiali · 2023 · Γίνεται αναφορά σε 7 — Current evidence of *COVID*-19 *vaccination-related* ... *myocardial infarction*, cardiac arrhythmias, hypertension, and stress-induced cardiomyopathy.

Impact of COVID-19 vaccination on mortality after acute ...

PLOS

https://journals.plos.org › ...

· Μετάφραση αυτής της σελίδας

από MD Gupta · 2024 — Correction: Impact of *COVID*-19 *vaccination* on mortality after acute *myocardial infarction*. Mohit D. Gupta, Shekhar Kunal, Girish M. P., Dixit ..

Acute myocardial infarction immediately after second ...

Wiley Online Library

https://onlinelibrary.wiley.com › ...

· Μετάφραση αυτής της σελίδας

από A Kurozumi · 2022 · Γίνεται αναφορά σε 2 — We present a serious and rare case of *acute myocardial infarction* soon after the administration of second vaccination for coronavirus disease 2019.

Review article Myocardial infarction following COVID-19 ...

ScienceDirect.com

https://www.sciencedirect.com › ...

· Μετάφραση αυτής της σελίδας

από DH Baqi · 2022 · Γίνεται αναφορά σε 11 — *MI related to COVID19 vaccination is a rare, but serious and life-threatening condition*. Chest discomfort should be regarded as a warning sign

Risk for MI, Stroke, Pulmonary Embolism After COVID-19 ...

American College of Cardiology

https://www.acc.org › Ri...

· Μετάφραση αυτής της σελίδας

8 Σεπ 2022 — Risk for *MI*, Stroke, Pulmonary Embolism After *COVID*-19 *Vaccines*. Sep ... *related* mortality in France, from December 27, 2020–July 20 ..

Zafar U, Zafar H, Ahmed MS, Khattak M. Link between COVID-19 vaccines and myocardial infarction. World J Clin Cases. 2022 Oct 6;10(28):10109-10119. doi: 10.12998/wjcc.v10.i28.10109. PMID: 36246837; PMCID: PMC9561578.

ΜΥΟΚΑΡΔΙΤΙΔΑ , ΠΕΡΙΚΑΡΔΙΤΙΔΑ

Research: Incidence, risk factors, natural history, and hypothesised mechanisms of myocarditis and pericarditis following covid-19 vaccination: living evidence syntheses and review doi: 10.1136/bmj2021-069445
Editorial: Myocarditis and pericarditis risk after covid-19 vaccination doi: 10.1136/bmj.o1554

Determinants of COVID-19 vaccine-induced myocarditis.
Ther Adv Drug Saf. 2024

Gao J, Feng L, Li Y, Lowe S, Guo Z, Bentley R, et al. A systematic review and meta-analysis of the association between SARS-CoV-2 vaccination and myocarditis or pericarditis. Am J Prev Med 2023; 64:275–84. 10.1016/j.amepre.2022.09.002
Google Scholar Crossref PubMed WorldCat

Sousa, Pedro & Silva, Elon & Campos, Marcos & Lages, Joyce & Corrêa, Rita & Barros-Silva, Gyl. (2024). Fatal Myocarditis following COVID-19 mRNA Immunization: A Case Report and Differential Diagnosis Review. Vaccines. 12. 194. 10.3390/vaccines12020194.

Castiello T, Georgiopoulos G, Finocchiaro G, et al.: COVID-19 and myocarditis: a systematic review and overview of current challenges. Heart Fail Rev. 2022, 27:251-61. 10.1007/s10741-021-10087-9

Motonori Takahashi, Takeshi Kondo, Gentaro Yamasaki, Marie Sugimoto, Migiwa Asano, Yasuhiro Ueno, Yasushi Nagasaki, An autopsy case report of aortic dissection complicated with histiolymphocytic pericarditis and aortic inflammation after mRNA COVID-19 vaccination, Legal Medicine, Volume 59, 2022, 102154, ISSN 1344-6223, https://doi.org/10.1016/j.legalmed.2022.102154.

Medsafe Alert Communication*: Myocarditis and Pericarditis have been Reported with Nuvaxovid (Novavax COVID-19 vaccine). New Zealand Medicines and Medical Devices Safety Authority: Medsafe.govt.nz. [(accessed on 7 April 2023)];2022 Available online: https://www.medsafe.govt.nz/safety/Alerts/nuvaxovid-myocarditis.asp.*

Katoto PDMC, Byamungu LN, Brand AS, Tamuzi JL, Kakubu MAM, Wiysonge CS, Gray G. Systematic review and meta-analysis of myocarditis and pericarditis in adolescents following COVID-19 BNT162b2 vaccination. NPJ Vaccines. 2023 Jun 9;8(1):89. doi: 10.1038/s41541-023-00681-3. PMID: 37296167; PMCID: PMC10252172.

Pillay J, Gaudet L, Wingert A, et al. Incidence, risk factors, natural history, and hypothesized mechanisms of myocarditis and pericarditis following COVID-19 vaccination: living evidence syntheses and review. BMJ 2022;378:e069445.

Bots SH, Riera-Arnau J, Belitser SV, Messina D, Aragón M, Alsina E, Douglas IJ, Durán CE, García-Poza P, Gini R, Herings RMC, Huerta C, Sisay MM, Martín-Pérez M, Martin I, Overbeek JA, Paoletti O, Pallejà-Millán M, Schultze A, Souverein P, Swart KMA, Villalobos F, Klungel OH, Sturkenboom MCJM. Myocarditis and pericarditis associated with SARS-CoV-2 vaccines: A population-based descriptive cohort and a nested self-controlled risk interval study using electronic health care data from four European countries. Front Pharmacol. 2022 Nov 24;13:1038043. doi: 10.3389/fphar.2022.1038043. PMID: 36506571; PMCID: PMC9730238.

Myers JM, Cooper LT, Kem DC, Stavrakis S, Kosanke SD, Shevach EM, Fairweather D, Stoner JA, Cox CJ, Cunningham MW. Cardiac myosin-Th17 responses promote heart failure in human myocarditis. JCI Insight. 2016;1:e85851 doi: 10.1172/jci.insight.85851 [DOI] [PMC free article] [PubMed] [Google Scholar]

Ling RR, Ramanathan K, Tan FL, Tai BC, Somani J, Fisher D, MacLaren G. Myopericarditis following COVID-19 vaccination and non-COVID-19 vaccination: a systematic review and meta-analysis. Lancet Respir Med. 2022;10:679–688. doi: 10.1016/S2213-2600(22)00059-5 [DOI] [PMC free article] [PubMed] [Google Scholar]

Alami A, Villeneuve PJ, Farrell PJ, Mattison D, Farhat N, Haddad N, Wilson K, Gravel CA, Crispo JAG, Perez-Lloret S, Krewski D. Myocarditis and Pericarditis Post-mRNA COVID-19 Vaccination: Insights from a Pharmacovigilance Perspective. J Clin Med. 2023 Jul 28;12(15):4971. doi: 10.3390/jcm12154971. PMID: 37568373; PMCID: PMC10419493.

Quinodoz A, Luthi F, Revaz S, Konzelmann M. Acute myopericarditis and left shoulder capsulitis following second dose of mRNA SARS-CoV-2 Moderna vaccination. BMJ Case Rep. 2023 Jun 1;16(6):e254110. doi: 10.1136/bcr-2022-254110. PMID: 37263680; PMCID: PMC10254694.

Zwiers LC, Ong DSY, Grobbee DE. COVID-19 Vaccine-Induced Myocarditis and Pericarditis: Towards Identification of Risk Factors. Glob Heart. 2023 Jul 31;18(1):39. doi: 10.5334/gh.1252. PMID: 38533475; PMCID: PMC10964799.

Zuin M, Zimelli E, Dalla Valle C, Cavedon S, Rigatelli G, Bilato C. Diagnosis of Acute Myocarditis Following mRNA Vaccines against SARS-CoV-2: A Methodological Review. Viruses. 2023 Apr 7;15(4):929. doi: 10.3390/v15040929. PMID: 37112909; PMCID: PMC10143457.

Naveed Z, Li J, Wilton J, Spencer M, Naus M, Velásquez García HA, Kwong JC, Rose C, Otterstatter M, Janjua NZ; Canadian Immunization Research Network (CIRN) Provincial Collaborative Network (PCN) Investigators. Comparative Risk of Myocarditis/Pericarditis

Following Second Doses of BNT162b2 and mRNA-1273 Coronavirus Vaccines. J Am Coll Cardiol. 2022 Nov 15;80(20):1900-1908. doi: 10.1016/j.jacc.2022.08.799. PMID: 36357091; PMCID: PMC9639791.

Oster ME, Shay DK, Su JR, et al. Myocarditis cases reported after mRNA-based COVID-19 vaccination in the US from December 2020 to August 2021. JAMA. 2022;327(4):331-340. doi:10.1001/jama.2021.24110

Bardosh K, Krug A, Jamrozik E, Lemmens T, Keshavjee S, Prasad V, Makary MA, Baral S, Høeg TB. COVID-19 vaccine boosters for young adults: a risk benefit assessment and ethical analysis of mandate policies at universities. J Med Ethics. 2024 Jan 23;50(2):126-138. doi: 10.1136/jme-2022-108449. PMID: 36600579; PMCID: PMC10850707.

Cadegiani FA. Catecholamines Are the Key Trigger of COVID-19 mRNA Vaccine-Induced Myocarditis: A Compelling Hypothesis Supported by Epidemiological, Anatomopathological, Molecular, and Physiological Findings. Cureus. 2022 Aug 11;14(8):e27883. doi: 10.7759/cureus.27883. PMID: 35971401; PMCID: PMC9372380.

Karlstad Ø, Hovi P, Husby A, et al. SARS-CoV-2 Vaccination and Myocarditis in a Nordic Cohort Study of 23 Million Residents. *JAMA Cardiol.* 2022;7(6):600–612. doi:10.1001/jamacardio.2022.0583

Oster ME, Shay DK, Su JR, et al. Myocarditis cases reported after mRNA-based COVID- 19 vaccination in the US from December 2020 to August 2021. JAMA 2022;327:331.

See commentary "Communicating the Benefits of Vaccination in Light of Potential Risks." with doi: 10.1001/jamacardio.2022.0590.

See "Myocarditis Following a Third BNT162b2 Vaccination Dose in Military Recruits in Israel" in *JAMA*, volume 327 on page 1611.

Schreckenberg R, Woitasky N, Itani N, Czech L, Ferdinandy P, Schulz R. Cardiac side effects of RNA-based SARS-CoV-2 vaccines: hidden cardiotoxic effects of mRNA-1273 and BNT162b2 on ventricular myocyte function and structure. Br J Pharmacol. 2024;181:345-361. doi:10.1111/bph.16262SARS-CoV-2 Vaccination and Myocarditis in a Nordic ...
Schreckenberg R, Woitasky N, Itani N, Czech L, Ferdinandy P, Schulz R. Cardiac side effects of RNA-based SARS-CoV-2 vaccines: hidden cardiotoxic effects of mRNA-1273 and BNT162b2 on ventricular myocyte function and structure. Br J Pharmacol. 2024;181:345-361. doi:10.1111/bph.16262

Ammirati E, Cooper LT Jr. Recovery from mRNA COVID-19 vaccine-related myocarditis. Lancet Child Adolesc Health. 2022;6(11):749-751. doi:10.1016/S2352- 4642(22)00272-3

Nakahara T, Iwabuchi Y, Miyazawa R, et al. Assessment of myo-cardial 18F-FDG uptake at PET/CT in asymptomatic SARS-CoV-2–vaccinated and nonvaccinated patients. Radiology. 2023;308(3): e230743. doi:10.1148/radiol.230743

Bluemke DA. COVID-19 vaccines and myocardial injury. Radiology. 2023;308(3):e232244. doi:10.1148/radiol.232244
SARS-CoV-2 Vaccination and Myocarditis in a Nordic ...

Karlstad Ø, Hovi P, Husby A, Härkänen T, Selmer RM, Pihlström N, Hansen JV, Nohynek H, Gunnes N, Sundström A, Wohlfahrt J, Nieminen TA, Grünewald M, Gulseth HL, Hviid A, Ljung R. SARS-CoV-2 Vaccination and Myocarditis in a Nordic Cohort Study of 23 Million Residents. JAMA Cardiol. 2022 Jun 1;7(6):600-612. doi: 10.1001/jamacardio.2022.0583. PMID: 35442390; PMCID: PMC9021987.

National Institutes of Health (NIH) (.gov)
https://pmc.ncbi.nlm.nih.gov › articles › PMC9021987

Prognosis of Myocarditis Developing After mRNA COVID-19 Vaccination Compared With Viral Myocarditis.
J Am Coll Cardiol. 2022.

Clinical outcomes of myocarditis after SARS-CoV-2 mRNA ...

BMJ Medicine
https://bmjmedicine.bmj.com › content

by A Husby · 2023 · Cited by 28 — *Myocarditis* after vaccination with SARS-CoV-2 mRNA vaccines was associated with better clinical outcomes within 90 days of admission to hospital.

Husby A, Gulseth HL, Hovi P, Hansen JV, Pihlström N, Gunnes N, Härkänen T, Dahl J, Karlstad Ø, Heliö T, Køber L, Ljung R, Hviid A. Clinical outcomes of myocarditis after SARS-CoV-2 mRNA vaccination in four Nordic countries: population based cohort study. BMJ Med. 2023 Feb 1;2(1):e000373. doi: 10.1136/bmjmed-2022-000373. PMID: 36936260; PMCID: PMC997867

Lai FTT, Chan EWW, Huang L, Cheung CL, Chui CSL, Li X, Wan EYF, Wong CKH, Chan EWY, Yiu KH, Wong ICK. Prognosis of Myocarditis Developing After mRNA COVID-19 Vaccination Compared With Viral Myocarditis. J Am Coll Cardiol. 2022 Dec 13;80(24):2255-2265. doi: 10.1016/j.jacc.2022.09.049. PMID: 36480967; PMCID: PMC9721305.

Booster vaccination with SARS-CoV-2 mRNA vaccines and ...

Oxford Academic
https://academic.oup.com › eurheartj › article-abstract

by A Hviid · 2024 · Cited by 11 — The results suggest that a booster dose is associated with increased *myocarditis* risk in adolescents and young adults.

Reuters. Israel examining heart inflammation cases in people who received Pfizer COVID shot. Published April 25, 2021. Accessed November 7,2021. http://www.reuters.com/world/middle-east/israel-examining-heart-inflammation-cases-people-who-received-pfizer-covid-shot-2021-04-25
EPI-PHARE. Myocardite et péricardite après la vaccination Covid-19 [in French]. Published online November 8, 2021. Accessed November 9, 2021. https://www.epi-phare.fr/rapports-detudes-et-publications/myocardite-pericardite-vaccination-covid19/

Witberg G, Barda N, Hoss S, et al. Myocarditis after Covid-19 vaccination in a large health care organization. *N Engl J Med*. Published online October 6, 2021. doi:10.1056/NEJMoa2110737Crossref

Arola A, Pikkarainen E, Sipilä JO, Pykäri J, Rautava P, Kytö V. Occurrence and features of childhood myocarditis: a nationwide study in Finland. J Am Heart Assoc. 2017;6(11):e005306. doi:10.1161/JAHA.116.005306

National Institutes of Health (NIH) (.gov)
https://pmc.ncbi.nlm.nih.gov › articles › PMC10202079

by **R Gedeborg** · 2023 · Cited by 6 — Overall, 95.6% (327/342) of cases registered as *myocarditis* were confirmed (definite, probable or possible *myocarditis* according to Brighton Collaboration ...

Husby A, Hansen JV, Fosbøl E, et al. SARS-CoV-2 vaccination and myocarditis or myopericarditis: population based cohort study. BMJ. 2021;375:e068665. doi:10.1136/bmj-2021-068665

A Simone, J Herald, A Chen, *et al.* Acute myocarditis following COVID-19 mRNA vaccination in adults aged 18 years or older JAMA Intern Med, 181 (2021), pp. 1668-1670. Government Department of Health A,. COVID-19 vaccination – guidance on myocarditis and pericarditis after mRNA COVID-19 vaccines. www.predict.org.au/mrna-chest-pain-guideline/ [Accessed 1 August 2023]. Google Scholar

T Lampejo, SM Durkin, N Bhatt, O Guttmann Acute myocarditis: aetiology, diagnosis and management Clin Med, 21 (2021), pp. e505-e510 View PDFView articleCrossrefGoogle Scholar43

RH Matar, R Mansour, H Nakanishi, *et al.* Clinical characteristics of patients with myocarditis following COVID-19 mRNA vaccination: a systematic review and meta-analysis. J Clin Med, 11 (2022), p. 4521 View at publisher CrossrefView in ScopusGoogle Scholar

Myocarditis and pericarditis after COVID-19 vaccination: clinical management guidance for healthcare professionals. www.gov.uk/government/publications/myocarditis-and-pericarditis-after-covid-19-vaccination/myocarditis-and-pericarditis-after-covid-19-vaccination-guidance-for-healthcare-professionals [Accessed 1 August 2023]. Google Scholar

B Heidecker, N Dagan, R Balicer, *et al.* Myocarditis following COVID-19 vaccine: incidence, presentation, diagnosis, pathophysiology, therapy, and outcomes put into perspective. A clinical consensus document supported by the Heart Failure Association of the European Society of Cardiology (ESC) and the ESC Working Group on Myocardial and Pericardial Diseases. Eur J Heart Fail, 24 (2022), pp. 2000-2018 View at publisherCrossrefView in ScopusGoogle Scholar View at publisherCrossrefView in ScopusGoogle Scholar

ALP Caforio, S Pankuweit, E Arbustini, *et al.* Current state of knowledge on aetiology, diagnosis, management, and therapy of myocarditis: a position statement of the European Society of Cardiology Working Group on Myocardial and Pericardial Diseases.Eur Heart J, 34 (2013), pp. 2636-2648 2648a–2648d View at publisher CrossrefView in ScopusGoogle Scholar

G Amir, A Rotstein, Y Razon, *et al.* CMR Imaging 6 Months After Myocarditis Associated with the BNT162b2 mRNA COVID-19 Vaccine.Pediatr Cardiol, 43 (2022), pp. 1522-1529 .View at publisherCrossrefView in ScopusGoogle Scholar48

TF Ismail, A Hua, S Plein, *et al.* The role of cardiovascular magnetic resonance in the evaluation of acute myocarditis and inflammatory cardiomyopathies in clinical practice - a comprehensive review. Eur Heart J Cardiovasc Imaging, 23 (2022), pp. 450-464. View at publisherCrossrefView in ScopusGoogle Scholar

UK Health Security Agency. COVID-19: the green book, chapter14a.www.gov.uk/government/publications/covid-19-the-green-book-chapter-14a Google Scholar

Florek K, Sokolski M. Myocarditis Associated with COVID-19 Vaccination. Vaccines (Basel). 2024 Oct 19;12(10):1193. doi: 10.3390/vaccines12101193. PMID: 39460358; PMCID: PMC11512328.

Agata Katarzyna Sularz, Alina Hua, Tevfik Ismail, SARS-CoV-2 vaccines and myocarditis, Clinical Medicine, Volume 23, Issue 5, 2023, Pages 495-502, ISSN 1470-2118, https://doi.org/10.7861/clinmed.2023-0049.
(https://www.sciencedirect.com/science/article/pii/S1470211824045573)

Husby A, Køber L. COVID-19 mRNA vaccination and myocarditis or pericarditis. Lancet. 2022 Jun 11;399(10342):2168-2169. doi: 10.1016/S0140-6736(22)00842-X. PMID: 35691306; PMCID: PMC9183212.

Mohiddin SA, Guttmann O, Marelli-Berg F. Vaccine-triggered acute autoimmune myocarditis: defining, detecting, and managing an apparently novel condition. J Am Heart Assoc. 2022;11(21):e026873. doi:10.1161/JAHA.122.026873

Schwab C, Domke LM, Hartmann L, Stenzinger A, Longerich T,Schirmacher P. Autopsy-based histopathological characterization of myocarditis after anti-SARS-CoV-2-vaccination. Clin Res Cardiol. 2023;112(3):431-440. doi:10.1007/s00392- 022- 02129-5

Kim HW, Jenista ER, Wendell DC, et al. Patients with acute myocarditis following mRNA COVID-19 vaccination. JAMA Cardiol. 2021;6(10):1196-1201. doi:10.1001/jamacardio.2021.2828

Yonker LM, Swank Z, Bartsch YC, Burns MD, Kane A, Boribong BP, Davis JP, Loiselle M, Novak T, Senussi Y, Cheng CA, Burgess E, Edlow AG, Chou J, Dionne A, Balaguru D, Lahoud-Rahme M, Arditi M, Julg B, Randolph AG, Alter G, Fasano A, Walt DR. Circulating Spike Protein Detected in Post-COVID-19 mRNA Vaccine Myocarditis. Circulation. 2023 Mar 14;147(11):867-876. doi: 10.1161/CIRCULATIONAHA.122.061025. Epub 2023 Jan 4. PMID: 36597886; PMCID: PMC10010667.

Fatima M, Cheema HA, Khan MHA, Shahid H, Ali MS, Hassan U, et al. Development of myocarditis and pericarditis after COVID-19 vaccination in adult population: a systematic review 2022;45.

Oster ME, Shay DK, Su JR, Gee J, Creech CB, Broder KR, et al. Myocarditis cases reported after mRNA-based COVID-19 vaccination in the US from December 2020 to August 2021. JAMA. 2022;327(4):331–40.

Dionne A, Sperotto F, Chamberlain S, Baker AL, Powell AJ, Prakash A, et al. Association of myocarditis with BNT162b2 messenger RNACOVID-19 vaccine in a case series of children. JAMA Cardiol. 2021;6(12):1446–50 w. Annals of medicine and surgery, 76,103486.

Boehmer TK, Kompaniyets L, Lavery AM, et al. Association between COVID-19 and myocarditis using hospital-based administrative data—United States, March 2020–January 2021. MMWR Morb Mortal Wkly Rep 2021; 70:1228–32.Google Scholar Crossref PubMed WorldCat

Theano Lagousi, Ioanna Papadatou, Petros Strempas, Elena Chatzikalil, Vana Spoulou, Paving the Way Towards Precision Vaccinology: The Paradigm of Myocarditis After Coronavirus Disease 2019 (COVID-19) Vaccination, *Clinical Infectious Diseases*, Volume 75, Issue Supplement_1, 15 August 2022, Pages S18–S23, https://doi.org/10.1093/cid/ciac396

Witberg G, Barda N, Hoss S, et al. Myocarditis after COVID-19 vaccination in a large health care organization. N Engl J Med 2021; 385:2132–9.Google Scholar Crossref PubMed WorldCat

Stowe J., Miller E., Andrews N., Whitaker H.J. Risk of myocarditis and pericarditis after a COVID-19 mRNA vaccine booster and after COVID-19 in those with and without prior SARS-CoV-2 infection: A self-controlled case series analysis in England. PLoS Med. 2023;20(6):e1004245. - PMC - PubMed

Block JP, Boehmer TK, Forrest CB, et al. Cardiac complications after SARS-CoV-2 infection and mRNA COVID-19 vaccination—PCORnet, United States, January 2021–January 2022.

MMWR Morb Mortal Wkly Rep 2022; 71:517–23.Google Scholar Crossref PubMed WorldCat

Bozkurt B, Kamat I, Hotez PJ. Myocarditis with COVID-19 mRNA vaccines. Circulation 2021; 144:471–84.Google Scholar Crossref PubMed WorldCat

Chua GT, Kwan MYW, Chui CSL, et al. Epidemiology of acute myocarditis/pericarditis in Hong Kong adolescents following Comirnaty vaccination. Clin Infect Dis 2021; ciab989. doi:10.1093/cid/ciab989.Google Scholar WorldCat Crossref

Gellad WF. Myocarditis after vaccination against COVID-19. BMJ 2021; 375:n3090.Google Scholar PubMed WorldCat

Mevorach D, Anis E, Cedar N, et al. Myocarditis after BNT162b2 mRNA vaccine against COVID-19 in Israel. N Engl J Med 2021; 385:2140–9.Google Scholar Crossref PubMed WorldCat

Rose J, Hulscher N, McCullough PA. Determinants of COVID-19 vaccine-induced myocarditis. Ther Adv Drug Saf. 2024 Jan 27;15:20420986241226566. doi: 10.1177/20420986241226566. PMID: 38293564; PMCID: PMC10823859.

ΜΥΟΚΑΡΔΙΤΙΔΑ ΑΠΟΔΙΔΟΜΕΝΗ ΣΕ ΛΟΙΜΩΞΗ COVID

Lupi L, Zaccone G, Italia L, Raffo M, Tomasoni D, et al. Cardiac involvement in a patient with coronavirus disease 2019 (COVID-19). JAMA Cardiol. (2020) 5:819–24. doi: 10.1001/jamacardio.2020.1096 PubMed Abstract | CrossRef Full Text | Google Scholar

RD Mitrani, N Dabas, JJ Goldberger COVID-19 cardiac injury: implications for long-term surveillance and outcomes in survivors Heart Rhythm, 17 (2020), pp. 1984-1990 View PDFView articleView in ScopusGoogle Scholar

Daniels CJ, Rajpal S, Greenshields JT, et al. Prevalence of clinical and subclinical myocarditis in competitive athletes with recent SARS-CoV-2 infection: results from the Big Ten COVID-19 Cardiac Registry. JAMA Cardiol 2021. May 27 (Epub ahead of print). - PMC - PubMed

ΜΥΟΚΑΡΔΙΤΙΔΑ ΛΟΓΩ ΕΜΒΟΛΙΟΥ COVID

Τις περισσότερες φορές τα συμπτώματα εμφανίζονται εντός των 10 ημερών από τον εμβολιασμό, συνήθως μετά την δεύτερη δόση, συχνότερα σε νεαρούς άνδρες. https://jamanetwork.com/journals/jama/fullarticle/2790421

Friedensohn L, Levin D, Fadlon-Derai M, et al. Myocarditis Following a Third BNT162b2 Vaccination Dose in Military Recruits in Israel. *JAMA Research Letter April 26,* 2022;327(16):1611–1612. doi:10.1001/jama.2022.4425

News-Medical, Thomas L. Free spike proteins in the blood appear to play a role in myocarditis post-COVID mRNA vaccine. News-Medical. Published January 5, 2023. https://www.news-medical.net/news/20230105/Free-spike-proteins-in-the-blood-appear-to-play-a-role-in-myocarditis-post-COVID-mRNA-vaccine.aspx

J Pillay, L Gaudet, A Wingert, *et al.* Incidence, risk factors, natural history, and hypothesised mechanisms of myocarditis and pericarditis following covid-19 vaccination: living evidence syntheses and review. BMJ, 378 (2022), p. e069445
View at publisher

Mevorach D, Anis E, Cedar N, et al. Myocarditis after BNT162b2 mRNA vaccine against Covid-19 in Israel. N Engl J Med. 2021; 385(23): 2140–2149. doi: 0.1056/NEJMoa2109730.

Patone M, Mei XW, Handunnetthi L, et al. Risks of myocarditis, pericarditis, and cardiac arrhythmias associated with COVID-19 vaccination or SARS-CoV-2 infection. Nat Med. 2022; 28(2): 410–422. doi: 10.1038/s41591-021-01630-0.

Oster ME, Shay DK, Su JR, et al. Myocarditis cases reported after mRNA-based COVID-19 vaccination in the US from December 2020 to August 2021. JAMA. 2022; 327(4): 331–340. doi:10.1001/jama.2021.24110.

Straus W, Urdaneta V, Esposito DB, et al.Analysis of myocarditis among 252 million mRNA-1273 recipients worldwide. Clin Infect Dis. 2023; 76(3): e544–e552. doi:10.1093/cid/ciac446.

Karlstad Ø, Hovi P, Husby A, et al. SARS-CoV-2 vaccination and myocarditis in a nordic cohort study of 23 million residents. JAMA Cardiol. 2022; 7(6): 600–612. doi:10.1001/jamacardio.2022.0583.

Witberg G, Barda N, Hoss S, et al. Myocarditis after Covid-19 vaccination in a large health care organization. N Engl J Med. 2021; 385(23): 2132–2139. doi: 10.1056/NEJMoa2110737.

Buchan SA, Seo CY, Johnson C, et al. Epidemiology of myocarditis and pericarditis following mRNA vaccination by vaccine product, schedule, and interdose interval among

Sularz AK, Hua A, Ismail T. SARS-CoV-2 vaccines and myocarditis. Clin Med (Lond). 2023; 23(5): 495–502. doi: 10.7861/clinmed.2023-0049.

Gnanenthiran SR, Limaye S. COVID-19 Mrna vaccines and myopericarditis. Intern Med J.2023; 53(2): 172–177. doi: 10.1111/imj.15748.

Altman NL, Berning AA, Mann SC, et al.Vaccination-associated myocarditis and myocardial injury. Circ Res. 2023; 132(10): 1338–1357. doi: 10.1161/CIRCRESAHA.122.321881

AK Sularz *et al.*SARS-CoV-2 vaccines and myocarditis Clin Med (Lond) **(2023)**

Shay DK, Shimabukuro TT, DeStefano F. (2021) Myocarditis Occurring After Immunization With mRNA-Based COVID-19 Vaccines. JAMA Cardiol.

Montgomery J, Ryan M, Engler R, et al. (2021) Myocarditis Following Immunization With mRNA COVID-19 Vaccines in Members of the US Military. JAMA Cardiol

Abu Mouch S, Roguin A, Hellou E, et al. (2021) Myocarditis following COVID-19 mRNA vaccination. Vaccine 39(29):3790-3793

Gargano JW, Wallace M, Hadler SC, et al. Use of mRNA COVID-19 vaccine after reports of myocarditis among vaccine recipients: update from the advisory committee on immunization practices — United States, June 2021. MMWR Morb Mortal Wkly Rep 2021;70:977-982. - PMC - PubMed

Myocarditis and pericarditis in association with COVID-19 mRNA-vaccination: cases from a regional pharmacovigilance centre.

Istampoulouoglou I, Dimitriou G, Späni S, Christ A, Zimmermanns B, Koechlin S, Stoeckmann O, Winterhalder C, Marono D, Toma V, Leuppi-Taegtmeyer AB. Glob Cardiol Sci Pract. 2021 Oct 30;2021(3):e202118. doi: 10.21542/gcsp.2021.18. eCollection 2021 Oct 30. PMID: 34805376

Myocarditis and pericarditis after COVID-19 messenger RNA vaccines.

Goldman RD. Can Fam Physician. 2022 Jan;68(1):17-18. doi: 10.46747/cfp.680117. PMID: 35063975 Free PMC article.

Features of Inflammatory Heart Reactions Following mRNA COVID-19 Vaccination at a Global Level.

Chouchana L, Blet A, Al-Khalaf M, Kafil TS, Nair G, Robblee J, Drici MD, Valnet-Rabier MB, Micallef J, Salvo F, Treluyer JM, Liu PP. Clin Pharmacol Ther. 2022 Mar;111(3):605-613. doi: 10.1002/cpt.2499. Epub 2021 Dec 27. PMID: 34860360 Free PMC article.

W Straus, V Urdaneta, DB Esposito, *et al.*Analysis of myocarditis among 252 million mRNA-1273 recipients worldwide. Clin Infect Dis, 76 (2023), pp. e544-e552 Scholarhttps://www.sciencedirect.com/science/article/pii/S1470211824045573

ME Oster, DK Shay, JR Su, *et al.* Myocarditis cases reported after mRNA-based COVID-19 vaccination in the US from December 2020 to August 2021. JAMA, 327 (2022), pp. 331-340
https://www.sciencedirect.com/science/article/pii/S1470211824045573

G Witberg, N Barda, S Hoss, *et al.*Myocarditis after Covid-19 vaccination in a large health care organization N Engl J Med, 385 (2021), pp. 2132-2139
https://www.sciencedirect.com/science/article/pii/S1470211824045573

Mevorach D, Anis E, Cedar N, Bromberg M, Haas EJ, Nadir E, et al. Myocarditis after BNT162b2 mRNA vaccine against Covid-19 in Israel. *N Engl J Med.* (2021) 385:2140–9. doi: 10.1056/NEJMoa2109730 PubMed Abstract | CrossRef Full Text | Google Scholar

X Li, FTT Lai, GT Chua, *et al.* Myocarditis following COVID-19 BNT162b2 vaccination among adolescents in Hong Kong. JAMA Pediatr, 176 (2022), pp. 612-614
https://www.sciencedirect.com/science/article/pii/S1470211824045573

Ø Karlstad, P Hovi, A Husby, *et al.* SARS-CoV-2 Vaccination and Myocarditis in a Nordic Cohort Study of 23 Million Residents JAMA Cardiol, 7 (2022), pp. 600-612
https://www.sciencedirect.com/science/article/pii/S1470211824045573

A Husby, JV Hansen, E Fosbøl, *et al.* SARS-CoV-2 vaccination and myocarditis or myopericarditis: population based cohort study BMJ, 375 (2021), p. e068665
https://www.sciencedirect.com/science/article/pii/S1470211824045573

S le Vu, M Bertrand, MJ Jabagi, *et al.* Age and sex-specific risks of myocarditis and pericarditis following Covid-19 messenger RNA vaccines Nat Commun, 13 (2022), p. 3633.
https://www.sciencedirect.com/science/article/pii/S1470211824045573

SA Buchan, CY Seo, C Johnson, *et al.* Epidemiology of myocarditis and pericarditis following mRNA vaccination by vaccine product, schedule, and interdose interval among adolescents and adults in Ontario, Canada. JAMA Netw Open, 5 (2022), p. e2218505.
https://www.sciencedirect.com/science/article/pii/S1470211824045573

M Patone, XW Mei, L Handunnetthi, *et al.* Risks of myocarditis, pericarditis, and cardiac arrhythmias associated with COVID-19 vaccination or SARS-CoV-2 infection Nat Med, 28 (2022), pp. 410-422 View at publisherCrossrefView in ScopusGoogle Scholar

B Bozkurt, I Kamat, PJ Hotez. Myocarditis with COVID-19 mRNA vaccines. Circulation, 144 (2021), pp. 471-484
https://www.sciencedirect.com/science/article/pii/S1470211824045573

A Dionne, F Sperotto, S Chamberlain, *et al.* Association of myocarditis with BNT162b2 messenger RNA COVID-19 vaccine in a case series of children. JAMA Cardiol, 6 (2021), pp. 1446-1450 https://www.sciencedirect.com/science/article/pii/S1470211824045573

JW Gargano, M Wallace, SC Hadler, *et al.* Use of mRNA COVID-19 vaccine after reports of myocarditis among vaccine recipients: update from the Advisory Committee on Immunization Practices - United States, June 2021. MMWR Morb Mortal Wkly Rep, 70 (2021), pp. 977-982. https://www.sciencedirect.com/science/article/pii/S1470211824045573

SK Sexson Tejtel, FM Munoz, I Al-Ammouri, *et al.* Myocarditis and pericarditis: case definition and guidelines for data collection, analysis, and presentation of immunization safety data Vaccine, 40 (2022), pp. 1499-1511 View PDF View article View in Scopus Google Scholar

European Medicines Agency. COVID-19 vaccines: update on ongoing evaluation of myocarditis and pericarditis. www.ema.europa.eu/en/news/covid-19-vaccines-update-ongoing-evaluation-myocarditis-pericarditis [Accessed 1 August 2023]. Google Scholar

American College of Cardiology. Vaccine-associated myocarditis risk in context: emerging evidence. www.acc.org/latest-in-cardiology/articles/2022/02/09/12/56/vaccine-associated-myocarditis-risk-in-context [Accessed 1 August 2023]. Google Scholar

S Lane, A Yeomans, S Shakir Reports of myocarditis and pericarditis following mRNA COVID-19 vaccination: a systematic review of spontaneously reported data from the UK, Europe and the USA and of the scientific literature BMJ Open, 12 (2022), p. e059223 https://www.sciencedirect.com/science/article/pii/S1470211824045573

GA Diaz, GT Parsons, SK Gering, *et al.* Myocarditis and Pericarditis After Vaccination for COVID-19 JAMA, 326 (2021), pp. 1210-1212 https://www.sciencedirect.com/science/article/pii/S1470211824045573

J Yasuhara, K Masuda, T Aikawa, *et al.* Myopericarditis after COVID-19 mRNA vaccination among adolescents and young adults: a systematic review and meta-analysis JAMA Pediatr, 177 (2023), pp. 42-52 https://www.sciencedirect.com/science/article/pii/S1470211824045573

J Chen, T Wu, C Zhang, *et al.* Clinically suspected lethal viral myocarditis combined with encephalitis: a COVID-19 vaccine complication ESC Heart Fail, 10 (2023), pp. 1422-1425 https://www.sciencedirect.com/science/article/pii/S1470211824045573

C Schwab, LM Domke, L Hartmann, *et al.* Autopsy-based histopathological characterization of myocarditis after anti-SARS-CoV-2-vaccination Clin Res Cardiol, 112 (2023), pp. 431-440 https://www.sciencedirect.com/science/article/pii/S1470211824045573

H Kawano, N Yamamoto, H Kurohama, *et al.* Fulminant myocarditis and acute appendicitis after COVID-19 vaccination: a case report .Intern Med, 62 (2023), pp. 411-417 https://www.sciencedirect.com/science/article/pii/S1470211824045573

I Kracalik, ME Oster, KR Broder, *et al.* Outcomes at least 90 days since onset of myocarditis after mRNA COVID-19 vaccination in adolescents and young adults in the USA: a follow-up surveillance study. Lancet Child Adolesc Health, 6 (2022), pp. 788-798 https://www.sciencedirect.com/science/article/pii/S1470211824045573

KF Larson, E Ammirati, ED Adler, *et al.*Myocarditis after BNT162b2 and mRNA-1273 vaccination. Circulation, 144 (2021), pp. 506-508 View at publisherCrossrefView in ScopusGoogle Scholar

L Thurner, C Kessel, N Fadle, *et al.* IL-1RA antibodies in myocarditis after SARS-CoV-2 vaccination. N Engl J Med, 387 (2022), pp. 1524-1527 https://www.sciencedirect.com/science/article/pii/S1470211824045573

K Parmar, S Subramanyam, G del Rio-Pertuz, P Sethi, E Argueta-Sosa Cardiac adverse events after vaccination-a systematic review. Vaccines (Basel), 10 (2022), p. 700 View at publisher CrossrefView in ScopusGoogle Scholar

Mueller C,. Myocardial Injury after COVID-19 mRNA booster vaccination [Oral presentation]. European Society of Cardiology conference, August 2022, Barcelona. https://esc365.escardio.org/presentation/255414?query=Myocardial%20Injury%20after%20COVID-19%20mRNA%20booster%20vaccination [Accessed 1 August 2023]. Google Scholar

https://www.rarecancers.org.au/news/415/possible-side-effects-of-the-pfizer-vaccine by **Dr. Emily Isham**

G Amir, A Rotstein, Y Razon, *et al.*CMR Imaging 6 Months After Myocarditis Associated with the BNT162b2 mRNA COVID-19 Vaccine Pediatr Cardiol, 43 (2022), pp. 1522-1529 https://www.sciencedirect.com/science/article/pii/S1470211824045573

TF Ismail, A Hua, S Plein, *et al.* The role of cardiovascular magnetic resonance in the evaluation of acute myocarditis and inflammatory cardiomyopathies in clinical practice - a comprehensive review. Eur Heart J Cardiovasc Imaging, 23 (2022), pp. 450-464
View at publisherCrossrefView in ScopusGoogle Scholar

A Simone, J Herald, A Chen, *et al.*Acute myocarditis following COVID-19 mRNA vaccination in adults aged 18 years or older .JAMA Intern Med, 181 (2021), pp. 1668-1670
View at publisherCrossrefView in ScopusGoogle Scholar

Buchan SA, Seo CY, Johnson C, et al. Epidemiology of myocarditis and pericarditis following mRNA vaccination by vaccine product, schedule, and interdose interval amongadolescents and adults in Ontario, Canada. JAMA Netw Open. 2022; 5(6):e2218505. doi:10.1001/jamanetworkopen.2022.18505.

Cocco N, Leibundgut G, Pelliccia F, et al. Arrhythmias after COVID-19 vaccination: Have we left all stones unturned? Int J Mol Sci. 2023; 24(12): 10405. doi: 10.3390/ijms241210405.

ΔΙΑΓΝΩΣΤΙΚΑ ΜΕΣΑ - ΜΑΓΝΗΤΙΚΗ ΤΟΜΟΓΡΑΦΙΑ

Incremental value of extracellular volume assessment by cardiovascular magnetic resonance imaging in risk stratifying patients with suspected myocarditis.

Gräni C, Bière L, Eichhorn C, Kaneko K, Agarwal V, Aghayev A, Steigner M, Blankstein R, Jerosch-Herold M, Kwong RY. Int J Cardiovasc Imaging. 2019 Jun;35(6):1067-1078. doi: 10.1007/s10554-019-01552-6. Epub 2019 Feb 12. PMID: 30756221

Optimal timing of follow-up cardiac magnetic resonance in patients with uncomplicated acute myocarditis.

Pieroni M, Ciabatti M, Zocchi C, Tavanti V, Camporeale A, Saletti E, Fumagalli C, Venezia D, Lombardi M, Olivotto I, Bolognese L. Int J Cardiol. 2024 Feb 15;397:131603. doi: 10.1016/j.ijcard.2023.131603. Epub 2023 Nov 17. PMID: 37979787

Cardiac Magnetic Resonance Follow-Up of Children After Pediatric Inflammatory Multisystem Syndrome Temporally Associated With SARS-CoV-2 With Initial Cardiac Involvement.

Bartoszek M, Małek ŁA, Barczuk-Falęcka M, Brzewski M. J Magn Reson Imaging. 2022 Mar;55(3):883-891. doi: 10.1002/jmri.27870. Epub 2021 Jul 29. PMID: 34327751 Free PMC article.

Cardiac manifestations and outcomes of COVID-19 vaccine-associated myocarditis in the young in the USA: longitudinal results from the Myocarditis After COVID Vaccination (MACiV) multicenter study.

Jain SS, Anderson SA, Steele JM, Wilson HC, Muniz JC, Soslow JH, Beroukhim RS, Maksymiuk V, Jacquemyn X, Frosch OH, Fonseca B, Harahsheh AS, Buddhe S, Ashwath RC, Thacker D, Maskatia SA, Misra N, Su JA, Siddiqui S, Vaiyani D, Vaikom-House AK, Campbell MJ, Klein J, Huang S, Mathis C, Cornicelli MD, Sharma M, Nagaraju L, Ang JY, Uppu SC, Ramachandran P, Patel JK, Han F, Mandell JG, Akam-Venkata J, DiLorenzo MP, Brumund M, Bhatla P, Eshtehardi P, Mehta K, Glover K, Dove ML, Aldawsari KA, Kumar A, Barfuss SB, Dorfman AL, Minocha PK, Yonts AB, Schauer J, Cheng AL, Robinson JD, Powell Z, Srivastava S, Chelliah A, Sanil Y, Hernandez LE, Gaur L, Antonchak M, Johnston M, Reich JD, Nair N, Drugge ED, Grosse-Wortmann L. EClinicalMedicine. 2024 Sep 6;76:102809. doi: 10.1016/j.eclinm.2024.102809. eCollection 2024 Oct. PMID: 39290640 Free PMC article.

Cardiovascular magnetic resonance evaluation of paediatric patients with systemic lupus erythematosus and cardiac symptoms.

Mavrogeni S, Smerla R, Grigoriadou G, Servos G, Koutsogeorgopoulou L, Karabela G, Stavropoulos E, Spiliotis G, Kolovou G, Papadopoulos G. Lupus. 2016 Mar;25(3):289-95. doi: 10.1177/0961203315611496. Epub 2015 Oct 8. PMID: 26453663

COVID-19 myocarditis cardiac magnetic resonance findings in symptomatic patients.

Altay S. Acta Radiol. 2022 Nov;63(11):1475-1480. doi: 10.1177/02841851211046502. Epub 2021 Oct 8. PMID: 34623175 Free PMC article.

[Predictive value of cardiac magnetic resonance-derived parameters on the improvement of left ventricular function in patients with acute viral myocarditis].

Ouyang HC, Ouyang FC, Mai LL, Chen YY, Hu YZ, Chen HX, Li WS. Zhonghua Xin Xue Guan Bing Za Zhi. 2017 Sep 24;45(9):758-764. doi: 10.3760/cma.j.issn.0253-3758.2017.09.006. PMID: 29036973 Chinese.

Cardiac magnetic resonance in histologically proven eosinophilic myocarditis.

Pöyhönen P, Rågback J, Mäyränpää MI, Nordenswan HK, Lehtonen J, Shenoy C, Kupari M. J Cardiovasc Magn Reson. 2023 Dec 18;25(1):79. doi: 10.1186/s12968-023-00979-0. PMID: 38105221 Free PMC article.

Native T1-mapping detects the location, extent and patterns of acute myocarditis without the need for gadolinium contrast agents.

Ferreira VM, Piechnik SK, Dall'Armellina E, Karamitsos TD, Francis JM, Ntusi N, Holloway C, Choudhury RP, Kardos A, Robson MD, Friedrich MG, Neubauer S. J Cardiovasc Magn Reson. 2014 May 23;16(1):36. doi: 10.1186/1532-429X-16-36. PMID: 24886708 Free PMC article.

Cardiovascular magnetic resonance in immune checkpoint inhibitor-associated myocarditis.

Zhang L, Awadalla M, Mahmood SS, Nohria A, Hassan MZO, Thuny F, Zlotoff DA, Murphy SP, Stone JR, Golden DLA, Alvi RM, Rokicki A, Jones-O'Connor M, Cohen JV, Heinzerling LM, Mulligan C, Armanious M, Barac A, Forrestal BJ, Sullivan RJ, Kwong RY, Yang EH, Damrongwatanasuk R, Chen CL, Gupta D, Kirchberger MC, Moslehi JJ, Coelho-Filho OR, Ganatra S, Rizvi MA, Sahni G, Tocchetti CG, Mercurio V, Mahmoudi M, Lawrence DP, Reynolds KL, Weinsaft JW, Baksi AJ, Ederhy S, Groarke JD, Lyon AR, Fradley MG, Thavendiranathan P, Neilan TG. Eur Heart J. 2020 May 7;41(18):1733-1743. doi: 10.1093/eurheartj/ehaa051. PMID: 32112560 Free PMC article.

Left ventricular myocardial strain and tissue characterization by cardiac magnetic resonance imaging in immune checkpoint inhibitor associated cardiotoxicity.

Higgins AY, Arbune A, Soufer A, Ragheb E, Kwan JM, Lamy J, Henry M, Cuomo JR, Charifa A, Gallegos C, Hull S, Coviello JS, Bader AS, Peters DC, Huber S, Mojibian HR, Sinusas AJ, Kluger H, Baldassarre LA. PLoS One. 2021 Feb 19;16(2):e0246764. doi: 10.1371/journal.pone.0246764. eCollection 2021. PMID: 33606757 Free PMC article.

Myocardial biomarkers and delayed enhanced cardiac magnetic resonance relationship in clinically suspected myocarditis and insight on clinical outcome.

Mewton N, Dernis A, Bresson D, Zouaghi O, Croisille P, Flocard E, Douek P, Bonnefoy-Cudraz E. J Cardiovasc Med (Hagerstown). 2015 Oct;16(10):696-703. doi: 10.2459/JCM.0000000000000024. PMID: 24933194

The prognostic value of global myocardium strain by CMR-feature tracking in immune checkpoint inhibitor-associated myocarditis.

Zhao SH, Yun H, Chen CZ, Chen YY, Lin JY, Zeng MS, Liu TS, Pan CZ, Jin H. Eur Radiol. 2022 Nov;32(11):7657-7667. doi: 10.1007/s00330-022-08844-x. Epub 2022 May 14. PMID: 35567603

Cardiac magnetic resonance monitors reversible and irreversible myocardial injury in myocarditis.

Zagrosek A, Abdel-Aty H, Boyé P, Wassmuth R, Messroghli D, Utz W, Rudolph A, Bohl S, Dietz R, Schulz-Menger J. JACC Cardiovasc Imaging. 2009 Feb;2(2):131-8. doi: 10.1016/j.jcmg.2008.09.014. PMID: 19356545 Free article.

M Fronza, P Thavendiranathan, GR Karur, *et al.*
Cardiac MRI and clinical follow-up in COVID-19 vaccine-associated myocarditis
Radiology, 304 (2022), pp. E48-E49

View at publisherCrossrefView in Scopus Google Scholar
Samimisedeh P, Jafari Afshar E, Shafiabadi Hassani N, Rastad H. Cardiac MRI Findings in COVID-19 Vaccine-Related Myocarditis: A Pooled Analysis of 468 Patients. J Magn Reson Imaging. 2022 Oct;56(4):971-982. doi: 10.1002/jmri.28268. Epub 2022 May 25. PMID: 35612967; PMCID: PMC9348186.

ΜΥΟΚΑΡΔΙΤΙΔΑ - ΕΥΡΗΜΑΤΑ ΕΠΙ ΒΛΑΒΗΣ ΜΥΟΚΑΡΔΙΟΥ ΑΛΛΗΣ ΑΙΤΙΟΛΟΓΙΑΣ - ΔΙΑΦΟΡΟΔΙΑΓΝΩΣΗ

Regional extracellular volume within late gadolinium enhancement-positive myocardium to differentiate cardiac sarcoidosis from myocarditis of other etiology: a cardiovascular magnetic resonance study.

Treiber J, Novak D, Fischer-Rasokat U, Wolter JS, Kriechbaum S, Weferling M, von Jeinsen B, Hain A, Rieth AJ, Siemons T, Keller T, Hamm CW, Rolf A. J Cardiovasc Magn Reson. 2023 Feb 9;25(1):8. doi: 10.1186/s12968-023-00918-z. PMID: 36755275 Free PMC article.

Left and right ventricular morphology, function and late gadolinium enhancement extent and localization change with different clinical presentation of acute myocarditis Data from the ITAlian multicenter study on MYocarditis (ITAMY).

Di Bella G, Camastra G, Monti L, Dellegrottaglie S, Piaggi P, Moro C, Pepe A, Lanzillo C, Pontone G, Perazzolo Marra M, Di Roma M, Scatteia A, Aquaro GD; working group 'Cardiac Magnetic Resonance' of the Italian Society of Cardiology. J Cardiovasc Med (Hagerstown). 2017 Nov;18(11):881-887. doi: 10.2459/JCM.0000000000000574. PMID: 28915139

"Function follows form": Role of cardiac magnetic resonance for ventricular arrhythmia risk stratification in patients with cardiac sarcoidosis.

Magnocavallo M, Vetta G, Polselli M, Cauti FM, Parlavecchio A, Caminiti R, Crea P, Pannone L, Sorgente A, Chimenti C, Chierchia GB, Rossi P, Natale A, de Asmundis C, Bianchi S, Della Rocca DG. J Cardiovasc Electrophysiol. 2023 Aug;34(8):1781-1784. doi: 10.1111/jce.16020. Epub 2023 Jul 26. PMID: 37493490

Cardiac magnetic resonance-based layer-specific strain in immune checkpoint inhibitor-associated myocarditis.

Li Z, Zhao R, Wang C, Wang Y, Lin J, Zhao S, Chen J, Zhou Y, Liu T, Wang F, Shu X, Zeng M, Cheng L. ESC Heart Fail. 2024 Apr;11(2):1061-1075. doi: 10.1002/ehf2.14664. Epub 2024 Jan 19. PMID: 38243390 Free PMC article

Cardiac magnetic resonance in giant cell myocarditis: a matched comparison with cardiac sarcoidosis.

Pöyhönen P, Nordenswan HK, Lehtonen J, Syväranta S, Shenoy C, Kupari M. Eur Heart J Cardiovasc Imaging. 2023 Mar 21;24(4):404-412. doi: 10.1093/ehjci/jeac265. PMID: 36624560 Free PMC article.

Applying quantitative CMR parameters for detecting myocardial lesion in immune checkpoint inhibitors-associated myocarditis.

Zhao SH, Yun H, Chen CZ, Chen YY, Lin JY, Zeng MS, Liu TS, Pan CZ, Jin H. Eur J Radiol. 2022 Nov;156:110558. doi: 10.1016/j.ejrad.2022.110558. Epub 2022 Oct 17. PMID: 36265221

Mesalazine-induced myocarditis in a patient with ulcerative colitis: a case report.

Littlewood S, Nikolou E, Aziz W, Anderson L. Eur Heart J Case Rep. 2024 Aug 27;8(9):ytae458. doi: 10.1093/ehjcr/ytae458. eCollection 2024 Sep. PMID: 39279885 Free PMC article.

[Toxin-Mediated Myocarditis From a Brown Recluse Spider Bite.]

Sims RA, Fish-Trotter HL, Clark DE, Gayle KA, Hughes SG, Brittain EL. JACC Case Rep. 2021 Oct 31;4(1):49-53. doi: 10.1016/j.jaccas.2021.10.003. eCollection 2022 Jan 5. PMID: 35036944 Free PMC article.

ΣΥΓΚΡΙΣΗ ΤΗΣ ΣΥΧΝΟΤΗΤΑΣ ΜΥΟΚΑΡΔΙΤΙΔΑΣ ΜΕΤΑΞΥ ΕΜΒΟΛΙΑΣΜΕΝΩΝ ΚΑΙ ΜΗ (MYOCARDITIS VACCINATED VS UNVACCINATED)

Η αναφερόμενη συχνότητα μυοκαρδίτιδας σε εμβολιασμένους και μη εμβολιασμένους ποικίλλει πολύ! Άλλοτε αναφέρεται αριθμός περιπτώσεων μυοκαρδίτιδας ανά 100.000 πληθυσμού, και άλλοτε ανά 1 εκατομμύριο δόσεων εμβολίου.
Κάποιοι ισχυρίζονται ότι είναι σπανιότατη η μυοκαρδίτιδα λόγω λοίμωξης COVID-19, ενώ ιδιαίτερα συχνή η οφειλόμενη σε COVID εμβόλιο, ενώ άλλοι δηλώνουν το ακριβώς αντίθετο.
Προκειμένου να σχηματίσει κανείς όσο το δυνατόν σωστότερη γνώμη, χρειάζεται να μελετήσει τον αριθμό δημοσιεύσεων προ του Δεκεμβρίου 2020, δηλαδή σε περίοδο χωρίς εμβόλια, σε σύγκριση με τις αναφερθείσες μετά την έναρξη των εμβολιασμών περιπτώσεις, προσέχοντας πάντα μήπως συνέπεσε λοίμωξη ή έστω θετικό τεστ για τον ιό SARS-COV- 2 κοντά στην ημερομηνία του εμβολιασμού.
Αντιφατικές είναι και οι πληροφορίες για την βαρύτητα της μυοκαρδίτιδας σε εμβολιασμένους και μη…
Δεν μπορεί παρά να αναρωτηθούμε μήπως μερικοί συγγραφείς πάσχουν σε επίπεδο εντιμότητας…

Elizalde MU, Eguinoa FJG, de Las Huertas AGL, Jiménez-González M, Ramírez E. Myocarditis and pericarditis risk with mRNA COVID-19 vaccination compared to unvaccinated individuals: A retrospective cohort study in a Spanish Tertiary Hospital. Biomed Pharmacother. 2024 Feb;171:116181. doi: 10.1016/j.biopha.2024.116181. Epub 2024 Jan 22. PMID: 38262150.

The incidence of pericarditis and myocarditis in the total population exposed to at least one dose of mRNA COVID-19 vaccines was 5/100,000 (CI95%:3 to 8 per 100,000), compared to 70/100,000 (CI95%: 66 to 92 per 100,000) in those who were not vaccinated. 22 Jan 2024

Alami A, Krewski D, Farhat N, Mattison D, Wilson K, Gravel CA, Farrell PJ, Crispo JAG, Haddad N, Perez-Lloret S, Villeneuve PJ. Risk of myocarditis and pericarditis in mRNA COVID-19-vaccinated and unvaccinated populations: a systematic review and meta-analysis. BMJ Open. 2023 Jun 20;13(6):e065687. doi: 10.1136/bmjopen-2022-065687. PMID: 37339840; PMCID: PMC10314577.

> by A Alami · 2023 · Cited by 34 — Our meta-analysis indicates that within 30-day follow-up period, *vaccinated individuals were twice as likely to develop myo/pericarditis* in the absence of SARS ... Although the absolute number of observed myo/pericarditis cases remains quite low, a higher risk was detected in those who received mRNA COVID-19 vaccinations compared with unvaccinated individuals in the absence of SARS-CoV-2 infection.

Mikel Urroz Elizalde, Francisco Javier Guijarro Eguinoa, Arturo Gómez López de las Huertas, María Jiménez-González, Elena Ramírez Myocarditis and pericarditis risk with mRNA COVID-19 vaccination compared to unvaccinated individuals: A retrospective cohort study in a Spanish Tertiary Hospital. Biomedicine & Pharmacotherapy,Volume 171, 2024,116181, ISSN 0753-3322, https://doi.org/10.1016/j.biopha.2024.116181.

(https://www.sciencedirect.com/science/article/pii/S0753332224000623)
by MU Elizalde · 2024 · Cited by 5 — Conclusion. The incidence of pericarditis and *myocarditis* in patients exposed to mRNA COVID-19 vaccines was lower than in those who were *not vaccinated*, ...

Myocarditis seven times more likely with COVID-19 than ...

Penn State Health News

https://pennstatehealthnews.org › News

26 Sept 2022 — According to the findings, the rates of *myocarditis* in people who were *vaccinated* against COVID-19 were **only twofold higher than in *unvaccinated*** ...

Myocarditis risks linked to COVID-19 vaccination explained

News-Medical

https://www.news-medical.net › news › Myocarditis-ris...

28 Aug 2024 — It means that *vaccinated patients have approx. 20 % higher risk of complication* for post-Covid myocardities than non vaccinated.

https://www.nature.com/articles/s41541-024-00893-1Buoninfante, A., Andeweg, A., Genov, G. *et al.* Myocarditis associated with COVID-19 vaccination. *npj Vaccines* **9**, 122 (2024). https://doi.org/10.1038/s41541-024-00893-1 https://www.nature.com › npj vaccines › review articles

by A Buoninfante · 2024 · Cited by 15 — Available evidence shows that COVID-19 mRNA *vaccination* is associated with an increased risk of *myocarditis*, but at a much lower level than the risk associated with COVID-19 infection, reiterating a clear positive benefit/risk ratio for COVID-19 mRNA vaccines....

https://bmjopen.bmj.com/content/13/6/e065687

Semenzato L, Le Vu S, Botton J, et al. Long-Term Prognosis of Patients With Myocarditis Attributed to COVID-19 mRNA Vaccination, SARS-CoV-2 Infection, or Conventional Etiologies. *JAMA.* 2024;332(16):1367–1377. doi:10.1001/jama.2024.16380

Guidance on Myocarditis and Pericarditis after COVID-19 ...

Australian Government Department of Health and Aged Care

https://www.health.gov.au › sites › default › files

PDF

12 Jan 2024 — A small increased risk of *myocarditis* and/or pericarditis has been observed in people following *vaccination* with an mRNA *vaccine* compared with ...

Myocarditis and Covid-19 vaccines

British Heart Foundation

https://www.bhf.org.uk › coronavirus-and-your-health

Research shows that Covid-19 itself is much more likely to cause *myocarditis* than a *vaccine* in most people. People who are *vaccinated* against Covid-19 also ...

Myocarditis · Read the article · Heart and Coronavirus · AstraZeneca Covid vaccine

COVID-19 infection poses higher risk for myocarditis than ...

www.heart.org

https://www.heart.org › news › 2022/08/22 › covid-19-i...

22 Aug 2022 — The analysis showed people infected with COVID-19 before receiving a *vaccine* were 11 times more at risk for developing *myocarditis* within 28 ...

Heart problems vaccinated vs unvaccinated

Rate of myocarditis **after COVID vaccine** vs **infection**

Myocarditis **vaccine** vs **infection 2023**

Pfizer myocarditis **2023**

Vaccine myocarditis **mechanism**

COVID vaccine myocarditis **study**

COVID vaccine and myocarditis **Canada**

Myocarditis **after vaccination firm data**

Oxford study on myocarditis and vaccine misrepresented

USA Today

https://www.usatoday.com › factcheck › 2024/08/08 › m...

Claim: Study shows heart issues only after COVID vaccination, not after infection

Claimed by: Social media

Fact check by USA Today: False

Yale study reveals insights into post-vaccine heart ...

YaleNews

https://news.yale.edu › 2023/05/05 › yale-study-reveals...

5 May 2023 — In a new study, Yale scientists have identified the immune signature of rare cases of *myocarditis* among those *vaccinated* against COVID-19 with mRNA vaccines.

U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION - CDC. *Interim Clinical Considerations for Use of COVID-19 Vaccines in the United States*. October , 2024 https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim- considerations-us.html Accessed February 1, 2025

Myocarditis in SARS-CoV-2: A Meta-Analysis

The Cureus Journal of Medical Science

https://www.cureus.com › articles › 183625-myocarditis-...

by R Thaker · 2023 · Cited by 4 — Other sources suggest that there was **a seven times increased risk** of developing *myocarditis* in the *unvaccinated* population versus the *vaccinated* ...

Myocarditis in SARS-CoV-2 infection vs. COVID-19 ...

Frontiers

https://www.frontiersin.org › fcvm.2022.951314 › full by N Voleti · 2022 · Cited by 83 — We found that the risk of *myocarditis* is more than seven fold higher in persons who were infected with the SARS-CoV-2 than in those who received the *vaccine*.

[SARS-CoV-2 Vaccination and Myocarditis in a Nordic ...]

JN

[JAMA Network]

https://jamanetwork.com › jamacardiology › fullarticle

by Ø Karlstad · 2022 · Cited by 218 — Risk of *myocarditis* after the first and second doses of SARS-CoV-2 mRNA vaccines was **highest in young males aged 16 to 24 years after the second dose**.

[Myocarditis Cases Reported After mRNA-Based COVID-19 ...]

JN

[JAMA Network]

https://jamanetwork.com › journals › jama › fullarticle

by ME Oster · 2022 · Cited by 697 — It has been hypothesized that *vaccination* can serve as a trigger for *myocarditis*; however, only the smallpox *vaccine* has previously been ...

[COVID-19, Vaccinations and Myocarditis]

[The Heart Group]

https://theheartgroup.co.nz › gp-info › covid-resources

... *unvaccinated adults are 17 times more likely to be hospitalised* compared with fully vaccinated adults. (DOI: https://doi.org/10.1101/2021.08.27.21262356).

[Myocarditis after Covid-19 Vaccination in a Large Health ...](https://www.nejm.org/doi/full/NEJMoa2110737)

[The New England Journal of Medicine](https://www.nejm.org/doi/full/NEJMoa2110737)

https://www.nejm.org › doi › full › NEJMoa2110737

by G Witberg · 2021 · Cited by 704 — More recently, researchers in Israel reported that *vaccination* increased the 42-day risk of *myocarditis* by a factor of 3.24 (95% confidence ...

Myocarditis In Kids Rare After COVID Vaccine

Children's Healthcare of Atlanta

https://www.choa.org › parent-resources › covid-19

29 Aug 2024 — A Children's-led study confirms that heart inflammation or *myocarditis* is a very rare side effect in kids who receive the COVID-19 mRNA *vaccine*.

Myocarditis risk significantly higher after COVID-19 ...

www.heart.org

https://newsroom.heart.org › news › myocarditis-risk-si...

22 Aug 2022 — The risk of developing *myocarditis* was substantially lower in the 1-28 days after COVID-19 *vaccination* than after COVID-19 infection, except for ...

[Study: Myocarditis Risk Is Significantly Higher After COVID ...]

[Pharmacy Times]

[https://www.pharmacytimes.com › view › study-myocar...]

24 Aug 2022 — The risk of myocarditis in *unvaccinated individuals* after a COVID-19 infection was at least 11 times higher than in individuals who ...

[COVID-19 Vaccines and Myocarditis: An Overview of ...]

[MDPI]

[https://www.mdpi.com › ...]

by A Hromić-Jahjefendić · 2023 · Cited by 12 — The objectives of this systematic review and meta-analysis are to find out *how often myocarditis occurs after receiving the COVID-19 vaccine*.

[Cardiovascular risks and COVID-19: New research ...]

[Dalhousie University]

[https://www.dal.ca › News & Events › April 2024 › 01]

1 Apr 2024 — A new study found that common cardiovascular complications of COVID-19 were substantially reduced in people who were *vaccinated*, with protective effects ...

COVID-19 | Let's Get Real

HHS.gov

https://www.hhs.gov › vaccine-preventable-diseases › co...

19 Dec 2024 — Studies during the COVID-19 pandemic showed that the risk of *myocarditis* after having COVID-19 is greater than after COVID-19 *vaccination* (up to ...

COVID-19 vaccines and cardiac inflammation

Australian Government Department of Health and Aged Care

https://www.health.gov.au › myocarditis-pericarditis

12 Jan 2024 — Symptoms of *myocarditis* or pericarditis typically appear within 1 to 5 days of *vaccination*. People who experience any of these symptoms after ...

Missing: unvaccinated | Show results with: unvaccinated

Risk of Myocarditis After Sequential Doses of COVID-19 ...

American Heart Association Journals

https://www.ahajournals.org › doi › CIRCULATIONAH...

by M Patone · 2022 · Cited by 203 — First, the risk of *myocarditis* is substantially higher after SARS-CoV-2 infection in *unvaccinated* individuals than the increase in risk observed ...

Defining the Rates of Rare COVID-19 Vaccine–Related Adverse Events

Marks, Peter

Mayo Clinic Proceedings, Volume 99, Issue 10, 1543 - 1544

Q&A: What Causes Rare Instances of Myocarditis After mRNA ...

Yale School of Medicine

https://medicine.yale.edu › news-article › qanda-what-c...

16 May 2023 — Iwasaki: *Myocarditis risk depends on the age and sex of the vaccine recipient*. It is most common in younger males—adolescents or young adults.

Myocarditis and COVID Vaccination: Yale Researchers ...

SciTechDaily

https://scitechdaily.com › Health

18 Jul 2023 — Lucas noted that, according to CDC findings, *the risk of myocarditis is significantly greater in unvaccinated individuals* who contract the COVID ...

Vaccine and infection myocarditis risks contrasted

Royal Australian College of General Practitioners (RACGP) *https://www1.racgp.org.au › newsgp › clinical › vaccin...*

25 Oct 2022 — A new Immunisation Coalition chart illustrates the much higher *myocarditis* risks following COVID-19 infection compared to *vaccination*.

Vaccine myocarditis vs COVID myocarditis: which is worse?

WUSA9

https://www.wusa9.com › article › news › verify › vacci...

26 Jan 2022 — No, our experts say *myocarditis is not more common post-vaccine* than it is post-COVID-19 infection. Vaccine-related myocarditis has been ...

Risk for Myocarditis Rises Significantly After COVID-19 ...

Infectious Disease Special Edition

https://www.idse.net › Covid-19 › Article › Risk-for-M...

The risk for *myocarditis* is 11 times higher for *unvaccinated* people after COVID-19 infection compared with those who develop the condition after receiving the ...

Myocarditis seven times more likely with COVID-19 than ...

ScienceDaily

https://www.sciencedaily.com › releases › 2022/10

13 Oct 2022 — According to the findings, the rates of *myocarditis* in people who were *vaccinated* against COVID-19 were only twofold higher than in *unvaccinated* ...

Myocarditis Risk Is 17 Times Higher for Unvaccinated ...

Pharmacy Times

https://www.pharmacytimes.com › view › myocarditis-ris...

25 Jan 2022 — The 30-day incidence of *myocarditis* following a COVID-19 diagnosis was *nearly 17 times higher than the incidence among* patients receiving the COVID-19 vaccine.

Full COVID vaccination tied to lower risk of heart conditions ...

CIDRAP

https://www.cidrap.umn.edu › covid-19 › full-covid-va...

18 Mar 2024 — Partially *vaccinated* and *unvaccinated* patients were at significantly higher risk for death in the Delta and Omicron periods (Delta odds ratio [...

Risk of myocarditis after a COVID-19 diagnosis in patients ...

Epic Research

https://epicresearch.org › articles › myocarditis-risk-17-...

25 Jan 2022 — Risk of *myocarditis* after a COVID-19 diagnosis in patients ages 12-30 is much higher than the risks associated with the COVID *vaccine*.

SARS-CoV-2 vaccination and myocarditis or myopericarditis

The BMJ

https://www.bmj.com › content › bmj-2021-068665

by A Husby · 2021 · Cited by 281 — *Individuals vaccinated with mRNA-1273 had a significantly increased rate of myocarditis* or myopericarditis compared with unvaccinated follow-up ...

Coronavirus Disease 2019 (COVID-19) Vaccine Safety

Centers for Disease Control and Prevention | CDC (.gov)

https://www.cdc.gov › vaccine-safety › vaccines › covi...

Myocarditis is inflammation of the heart muscle. Most patients with myocarditis after COVID-19 vaccination respond well to medicine and rest and feel better ...

COVID-19 Vs The Vaccine Risk For Myocarditis

Science 2.0

https://www.science20.com › news_staff › covid19_vs_t...

17 Oct 2022 — According to the findings, the rates of *myocarditis* in people who were *vaccinated* against COVID-19 were only twofold higher than in *unvaccinated* ...

COVID-19 mRNA vaccines and Myocarditis - UN News

UN News

https://news.un.org › story › 2021/07

9 Jul 2021 — Current evidence suggests a likely causal association between *myocarditis* and the mRNA vaccines", the WHO committee wrote, noting that recently ...

COVID-19 subcommittee of the WHO Global Advisory ...

World Health Organization (WHO)

https://www.who.int › News › item

9 Jul 2021 — ... *unvaccinated* populations as well as investigations monitoring ... Use of mRNA COVID-19 *vaccine* after reports of *myocarditis* among *vaccine* ...

Myocarditis and Pericarditis Only Appear After COVID ...

Healthcare Communications Network

https://hcn.health › hcn-trends-story › myocarditis-and-p...

6 Jun 2024 — *Myocarditis* and pericarditis were exclusively observed in *vaccinated* children and adolescents, with no cases reported in *unvaccinated* ...

The Heart of the Matter: Myocarditis and COVID-19 Vaccines

Substack · Unbiased Science

10+ likes · 4 months ago

Myocarditis cases are more frequently reported in males, particularly those aged 16–30, after receiving the second dose of an mRNA *vaccine*.

Effectiveness of COVID-19 vaccination in children and ...

Bennett Institute for Applied Data Science

https://www.bennett.ox.ac.uk › papers

20 May 2024 — ... *vs unvaccinated* cohort. Among both adolescents and children, *myocarditis* and pericarditis were documented only in the *vaccinated* groups ...

OpenSAFELY: Effectiveness of COVID-19 vaccination in ...

medRxiv

https://www.medrxiv.org › content

PDF

by CD Andrews · 2024 · Cited by 3 — occurred in the adolescent first dose *vs unvaccinated* cohort. Among both adolescents and children, *myocarditis* and pericarditis were ...

Do Vaccines Cause Myocarditis and/or Myocardopathy/ ...

Institute for Vaccine Safety

https://www.vaccinesafety.edu › do-vaccines-cause-my...

Thus, diphtheria *vaccine* prevents *myocarditis* by protecting against natural infection. Smallpox *vaccine* can very rarely cause *myocarditis* and myocardiopathy/ ...

Updated guidance on the use of COVID-19 vaccines in ...

Canada.ca

https://www.canada.ca › vaccines-immunization › natio...

10 Nov 2023 — The risk of *myocarditis* and/or pericarditis following a first booster dose of an original mRNA COVID-19 *vaccine* (Moderna Spikevax [50 mcg] and ...

Incidence rates of myocarditis and pericarditis within 30 ...

ScienceDirect.com

https://www.sciencedirect.com › science › article › pii

by P Kumwichar · 2024 · Cited by 1 — The third dose of the BNT162b2 *vaccine* increases the risk of *myocarditis*, particularly in adolescent males. •. The risk of *myocarditis* from ...

Comparative Risk of Myocarditis/Pericarditis Following ...

JACC Journals

https://www.jacc.org › doi › j.jacc.2022.08.799 by Z Naveed · 2022 · Cited by 27 — Studies suggest that the rate of *myocarditis*/pericarditis following mRNA *vaccination* is higher than expected, particularly among younger men ...

[Overview of Myocarditis Cases Caused by the COVID-19 ...]

[Diagnostic and Interventional Cardiology]

[https://www.dicardiology.com › article › overview-myoc...]

24 Jun 2021 — *Vaccine* statistical models created based on the trials of the mRNA vaccines predicted some cases of *myocarditis*, but the CDC data presented at ...

[What to Know About the Updated 2024-2025 COVID ...]

[Yale Medicine]

[https://www.yalemedicine.org › news › updated-2024-2...]

24 Oct 2024 — But research has shown that cardiac complications, including *myocarditis*, were significantly higher after a COVID infection than *vaccination* for ...

[Effectiveness of COVID-19 vaccination in children and ...]

[medRxiv]

[https://www.medrxiv.org › content]

20 May 2024 — Among both adolescents and children, *myocarditis* and pericarditis were documented only in the *vaccinated* groups, with rates of 27 and 10 cases/ ...

[**Impact of vaccination on the association of COVID-19 with ...**]

[Nature]

https://www.nature.com › ... › articles

by GI Cezard · 2024 · Cited by 13 — Hazard ratios were higher after hospitalised than non-hospitalised COVID-19 and higher in the pre-*vaccination* and *unvaccinated* cohorts than the ...

[**Why a major study on myocarditis risk following COVID ...**]

[Frontiers]

https://www.frontiersin.org › fmed.2023.1126945 › full

by PS Bourdon · 2023 — First, the risk of *myocarditis* is substantially higher after SARS-CoV-2 infection in *unvaccinated* individuals than the increase in risk observed after a first ...

[**Myocarditis With COVID-19 mRNA Vaccines | Circulation**]

[American Heart Association Journals]

https://www.ahajournals.org › doi › CIRCULATIONAH...

by B Bozkurt · 2021 · Cited by 934 — *Myocarditis* has been recognized as a rare complication of coronavirus disease 2019 (COVID-19) mRNA *vaccinations*, especially in young adult and adolescent males.

COVID-19 vaccination is safe in patients with previous ...

European Society of Cardiology

https://www.escardio.org › Press-Office › Press-releases

17 Mar 2022 — The main reason given for not getting the *vaccine* was the fear of *myocarditis* recurrence (12 patients, 75% of *non-vaccinated* patients).

COVID 19 vaccine and heart patients Myocarditis ...

VCU Health

https://www.vcuhealth.org › the-beat › latest-updates › c...

Although the risk related to *vaccination* may up to 3 times higher than the general population, the risks of developing *myocarditis* or pericarditis due to COVID- ...

Myocarditis after BNT162b2 mRNA Vaccine against Covid- ...

The New England Journal of Medicine

https://www.nejm.org › doi › full › NEJMoa2109730

by D Mevorach · 2021 · Cited by 667 — The rate ratio 30 days after the second *vaccine* dose in fully *vaccinated* recipients, as compared with *unvaccinated* persons, was 2.35 (95% CI, ...

Get the facts about COVID-19 vaccines

Mayo Clinic

https://www.mayoclinic.org › in-depth › art-20484859

... *not vaccinated*. Even when people who are *vaccinated* get symptoms, they tend ... *Myocarditis* and pericarditis following mRNA COVID-19 *vaccination*.

Myocarditis & The COVID-19 Vaccine

YouTube · Demystifying Medicine McMaster

3,2K+ views · 1 year ago

... *Myocarditis* in SARS-CoV-2 infection *vs*. COVID-19 *vaccination*: A systematic review and meta-analysis. Frontiers in Cardiovascular Medicine, 9 ...

Fact check: Claim misinterprets BMJ study's findings on ...

USA Today

https://www.usatoday.com › factcheck › 2023/03/09 › fa...

Claim: Study shows COVID-19 vaccine causes 5 times more myocarditis than the virus

Claimed by: Social media

Fact check by USA Today: False

Covid-19 vaccinations, self-reported health, and worldviews

European Society of Medicine

https://esmed.org › MRA › mra › article › view

by H Walach · 2024 — Altogether 1051 responses were analyzed. *Vaccinated* persons reported significantly more events that required the visit of a doctor (42% versus ...

Diphtheria - Symptoms & causes

Mayo Clinic

https://www.mayoclinic.org › diphtheria › syc-20351897

In areas where diphtheria *vaccination* is standard, the disease is mainly a threat to *unvaccinated* or inadequately *vaccinated* people who travel internationally ...

Unvaccinated people who recovered from COVID-19 at ...

YouTube · CNA

13K+ views · 1 year ago

A study shows that *unvaccinated* people who recovered from COVID-19 face a higher risk of heart complications.

COVID-19 vaccination: a guide on pregnancy and ...

GOV.UK

https://www.gov.uk › government › publications › covi...

10 Jan 2023 — remain *unvaccinated* or partially *vaccinated*. You are at more risk ... Cases of inflammation of the heart (called *myocarditis* or ...

The Vaccine Versus the Virus: An Update

Science-Based Medicine

https://sciencebasedmedicine.org › vaccine-myocarditis-...

6 Sept 2021 — Though the short-term outcomes for adolescents seems reassuring so far, individuals with *vaccine-myocarditis* had chest pain and many had ...

Myocarditis / Your Questions Answered with 5 Studies ...

YouTube · Medicine with Dr. Moran

42,8K+ views · 1 year ago

One of the proven covid *vaccine* side effects is *Myocarditis*. This ... *Unvaccinated* for Covid? Scientific Study Proves Discrimination ...

In RFK Jr.'s emails to his niece, a trail of vaccine criticism | STAT

statnews.com

https://www.statnews.com › 2025/01/28 › rfk-jr-emails-...

5 days ago — Pfizer's clinical data submission to FDA indicated a 21% increase in all cause mortality in *vaccinated* compared to *unvaccinated* with a 400% ...

[McCullough Protocol: Base Spike Detoxification (BSD). A](https://www.researchgate.net)

ResearchGate

https://www.researchgate.net › figure › McCullough-Pr...

... Hulscher et al found that COVID-19 *vaccine*-induced *myocarditis* can most likely result in sudden cardiac death using post-mortem analysis in 28 autopsy cases ...

Preprint doesn't show myocarditis only in vaccinated

Logically Facts

https://www.logicallyfacts.com › fact-check › preprint-d...

10 Dec 2024 — The paper identified no cases of heart inflammation in the *unvaccinated* group because the paper's sample size wasn't large enough.

Heart complications more likely in unvaccinated COVID-19 ...

News-Medical

https://www.news-medical.net › news › Heart-complicat...

9 Oct 2023 — *Vaccinated* COVID-19 survivors had an 11 per cent risk of heart complications versus uninfected individuals, while boosted COVID-19 survivors had ...

Scientific Library Asthma or Kawasaki Disease ...

Associazione Corvelva

https://www.corvelva.it › Home › Scientific Library

Reference target: *Vaccinated vs Unvaccinated*; Components/Excipients ... Focus: Most acute *myocarditis* associated with COVID-19 *vaccination* showed ...

RFK Jr. and the Science of Misinformation

CP

Counterpunch

https://www.counterpunch.org › 2025/01/31 › rfk-jr-an...

2 days ago — A pre-print study also found that *myocarditis* is by far more common after covid infection than *vaccination* in teen boys, 450 cases per million ...

COVID-19 Vaccines and Myocarditis: Pre- vs Post- ...

Infectious Disease Advisor

https://www.infectiousdiseaseadvisor.com › news › myo...

6 Nov 2023 — COVID-19 mRNA *vaccination* was associated with increased *myocarditis* incidence, though *myocarditis* outcomes were more favorable in *vaccinated* ...

Severe COVID-19 Myocarditis in a Young Unvaccinated ...

The Cureus Journal of Medical Science

https://www.cureus.com › articles › 142810-severe-covid...

by SC Pokhriyal · 2023 — Centers for Disease Control and Prevention (CDC), in their data from over 900 different hospitals between March 2020 and January 2021, found a ...

Senators voice uncertainty about RFK Jr. | WORLD - WNG.org

wng.org

https://wng.org › Roundups

4 days ago — cold, hard fact: Death/hospitalization rates for *vaccinated* were much, much lower than *unvaccinated*. ... *vaccinated vs* 14 who received a placebo).

Medicine and Healthcare Products Regulatory Agency. Coronavirus vaccine - summary of Yellow Card reporting. www.gov.uk/government/publications/coronavirus-covid-19-vaccine-adverse-reactions/coronavirus-vaccine-summary-of-yellow-card-reporting–2 [Accessed 1 August 2023].

Google Scholar

https://www.sciencedirect.com/science/article/pii/S1470211824045573

E Twentyman, M Wallace, LE Roper, *et al.*Interim recommendation of the Advisory Committee on Immunization Practices for Use of the Novavax COVID-19 Vaccine in Persons Aged ≥18 years-United States, July 2022

MMWR Morb Mortal Wkly Rep, 71 (2022), pp. 988-992 View at publisherCrossrefView in ScopusGoogle Scholar3

W Straus, V Urdaneta, DB Esposito, *et al.*
Analysis of myocarditis among 252 million mRNA-1273 recipients worldwide
Clin Infect Dis, 76 (2023), pp. e544-e552 View at publisherCrossrefGoogle Scholar4

ME Oster, DK Shay, JR Su, *et al.*
Myocarditis cases reported after mRNA-based COVID-19 vaccination in the US from December 2020 to August 2021. JAMA, 327 (2022), pp. 331-340 View at publisherCrossref View in Scopus Google Scholar

G Witberg, N Barda, S Hoss, *et al.*

Myocarditis after Covid-19 vaccination in a large health care organization
N Engl J Med, 385 (2021), pp. 2132-2139
View at publisher CrossrefView in ScopusGoogle Scholar

D Mevorach, E Anis, N Cedar, *et al.*
Myocarditis after BNT162b2 mRNA Vaccine against Covid-19 in Israel
N Engl J Med, 385 (2021), pp. 2140-2149
View at publisher
CrossrefView in ScopusGoogle Scholar

X Li, FTT Lai, GT Chua, *et al.*
Myocarditis following COVID-19 BNT162b2 vaccination among adolescents in Hong Kong
JAMA Pediatr, 176 (2022), pp. 612-614
View at publisherCrossrefView in ScopusGoogle Scholar

Ø Karlstad, P Hovi, A Husby, *et al.*
SARS-CoV-2 Vaccination and Myocarditis in a Nordic Cohort Study of 23 Million Residents
JAMA Cardiol, 7 (2022), pp. 600-612
View at publisherCrossrefView in ScopusGoogle Scholar

A Husby, JV Hansen, E Fosbøl, *et al.*
SARS-CoV-2 vaccination and myocarditis or myopericarditis: population based cohort study
BMJ, 375 (2021), p. e068665
View at publisher
CrossrefView in ScopusGoogle Scholar

S le Vu, M Bertrand, MJ Jabagi, *et al.*
Age and sex-specific risks of myocarditis and pericarditis following Covid-19 messenger RNA vaccines
Nat Commun, 13 (2022), p. 3633
View in Scopus
Google Scholar

SA Buchan, CY Seo, C Johnson, *et al.*
Epidemiology of myocarditis and pericarditis following mRNA vaccination by vaccine product, schedule, and interdose interval among adolescents and adults in Ontario, Canada
JAMA Netw Open, 5 (2022), p. e2218505
View at publisherCrossrefGoogle Scholar

M Patone, XW Mei, L Handunnetthi, *et al.*
Risks of myocarditis, pericarditis, and cardiac arrhythmias associated with COVID-19 vaccination or SARS-CoV-2 infection

Nat Med, 28 (2022), pp. 410-422
View at publisherCrossrefView in ScopusGoogle Scholar

A guide to the COVID-19 autumn booster.
www.gov.uk/government/publications/covid-19-vaccination-autumn-booster-resources/a-guide-to-the-covid-19-autumn-booster [Accessed 1 August 2023].
Google Scholar

B Bozkurt, I Kamat, PJ Hotez
Myocarditis with COVID-19 mRNA vaccines
Circulation, 144 (2021), pp. 471-484
View at publisher
CrossrefView in ScopusGoogle Scholar

A Dionne, F Sperotto, S Chamberlain, *et al.*Association of myocarditis with BNT162b2 messenger RNA COVID-19 vaccine in a case series of children
JAMA Cardiol, 6 (2021), pp. 1446-1450
View at publisherCrossrefView in ScopusGoogle Scholar

JW Gargano, M Wallace, SC Hadler, *et al.*
Use of mRNA COVID-19 vaccine after reports of myocarditis among vaccine recipients: update from the Advisory Committee on Immunization Practices - United States, June 2021
MMWR Morb Mortal Wkly Rep, 70 (2021), pp. 977-982
View at publisher
CrossrefView in ScopusGoogle Scholar

SK Sexson Tejtel, FM Munoz, I Al-Ammouri, *et al.*
Myocarditis and pericarditis: case definition and guidelines for data collection, analysis, and presentation of immunization safety data
Vaccine, 40 (2022), pp. 1499-1511
View PDFView articleView in ScopusGoogle Scholar

European Medicines Agency. COVID-19 vaccines: update on ongoing evaluation of myocarditis and pericarditis. www.ema.europa.eu/en/news/covid-19-vaccines-update-ongoing-evaluation-myocarditis-pericarditis [Accessed 1 August 2023].Google Scholar

American College of Cardiology. Vaccine-associated myocarditis risk in context: emerging evidence. www.acc.org/latest-in-cardiology/articles/2022/02/09/12/56/vaccine-associated-myocarditis-risk-in-context [Accessed 1 August 2023]. Google Scholar

S Lane, A Yeomans, S Shakir

Reports of myocarditis and pericarditis following mRNA COVID-19 vaccination: a systematic review of spontaneously reported data from the UK, Europe and the USA and of the scientific literature
BMJ Open, 12 (2022), p. e059223
View at publisher
CrossrefView in ScopusGoogle Scholar

GA Diaz, GT Parsons, SK Gering, *et al.*
Myocarditis and Pericarditis After Vaccination for COVID-19
JAMA, 326 (2021), pp. 1210-1212
View at publisherCrossrefView in ScopusGoogle Scholar

J Yasuhara, K Masuda, T Aikawa, *et al.*
Myopericarditis after COVID-19 mRNA vaccination among adolescents and young adults: a systematic review and meta-analysis
JAMA Pediatr, 177 (2023), pp. 42-52
View at publisherCrossrefView in ScopusGoogle Scholar

J Chen, T Wu, C Zhang, *et al.*
Clinically suspected lethal viral myocarditis combined with encephalitis: a COVID-19 vaccine complication
ESC Heart Fail, 10 (2023), pp. 1422-1425
View at publisherCrossrefView in ScopusGoogle Scholar

C Schwab, LM Domke, L Hartmann, *et al.*
Autopsy-based histopathological characterization of myocarditis after anti-SARS-CoV-2-vaccination
Clin Res Cardiol, 112 (2023), pp. 431-440
View at publisherCrossrefView in ScopusGoogle Scholar

H Kawano, N Yamamoto, H Kurohama, *et al.*
Fulminant myocarditis and acute appendicitis after COVID-19 vaccination: a case report
Intern Med, 62 (2023), pp. 411-417
View at publisher
CrossrefView in ScopusGoogle Scholar

I Kracalik, ME Oster, KR Broder, *et al.*
Outcomes at least 90 days since onset of myocarditis after mRNA COVID-19 vaccination in adolescents and young adults in the USA: a follow-up surveillance study
Lancet Child Adolesc Health, 6 (2022), pp. 788-798
View PDFView articleView in ScopusGoogle Scholar

M Fronza, P Thavendiranathan, GR Karur, *et al.*
Cardiac MRI and clinical follow-up in COVID-19 vaccine-associated myocarditis
Radiology, 304 (2022), pp. E48-E49

View at publisherCrossrefView in ScopusGoogle Scholar

KF Larson, E Ammirati, ED Adler, *et al.*
Myocarditis after BNT162b2 and mRNA-1273 vaccination
Circulation, 144 (2021), pp. 506-508
View at publisher
CrossrefView in ScopusGoogle Scholar

Scientific Library Anaphylaxis or Respiratory Diseases ...

Associazione Corvelva

https://www.corvelva.it › Home › Scientific Library

... *vaccine* recipients to identify cases of post-*vaccination myocarditis* or pericarditis. ... Reference target: *Vaccinated vs Unvaccinated*; Components/ ...

Augie Ray (@augieray@mastodon.social)

mastodon.social

https://mastodon.social › ...

— Cesarean section deliveries were performed in 57% (135/237) SARS CoV-2+ participants *vs*. ... *non-vaccinated* people, those with comorbidities, and ...

(NEED TO KNOW) RESTORED REPUBLIC VIA A GCR

The Rumor Mill News Reading Room

https://www.rumormillnews.com › cgi-bin › forum

— According to the study, **“Zero cases of *myocarditis* or pericarditis were found in the *unvaccinated* group**.” The study, led by Oxford ...

Nothing New Under The Sun 2016 | "The truth is out there, you ...

nothingnewunderthesun2016.com

https://nothingnewunderthesun2016.com

Moderna Pushing mRNA '*Vaccine*' Injected Directly into Heart to Tackle Cardiac Arrest Surge – "*Myocarditis* and pericarditis are both known side effects of Covid ...

MECHANISMS

Shedding Light on Mechanisms of Myocarditis With COVID ...

American Heart Association Journals

https://www.ahajournals.org › doi › CIRCULATIONAH...

by **B Bozkurt** · **2023** · Cited by 27 — The study from Yonker et al sheds light on mechanisms of myocarditis with COVID-19 mRNA vaccines, and implicates elevated circulating spike ...

Covid- 19 Vaccine-induced Myocarditis - PMC

National Institutes of Health (NIH) (.gov)

https://pmc.ncbi.nlm.nih.gov › articles › PMC10589044

by **JS Munjal** · 2023 · Cited by 9 — *The immune system may register mRNA in the vaccine as an antigen*, which leads to the activation of immune-mediated inflammation of the myocardium. Immune- ...

Myocarditis associated with COVID-19 vaccination

Nature

https://www.nature.com › npj vaccines › review articles

by **A Buoninfante** · 2024 · Cited by 15 — Thus, a possible mechanistic explanation for myopericarditis after COVID-19 mRNA *vaccine* could be cardiac injury mediated by *vaccination*- ...

L Thurner, C Kessel, N Fadle, *et al.*

IL-1RA antibodies in myocarditis after SARS-CoV-2 vaccination

N Engl J Med, 387 (2022), pp. 1524-1527

View at publisher

CrossrefView in ScopusGoogle Scholar

Q&A: What Causes Rare Instances of Myocarditis After mRNA ...

Yale School of Medicine

https://medicine.yale.edu › news-article › qanda-what-c...

16 May 2023 — This is *immune cell mediated*. We found that activated immune cells like cytotoxic killer cells and myeloid cells are elevated in these patients, ...

Myocarditis following COVID-19 vaccination: incidence, ...

National Institutes of Health (NIH) (.gov)

https://pmc.ncbi.nlm.nih.gov › articles › PMC9115793 by JR Power · 2022 · Cited by 29 — When exposed to COVID-19 virus, *vaccine-induced antibodies bind the viral envelope spike protein*, which both inhibits viral binding to the host cell surface ...

[Myocarditis after COVID-19 mRNA vaccination]

[Nature]

https://www.nature.com › ... › comment

by S Heymans · 2022 · Cited by 276 — The three main mechanisms by which COVID-19 mRNA vaccines might induce hyperimmunity are *mRNA immune reactivity*, antibodies to SARS-CoV-2 spike ...

[The Epidemiology of COVID-19 Vaccine-Induced ...]

[Wiley Online Library]

https://onlinelibrary.wiley.com › doi

by **C Costa** · **2024** · Cited by 3 — While the definite mechanism of mRNA COVID-19 vaccine-associated myocarditis remains ambiguous, potential mechanisms include molecular mimicry ...

[COVID-19 Vaccines and Myocarditis: An Overview of ...]

[MDPI]

https://www.mdpi.com › ...

by A Hromić-Jahjefendić · 2023 · Cited by 12 — *Vaccine-induced spike (S)-protein IgG antibodies block the attachment of SARS-CoV-2* to host cells through S protein binding to ACE2 and thereby kill the virus.

[Vaccination-Associated Myocarditis and Myocardial Injury](https://www.ahajournals.org)

[American Heart Association Journals](https://www.ahajournals.org)

https://www.ahajournals.org › doi › CIRCRESAHA.122...

by NL Altman · 2023 · Cited by 25 — COVID-19 vaccine–associated myocardial injury can be caused by an inflammatory immune cell infiltrate, but other etiologies such as microvascular thrombosis ...

Do COVID-19 viral infection and its mRNA vaccine carry ...

ScienceDirect.com

https://www.sciencedirect.com › science › article › pii

by AS Ulucay · 2023 · Cited by 7 — Mechanism of COVID mRNA vaccine induced myocarditis. The *mRNA spike protein of COVID vaccine initiates humoral response* to produce COVID-19 anti-spike ...

ΠΕΡΙΠΤΩΣΕΙΣ ΜΕ ΚΑΚΗ ΕΚΒΑΣΗ (FATAL CASES)

Sousa PMB, Silva EA, Campos MAG, Lages JS, Corrêa RDGCF, Silva GEB. Fatal Myocarditis following COVID-19 mRNA Immunization: A Case Report and Differential Diagnosis Review. Vaccines (Basel). 2024 Feb 13;12(2):194. doi: 10.3390/vaccines12020194. PMID: 38400177; PMCID: PMC10891853.

Sudden Death and Myocarditis: FAQs

Myocarditis Foundation

https://www.myocarditisfoundation.org › ...

in young adults, *nearly 20% of sudden death cases are linked to myocarditis*. ... Psychological stress and fatal heart attack: the Athens (1981)

Myocarditis and Sudden Cardiac Death in the Community

American Heart Association Journals

https://www.ahajournals.org › ...

· Μετάφραση αυτής της σελίδας

από **RT Bhatia** · 2023 · Γίνεται αναφορά σε 5 — Our observations show that *myocarditis is a relatively rare cause of SCD in nonhospitalized individuals (1.1*%) and the majority of decedents die ...

Motonori Takahashi, Takeshi Kondo, Gentaro Yamasaki, Marie Sugimoto, Migiwa Asano, Yasuhiro Ueno, Yasushi Nagasaki, An autopsy case report of aortic dissection complicated with histiolymphocytic pericarditis and aortic inflammation after mRNA COVID-19 vaccination, Legal Medicine, Volume 59, 2022, 102154, ISSN 1344-6223, https://doi.org/10.1016/j.legalmed.2022.102154. (https://www.sciencedirect.com/science/article/pii/S1344622322001420)

Assessment of Risk for Sudden Cardiac Death Among...

Centers for Disease Control and Prevention | CDC (.gov)

https://www.cdc.gov › ...

· Μετάφραση αυτής της σελίδας

από J Liko · 2024 · Γίνεται αναφορά σε 2 — As of July 17, 2023, *no fatal cases of myocarditis in Oregon had been reported* to the federal Vaccine Adverse Event Reporting System (VAERS); ...

Autopsy findings in cases of fatal COVID-19 vaccine ...

Wiley Online Library

https://onlinelibrary.wiley.com › ...

· Μετάφραση αυτής της σελίδας

από **N Hulscher** · 2024 · Γίνεται αναφορά σε 34 — This systematic review aims to investigate potential causal links between COVID-19 vaccines and *death* from *myocarditis* using post-mortem analysis.

Myocarditis Cases Reported After mRNA-Based COVID-19 ...

JAMA

https://jamanetwork.com › ...

· Μετάφραση αυτής της σελίδας

από ME Oster · 2022 · Γίνεται αναφορά σε 698 — Among persons younger than 30 years of age, there were *no confirmed cases of myocarditis in those who died* after mRNA-based COVID-19 vaccination ...

A FATAL CASE OF ACUTE MYOCARDITIS IN A PATIENT ...

JACC Journals

https://www.jacc.org › ...

· Μετάφραση αυτής της σελίδας

από **H Ijaz** · 2024 — Acute myocarditis with severe LV dysfunction in SSc *is rare and can be fatal*. Its management, including the role of EMB and immunosuppressive ...

The Myocarditis Foundation

Myocarditis Foundation

https://www.myocarditisfoundation.org › uploads

PDF

Myocarditis is the reason for sudden cardiac death in 5--22% of athletes < 35 years of age. For prevention of myocarditis and sudden cardiac death it is ...

Trends in myocarditis incidence, complications and ...

Nature

https://www.nature.com › ...

· Μετάφραση αυτής της σελίδας

από M Fu · 2022 · Γίνεται αναφορά σε 35 — Autopsy studies have shown estimates of the prevalence of *myocarditis* to be 2–12% in those who died suddenly. Other studies reported *myocarditis* ...

[COVID-19 vaccination-related myocarditis - Oxford Academic]

[Oxford Academic]

https://academic.oup.com › ...

· [Μετάφραση αυτής της σελίδας]

από **JY Cho** · 2023 · Γίνεται αναφορά σε 45 — During hospitalization, *13 out of 36 FM cases (36.1%) died* (9 deaths in ECMO cases). Heart transplantation was done successfully in one case,

[Letter to the editor regarding 'Autopsy findings in cases of ...]

[Wiley Online Library]

https://onlinelibrary.wiley.com › ...

· [Μετάφραση αυτής της σελίδας]

από **H Van Wyk** · 2024 — Previous research shows that COVID-19 vaccination was associated with risk of *myocarditis* only in those younger than 40.

[Sudden cardiac death risk in contact sports increased by ...]

[Oxford Academic]

https://academic.oup.com › ...

· Μετάφραση αυτής της σελίδας

από **G Massoullié** · 2021 · Γίνεται αναφορά σε 6 — *Myocarditis may increase the risk of life-threatening ventricular arrhythmias* caused by blunt impact to the chest, particularly in contact sports.

Myocarditis-induced Sudden Death after BNT162b2 mRNA ...

:: JKMS :: Journal of Korean Medical Science

https://jkms.org › DOIx

· Μετάφραση αυτής της σελίδας

από **S Choi** · 2021 · Γίνεται αναφορά σε 139 — We present autopsy findings of a 22-year-old man who developed chest pain 5 days after the first dose of the BNT162b2 mRNA vaccine and died 7 hours later

(PDF) Autopsy findings in cases of fatal COVID-19 vaccine ...

ResearchGate

https://www.researchgate.net › ...

· Μετάφραση αυτής της σελίδας

As some of the post-vaccination *myocarditis cases* can be *fatal*, it is needed to highlight that deaths occurred mainly among males with a mean age of 44.4 years ..

Autopsy Proven Fatal COVID-19 Vaccine-Induced ...

ScienceOpen

https://www.scienceopen.com › ...

· Μετάφραση αυτής της σελίδας

18 Ιουλ 2023 — We established that all 28 deaths were causally linked to COVID-19 vaccination by independent adjudication. ... Urgent investigation is required ...

Fatal Myocarditis After COVID-19 Vaccination: Fourteen...

Lippincott

https://journals.lww.com › ...

· Μετάφραση αυτής της σελίδας

από P Manu · 2023 · Γίνεται αναφορά σε 2 — *Fatal myocarditis after COVID-19 vaccination seems to be exceptionally rare* and is certainly not the cause of increased cardiac mortality during the pandemic.

Sudden death related myocarditis: A study of 56 cases

ResearchGate

https://www.researchgate.net › ...

· Μετάφραση αυτής της σελίδας

22 Οκτ 2024 — *Fifty-six cases of sudden death from myocarditis* were reviewed to characterize the range of histologic appearances of myocarditis.

Myocarditis-induced Sudden Death after BNT162b2 mRNA ...

:: JKMS :: Journal of Korean Medical Science

https://jkms.org › DOIx

· Μετάφραση αυτής της σελίδας

από S Choi · 2021 · Γίνεται αναφορά σε 139 — We present autopsy findings of a 22-year-old man who developed chest pain 5 days after the first dose of the BNT162b2 mRNA vaccine and died 7 hours later.

Myocarditis complications more common after COVID infection ...

CIDRAP

https://www.cidrap.umn.edu › ...

· Μετάφραση αυτής της σελίδας

26 Αυγ 2024 — One patient (0.2%) died after postvaccine *myocarditis*, 4 (1.3%) died after post-COVID *myocarditis*, and 49 (1.3%) died after the conventional .

Autopsy Histopathologic Cardiac Findings in 2 Adolescents ...

Allen Press

https://meridian.allenpress.com › ...

· Μετάφραση αυτής της σελίδας

από **JR Gill** · 2022 · Γίνεται αναφορά σε 81 — *Myocarditis* in adolescents (particularly teenage boys) has been reported following the second dose of the Pfizer-BioNTech COVID-19 vaccine.

All 28 Fatal Myocarditis Cases in Study Point to "High ...

Trial Site News

https://www.trialsitenews.com › ...

· Μετάφραση αυτής της σελίδας

1 Φεβ 2024 — Hulscher told TrialSite: “As shown in our systematic review, there are 28 published autopsy *cases* of *fatal* COVID-19 vaccine-induced *myocarditis* ...

Giant cell myocarditis causing sudden death in a patient ...

SciELO Brasil

https://www.scielo.br › ...

· Μετάφραση αυτής της σελίδας

από JP Ziegler · 2020 · Γίνεται αναφορά σε 5 — *Cases* tend to have an equal gender distribution and the median reported age is approximately 42 years (range 10 days- 88 years).,- It should be noted,

Fatal Myocarditis After COVID-19 Vaccination: Fourteen...

Lippincott

https://journals.lww.com › ...

· Μετάφραση αυτής της σελίδας

Fatal Myocarditis After COVID-19 Vaccination: Fourteen Autopsy-Confirmed *Cases*: Erratum ... The title of Table 1 is being corrected to the following: Demographic

Sudden Cardiac Arrest in Young People

HealthyChildren.org

https://www.healthychildren.org › ...

· Μετάφραση αυτής της σελίδας

30 Μαΐ 2024 — " SCA can be *fatal* if not treated within minutes. Survival ... Most *myocarditis cases* in children happen when a virus such as an

Case of Myocarditis, Pericarditis, and Fatal Aortic ...

OSF

https://osf.io › osf

· Μετάφραση αυτής της σελίδας

από EJ Balbona — Sixteen days after his first dose, he experienced acute inflammation, sudden thoracic aortic dissection, and pericardial tamponade, rapidly

Autopsy Proven Fatal COVID-19 Vaccine-Induced ...

Preprints.org

https://www.preprints.org › download

PDF

18 Ιουλ 2023 — This systematic review aims to investigate potential causal links between COVID-19 vaccines and *death* from *myocarditis* using post-mortem

[Fatal lymphocytic myocarditis masquerading as thoracic ...]

[Karger Publishers]

[https://karger.com › cra]

· [Μετάφραση αυτής της σελίδας]

8 Ιουλ 2021 — A proportion of acute myocarditides may develop into fulminant *myocarditis* resulting in significant mortality if left untreated. This *case* ..

[Sudden Death of a Woman at Postpartum Period]

[Herald Scholarly Open Access]

[https://www.heraldopenaccess.us › ...]

· [Μετάφραση αυτής της σελίδας]

Myocarditis has a wide spectrum of clinical courses from full recovery to serious complications including permanent cardiac damage or sudden *death* by *fatal* ...

[Myocarditis followed by CoViD-19 vaccines: A cause for ...]

[The BMJ]

[https://www.bmj.com › ...]

· [Μετάφραση αυτής της σελίδας]

18 Μαΐ 2021 — *Myocarditis* often manifests into rate and rhythm disorders, the report listed 2183 *cases* of cardiac rate and rhythm anomalies with AstraZeneca (

No certain cause of healthy teen's death after Covid vaccine

NZ Herald

https://www.nzherald.co.nz › New Zealand

2 Απρ 2024 — A healthy 13-year-old who unexpectedly died 10 days after receiving a vaccination against Covid-19 had a "microscopic" amount of *myocarditis* .

Athletes, Vaccines and Cardiac Deaths

McGill University

https://www.mcgill.ca › ...

· Μετάφραση αυτής της σελίδας

24 Νοε 2023 — ... *death* being the cause in 143 *cases*. Sadly, accidents ... *myocarditis* that was unrelated to either COVID-19 infection or vaccination.

Autopsy findings in cases of fatal COVID-19 vaccine

Commissione Medico Scientifica Indipendente

https://cmsindipendente.it › sites › default › files

PDF

από N Hulscher · 2024 · Γίνεται αναφορά σε 34 — This systematic review aims to investigate potential causal links between COVID-19 vaccines and *death* from *myocarditis* using post-mortem analysis. W

Determinants of COVID-19 vaccine-induced myocarditis

S

Sage Journals

https://journals.sagepub.com › ...

· Μετάφραση αυτής της σελίδας

27 Ιαν 2024 — Out of those affected, 92 individuals died. *Myocarditis* was more likely following a second dose of vaccine. Furthermore, individuals under the ...

ΠΝΕΥΜΟΝΙΚΗ ΕΜΒΟΛΗ

Pulmonary Embolism after Vaccination with the COVID-19 ...

National Institutes of Health (NIH) (.gov)
https://pmc.ncbi.nlm.nih.gov › ...

· Μετάφραση αυτής της σελίδας
από EJ Kim · 2023 · Γίνεται αναφορά σε 6 — We report a case of *pulmonary embolism* and deep vein thrombosis that occurred after using mRNA COVID-19 vaccines (BNT162b2).

Pulmonary embolism after SARS-CoV-2 vaccination

E
ScienceDirect.com
https://www.sciencedirect.com › ...

· Μετάφραση αυτής της σελίδας
από B Zethelius · 2024 — In this nation-wide study, no strong associations were found between *COVID*-19 *vaccinations* and *pulmonary embolism*.

Thromboembolic Events after COVID-19 Vaccination

National Institutes of Health (NIH) (.gov)
https://pmc.ncbi.nlm.nih.gov › ...

· Μετάφραση αυτής της σελίδας
από **FF Bernardi** · 2023 · Γίνεται αναφορά σε 4 — A population-based studies conducted on over 2 million people *vaccinated* against *COVID*-19 found a risk of *pulmonary embolism* with the Pfize

Evaluation of the Association between COVID-19 Vaccines ...

Istanbul Medical Journal
https://istanbulmedicaljournal.org › ...

· Μετάφραση αυτής της σελίδας
από **C Doğan** · 2024 — The rate of patients with *PE* within 1 month *after* being *vaccinated* was 6.6% in the overall study population. No significant differences were ..

Can the COVID-19 Vaccine Cause Pulmonary Embolism?

Healthline
https://www.healthline.com › ...

· Μετάφραση αυτής της σελίδας
16 Ιουν 2022 — *Some people report cases of pulmonary embolism after COVID-19 vaccination*. We'll explore this potential link, its causes, and what you need ...

Massive pulmonary embolism after Pfizer vaccine

Beaumont Health
https://scholarlyworks.beaumont.org › ...

Pulmonary embolism after anti-SARS-CoV-2 vaccines in ...

Via Medica Journals
https://journals.viamedica.pl › HCP.2023.0004

PDF
από **K Korzeniowska** · 2023 — Cases of thrombotic events *after* vector *COVID*-19 *vaccines* started to be reported in February 2021, including cerebral venous sinus *thrombosis* (CVST), splanchnic ...

· Μετάφραση αυτής της σελίδας
από S Pandey · 2021 — This is the first case to report the *massive, near-fatal Pulmonary Embolism (PE*) associated with BNT162b2 Covid-19 (Pfizer/BioNTech) vaccine.

COVID-19 Vaccination Associated Bilateral Pulmonary ...

Wiley Online Library
https://onlinelibrary.wiley.com › ...

· [Μετάφραση αυτής της σελίδας]
από **JO Ogunkoya** · Γίνεται αναφορά σε 5 — Bilateral *pulmonary embolism* is a rare clinical presentation of APE all over the world and its association with *COVID*-19 *vaccination* is even more

One Center's Experience of Pulmonary Embolism after COVID ...

[RocScholar]
https://scholar.rochesterregional.org › viewcontent

PDF
από C Gose · 2025 — The hypothesis was that *vaccinated, immunocompetent patients have a lower incidence of PE* after COVID-19 compared to unvaccinated patients.

Management of a severe bilateral pulmonary embolism as ...

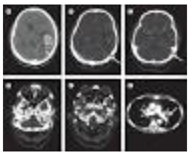
[BMJ Case Reports]
https://casereports.bmj.com › ...

· [Μετάφραση αυτής της σελίδας]
από **M Elkoumy** · 2022 · Γίνεται αναφορά σε 6 — We report a case on the acute management of a patient who presented to us with life-threatening bilateral *pulmonary embolism* as a complication of VITT.

Cerebral venous thrombosis after vaccination ... - The Lancet

[The Lancet]
https://www.thelancet.com › ...

· [Μετάφραση αυτής της σελίδας]



από **RJ Perry** · 2021 · Γίνεται αναφορά σε 195 — Cerebral venous *thrombosis* is the most common manifestation of this syndrome but, to our knowledge, has not previously been described in detail

Isolated pulmonary embolism following COVID vaccination

[ResearchGate]
https://www.researchgate.net › ...

· [Μετάφραση αυτής της σελίδας]
Acute *pulmonary embolism* (*PE*) is a frequent cause of hypoxemic respiratory failure and presentation to the emergency department.

Risk of Venous Thromboembolism After Covid-19 ...

[National Blood Clot Alliance]
https://www.stoptheclot.org › ...

· [Μετάφραση αυτής της σελίδας]
21 Ιουν 2022 — Among the 793 patients with VTE *after COVID*-19 *vaccination*, 489 had DVT (upper or lower extremity) and 426 had *PE*. The overall incidence rates (...

ΑΝΕΥΡΥΣΜΑΤΑ ΑΟΡΤΗΣ , ΑΛΛΗΣ ΑΡΤΗΡΙΑΣ

Overview of reports with fatal outcome after COVID-19 ...

[Lareb]
https://www.lareb.nl › media › signals_2021_cases...

PDF
1 Ιουλ 2021 — *Aortic Aneurysm* (n=4). Aortic Disorder (n=1). 5. Peripheral Vascular ... million *COVID*-19 *vaccinations* were administered and 264 reports of death ...

A Possible Case of Hypertensive Crisis With Aortic ...

[Sage Journals]
https://journals.sagepub.com › ...

· [Μετάφραση αυτής της σελίδας]
3 Φεβ 2024 — We report a case of painless *aortic* dissection that occurred within minutes of receiving the *COVID*-19 inactivated *vaccine*.

Small popliteal aneurysm thrombosis after SARS-CoV-2 ...

[Journal of Vascular Surgery Cases, Innovations and Techniques]
https://www.jvscit.org › ...

· [Μετάφραση αυτής της σελίδας]
από **R El Khoury** · 2022 — This letter narrates the rare case of peripheral arterial thrombosis *after coronavirus* disease 2019 *immunization*.

Case Report: Are We Witnessing an Increase of Chronic ...

[Frontiers](https://www.frontiersin.org)
[https://www.frontiersin.org › ...](https://www.frontiersin.org)

· [Μετάφραση αυτής της σελίδας]()
από **A Lyon** · 2021 · Γίνεται αναφορά σε 8 — The number of cases of chronic ascending *aortic* dissections dramatically increased. We present two patients whose management has been affected by

Intracranial aneurysm rupture within three days after ...

[Surgical Neurology International](https://surgicalneurologyint.com)
[https://surgicalneurologyint.com › ...](https://surgicalneurologyint.com)

· [Μετάφραση αυτής της σελίδας]()
31 Μαρ 2022 — We have reported here *three cases of intracranial aneurysm rupture* shortly after receiving the BNT162b2 mRNA COVID-19 vaccine. Three ...

A Possible Case of Hypertensive Crisis With Aortic ...

[Sage Journals](https://journals.sagepub.com)
[https://journals.sagepub.com › ...](https://journals.sagepub.com)

· [Μετάφραση αυτής της σελίδας]()
από L Mohsenian — A Possible Case of Hypertensive Crisis With *Aortic* Dissection *After* an Anti-*COVID*-19 *Vaccine* ... Dissecting *aneurysm* of the *aorta*: a review of 505 cases.

Case of Myocarditis, Pericarditis, and Fatal Aortic ...

[OSF](https://osf.io)
[https://osf.io › download](https://osf.io)

PDF
από EJ Balbona — Sixteen days *after* his first dose, he experienced acute inflammation, sudden thoracic *aortic* dissection, and pericardial tamponade, rapidly ...

Assessment of cardiac adverse events following COVID-19 ...

Nature
https://www.nature.com › ...

· Μετάφραση αυτής της σελίδας
από S Chaichuum · 2024 · Γίνεται αναφορά σε 2 — This study aimed to evaluate the role of myocardial strains in the early assessment of the clinical presentations *after COVID*-19 *vaccination*.

COVID-19 and brain aneurysm: What's the link?

MedicalNewsToday
https://www.medicalnewstoday.com › ...

· Μετάφραση αυτής της σελίδας
25 Απρ 2023 — These infections correspond to 6 million deaths and many more episodes of ill health. Indeed, *since* the start of the *COVID*-19 pandemic, ...

Aortic Dissection after COVID-19 Vaccination

Trial Site News
https://www.trialsitenews.com › ...

· Μετάφραση αυτής της σελίδας
21 Οκτ 2022 — ... *aortic aneurysm* or widening of the aorta, and then a discrete tear which blood flow now goes through the true lumen and a false lumen .

Safety outcomes following COVID-19 vaccination and ...

Nature
https://www.nature.com › ...

· Μετάφραση αυτής της σελίδας
από E Copland · 2024 · Γίνεται αναφορά σε 15 — ... *vaccine* safety outcomes *after COVID*-19 *vaccination* and ... *aneurysms*, cardiac dysfunction, and multiorgan inflammatory manifestations.

ΦΛΕΓΜΟΝΗ ΑΟΡΤΗΣ - ΡΗΞΗ

วีรกุล ก., เชาน์ทวี เ., กฤดากร อ., & วัฒนศัพท์ ว. (2022). Myopericarditis and Acute Aortic Dissection after Receiving mRNA Based COVID 19 Vaccine: Cases Report and Literature Reviewed. *Journal of Health Science of Thailand*, *31*(5), 945–960. Retrieved from https://thaidj.org/index.php/JHS/article/view/12795

Motonori Takahashi, Takeshi Kondo, Gentaro Yamasaki, Marie Sugimoto, Migiwa Asano, Yasuhiro Ueno, Yasushi Nagasaki, An autopsy case report of aortic dissection complicated with histiolymphocytic pericarditis and aortic inflammation after mRNA COVID-19 vaccination, Legal Medicine, Volume 59, 2022, 102154, ISSN 1344-6223, https://doi.org/10.1016/j.legalmed.2022.102154. (https://www.sciencedirect.com/science/article/pii/S1344622322001420)

An autopsy revealed dissection of the ascending aorta and pericardial hemotamponade. The heart showed a white villous surface, and the pericardium was fibrously thick. Microscopic examination revealed [pericarditis]() with predominantly macrophage and lymphocyte infiltration. These histological findings were compatible with those of post-vaccination myocarditis. To the best of our knowledge, histopathologically proven pericarditis after COVID-19 vaccination has not been reported. In the present case, extended inflammation of the aortic adventitia was a possible cause of aortic wall fragility followed by dissection.

Motonori Takahashi, Takeshi Kondo, Gentaro Yamasaki, Marie Sugimoto, Migiwa Asano, Yasuhiro Ueno, Yasushi Nagasaki, An autopsy case report of aortic dissection complicated with histiolymphocytic pericarditis and aortic inflammation after mRNA COVID-19 vaccination, Legal Medicine, Volume 59, 2022, 102154, ISSN 1344-6223, https://doi.org/10.1016/j.legalmed.2022.102154. (https://www.sciencedirect.com/science/article/pii/S1344622322001420)

ΑΡΤΗΡΙΑΚΗ ΥΠΕΡΤΑΣΗ

A Possible Case of Hypertensive Crisis With Intracranial Haemorrhage After an mRNA Anti-COVID-19 Vaccine

https://pubmed.ncbi.nlm.nih.gov/34018416/

[Η ΑΥΞΗΣΗ ΤΗΣ ΑΡΤΗΡΙΑΚΗΣ ΠΙΕΣΗΣ ΜΕΤΑ ΤΟ ...]()

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[projector-web.gr]()

[https://projector-web.gr › pdf › 987_iAlBIF_AA26]()

PDF

Ένα ποσοστό ασθενών παρουσιάζει συμπτωματική *υπέρταση* μετά τη λήψη του εμβολίου έναντι του *COVID*-19. ... Σε όλους τους παραπάνω ασθενείς η *αρτηριακή* πίεση ...

[**επιπτωσεις του εμβολιου covid-19 στο - IKEE / AUTh**]()

[ΑΡΙΣΤΟΤΕΛΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΟΝΙΚΗΣ]()

[*http://ikee.lib.auth.gr › files › GRI-2023-37836*]()

PDF

10 Νοε 2022 — *ΥΠΕΡΤΑΣΗ*. Ορισμένες έρευνες έχουν δείξει ότι τα εμβόλια *COVID*-19 μπορεί να σχετίζονται με υψηλή *αρτηριακή* πίεση. Σε μια σειρά περιπτώσεων ...

[**Τόμος 31 - Τεύχος 3: 2022**]()

[Ελληνική Εταιρεία Υπέρτασης]()

[*https://hypertasi.gr › περιοδικό › παλαιοτερα-τευχη › αρ...*]()

Παροδικές μεταβολές της αρτηριακής πίεσης μετά τον εμβολιασμό έναντι της COVID-19. Θ. Αναστασίου, Μ. Βέλλιου, Δ. Παπαδόπουλος, Ι. Μπαρμπετσέας. 154.

Angeli F, Reboldi G, Zappa M, Verdecchia P. Hypertension and myocarditis following COVID-19 vaccination. Two sides of the coin? Eur J Intern Med. 2023 Jul;113:107-109. doi: 10.1016/j.ejim.2023.04.023. Epub 2023 Apr 28. PMID: 37130772; PMCID: PMC10141188. doi: [10.1016/j.ejim.2023.04.023]()

Buso G., Agabiti-Rosei C., Muiesan M.L. The relationship between COVID-19 vaccines and increased blood pressure: a word of caution. Eur J Intern Med. 2023;111:27–29. doi: 10.1016/j.ejim.2023.03.002. [[DOI]()] [[PMC free article]()] [[PubMed]()] [[Google Scholar]()]

Zappa M., Verdecchia P., Spanevello A., Visca D., Angeli F. Blood pressure increase after Pfizer/BioNTech SARS-CoV-2 vaccine. Eur J Intern Med. 2021;90:111–113. doi: 10.1016/j.ejim.2021.06.013. [DOI] [PMC free article] [PubMed] [Google Scholar]

Meylan S, Livio F, Foerster M, Genoud PJ, Marguet F, Wuerzner G, et al. Stage III hypertension in patients after mRNA-based SARS-CoV-2 vaccination. Hypertension. 2021;77(6):e56–ee7. doi: 10.1161/HYPERTENSIONAHA.121.17316. [DOI] [PMC free article] [PubMed] [Google Scholar]

Athyros VG, Doumas M. A possible case of hypertensive crisis with intracranial haemorrhage after an mRNA anti-COVID-19 vaccine. Angiology. 2022;73(1):87. doi: 10.1177/00033197211018323. [DOI] [PubMed] [Google Scholar]

Furuto Y, Nohara T, Hamada H, Shibuya Y. Hypertensive anaphylaxis after moderna COVID-19 vaccination: a case report. Cureus. 2022;14(6):e25586. doi: 10.7759/cureus.25586. [DOI] [PMC free article] [PubMed] [Google Scholar]

Gulabani M, Pragya Saxena AK, Sharma CS. Hypertensive emergency and intracranial bleed following vaccination against SARS-COV-2 virus. J Anaesthesiol Clin Pharmacol. 2022;38(Suppl 1):S150–S1S1. doi: 10.4103/joacp.joacp_257_21. [DOI] [PMC free article] [PubMed] [Google Scholar]

Bouhanick B, Montastruc F, Tessier S, Brusq C, Bongard V, Senard JM, et al. Hypertension and Covid-19 vaccines: are there any differences between the different vaccines? A safety signal. Eur J Clin Pharmacol. 2021;77(12):1937–1938. doi: 10.1007/s00228-021-03197-8. [DOI] [PMC free article] [PubMed] [Google Scholar

Syrigos N, Kollias A, Grapsa D, Fyta E, Kyriakoulis KG, Vathiotis I, et al. Significant increase in blood pressure following BNT162b2 mRNA COVID-19 vaccination among healthcare workers: a rare event. Vaccines (Basel) 2022;10(5) doi: 10.3390/vaccines10050745. [DOI] [PMC free article] [PubMed] [Google Scholar]

Simonini M, Scarale MG, Tunesi F, Manunta P, Lanzani C. Multidisciplinary epidemiological research team study G. COVID-19 vaccines effect on blood pressure. Eur J Intern Med. 2022;105:109–110. doi: 10.1016/j.ejim.2022.08.027. [DOI] [PMC free article] [PubMed] [Google Scholar]

Bouhanick B, Brusq C, Bongard V, Tessier S, Montastruc JL, Senard JM, et al. Blood pressure measurements after mRNA-SARS-CoV-2 tozinameran vaccination: a retrospective analysis in a university hospital in France. J Hum Hypertens. 2022;36(6):580–581. doi: 10.1038/s41371-021-00634-0. [DOI] [PubMed] [Google Scholar]

Sanidas E, Anastasiou T, Papadopoulos D, Velliou M, Mantzourani M. Short term blood pressure alterations in recently COVID-19 vaccinated patients. Eur J Intern Med. 2022;96:115–116. doi: 10.1016/j.ejim.2021.11.017. [DOI] [PMC free article] [PubMed] [Google Scholar

Angeli F, Reboldi G, Trapasso M, Santilli G, Zappa M, Verdecchia P. Blood pressure increase following COVID-19 vaccination: a systematic overview and meta-analysis. J Cardiovasc Dev Dis. 2022;9(5) doi: 10.3390/jcdd9050150. [DOI] [PMC free article] [PubMed] [Google Scholar

Tan TL, Salleh SA, Che Man Z, Tan MHP, Kader R, Jarmin R. BNT162b2 COVID-19 Vaccination and Its Effect on Blood Pressure. Medicina (Kaunas) 2022;58(12) doi: 10.3390/medicina58121789. [DOI] [PMC free article] [PubMed] [Google Scholar]

Angeli F, Zappa M, Reboldi G, Gentile G, Trapasso M, Spanevello A, et al. The spike effect of acute respiratory syndrome coronavirus 2 and coronavirus disease 2019 vaccines on blood pressure. Eur J Intern Med. 2022 doi: 10.1016/j.ejim.2022.12.004. [DOI] [PMC free article] [PubMed] [Google Scholar]

Did your Blood Pressure increase after COVID? | Mayo Clinic Connect. Mayo Clinic Connect. https://connect.mayoclinic.org/discussion/blood-pressure-2/

ΕΜΦΑΝΙΣΗ ΠΝΕΥΜΟΝΙΚΗΣ ΥΠΕΡΤΑΣΗΣ

Sullivan, R. D., Shults, N. V., & Suzuki, Y. J. (2023). Case Report: Two Case Reports of Pulmonary Hypertension after mRNA COVID-19 Vaccination. Diseases, 11(3), 114 . **https://doi.org/10.3390/diseases11030114**

Nakagawa, A.; Nakamura, N.; Torii, S.; Goto, S. Acute pulmonary hypertension due to microthrombus formation following COVID-19 vaccination: A case report. Eur. Heart J. Case Rep. 2023, 7, ytad353. [Google Scholar] [CrossRef] [PubMed]

Suzuki, Y.J.; Gychka, S.G. SARS-CoV-2 spike protein elicits cell signaling in human host cells: Implications for possible consequences of COVID-19 vaccines. Vaccines 2021, 9, 36. [Google Scholar] [CrossRef] [PubMed]

Nakamura N, et al. Acute exacerbation of pulmonary arterial hypertension after COVID-19 vaccination. Pediatrics International 65: No. 1, Dec 2023. Available from: URL: https://dx.doi.org/10.1111/ped.15711

Wieteska-Milek M, Szmit S, Florczyk M, Kuśmierczyk-Droszcz B, Ryczek R, Kurzyna M, et al. COVID-19 vaccination in patients with pulmonary arterial hypertension and chronic thromboembolic pulmonary hypertension: safety profile and reasons for opting against vaccination. Vaccines (Basel). 2021; 9:1395.

Akiko N, Norihito N, Sho T, Goto S. Acute pulmonary hypertension due to microthrombus formation following COVID-19 vaccination: a case report. Eur Heart J Case Rep. 2023; 7: 1–5.

Robert DS, Nataliia VS, Yuichiro JS. Case report: two case reports of pulmonary hypertension after mRNA COVID-19 vaccination. Diseases. 2023; 11(3):114. View TY - JOUR

Buso Giacomo, Agabiti-Rosei Claudia, Muiesan Maria. The relationship between COVID-19 vaccines and increased blood pressure: A word of caution
DO - 10.1016/j.ejim.2023.03.002 European Journal of Internal Medicine, 2023
PubMedGoogle Scholar

[Hypertension After COVID Vax No Cause for Worry, So Far](https://www.medpagetoday.com)

MedPage Today

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· **Μετάφραση αυτής της σελίδας**

25 Μαρ 2021 — A small percentage of people developed *symptomatic hypertension* minutes *after* getting a *COVID*-19 *vaccine*, according to a case series from Switzerland.

Bouhanick, B., Brusq, C., Bongard, V. *et al.* Blood pressure measurements after mRNA-SARS-CoV-2 tozinameran vaccination: a retrospective analysis in a university hospital in France. *J Hum Hypertens* 36, 580–581 (2022). https://doi.org/10.1038/s41371-021-00634-0

ΕΠΙΔΡΑΣΗ ΤΟΥ ΙΟΥ SARS CoV 2 (ΤΗΣ COVID ΛΟΙΜΩΞΗΣ) ΣΤΟ ΚΑΡΔΙΑΓΓΕΙΑΚΟ ΣΥΣΤΗΜΑ

Αυτή η θεματική ενότητα παρατίθεται, επειδή πάντα τίθεται το ερώτημα «ευθύνεται το εμβόλιο ή ο ιός για κάποια συμπτώματα και κάποιες επιπλοκές»;
Ιδιαίτερα για την μυοκαρδίτιδα και τη συχνότητά της, εκφράζονται αντιδιαμετρικά αντίθετες απόψεις. Η μία πλευρά ισχυρίζεται ότι είναι σπάνια η μυοκαρδίτιδα από την νόσο COVID, ενώ εμφανίζεται συχνά συνεπεία του εμβολίου. Η ίδια διαφωνία υπάρχει σχετικά με την βαρύτητα της μυοκαρδίτιδας στην μία και στην άλλη περίπτωση.

COVID-19 Associated Cardiovascular Disease-Risks, Prevention and Management: Heart at Risk Due to COVID-19.

Kemerley A, Gupta A, Thirunavukkarasu M, Maloney M, Burgwardt S, Maulik N. Curr Issues Mol Biol. 2024 Feb 29;46(3):1904-1920. doi: 10.3390/cimb46030124. PMID: 38534740 Free PMC article. Review

Myocardial involvement in children with post-COVID multisystem inflammatory syndrome: a cardiovascular magnetic resonance based multicenter international study-the CARDOVID registry.

Aeschlimann FA, Misra N, Hussein T, Panaioli E, Soslow JH, Crum K, Steele JM, Huber S, Marcora S, Brambilla P, Jain S, Navallas M, Giuli V, Rücker B, Angst F, Patel MD, Azarine A, Caro-Domínguez P, Cavaliere A, Di Salvo G, Ferroni F, Agnoletti G, Bonnemains L, Martins D, Boddaert N, Wong J, Pushparajah K, Raimondi F. J Cardiovasc Magn Reson.

2021 Dec 30;23(1):140. doi: 10.1186/s12968-021-00841-1. PMID: 34969397 Free PMC article.

Persistence of Late Gadolinium Enhancement on Follow-Up CMR Imaging in Children with Acute Myocarditis.

Dubey S, Agarwal A, Nguyen S, Adebo D. Pediatr Cardiol. 2020 Dec;41(8):1777-1782. doi: 10.1007/s00246-020-02445-5. Epub 2020 Sep 12. PMID: 32920654

Role of cardiac magnetic resonance in the differential diagnosis between arrhythmogenic cardiomyopathy with left ventricular involvement and previous infectious myocarditis.

Colombo D, Turco A, Lomi S, Valentini A, Bassi E, Scelsi L, Greco A, Schirinzi S, Zacchino M, Acquaro M, Oliveri F, Preda L, Ghio S. Int J Cardiol. 2023 Mar 1;374:120-126. doi: 10.1016/j.ijcard.2022.12.022. Epub 2022 Dec 16. PMID: 36535562

Cardiovascular magnetic resonance evaluation of soldiers after recovery from symptomatic SARS-CoV-2 infection: a case-control study of cardiovascular post-acute sequelae of SARS-CoV-2 infection (CV PASC).

Clark DE, Dendy JM, Li DL, Crum K, Dixon D, George-Durrett K, Parikh AP, Wassenaar JW, Hughes SG, Soslow JH. J Cardiovasc Magn Reson. 2021 Oct 7;23(1):106. doi: 10.1186/s12968-021-00798-1. PMID: 34620179 Free PMC article.

Role of cardiovascular magnetic resonance imaging in COVID-19 recovered patients: A short-term follow-up study.

Kunal S, Bagarhatta P, Palleda GM, Bansal A, Batra V, Daga MK, Tyagi S, Sharma A, Bansal K, Agarwal R, Gupta MD. Echocardiography. 2022 Nov;39(11):1401-1411. doi: 10.1111/echo.15466. Epub 2022 Oct 20. PMID: 36266740 Free PMC article.

Cardiac involvement in consecutive elite athletes recovered from Covid-19: A magnetic resonance study.

Małek ŁA, Marczak M, Miłosz-Wieczorek B, Konopka M, Braksator W, Drygas W, Krzywański J. J Magn Reson Imaging. 2021 Jun;53(6):1723-1729. doi: 10.1002/jmri.27513. Epub 2021 Jan 20. PMID: 33474768 Free PMC article.

Application of Multiparametric Quantitative Cardiac Magnetic Resonance for Detection and Monitoring of Myocardial Injury in Patients with Fulminant Myocarditis.

Li H, Zhu H, Yang Z, Tang D, Huang L, Xia L. Acad Radiol. 2021 Feb;28(2):e35-e43. doi: 10.1016/j.acra.2020.01.034. Epub 2020 Mar 18. PMID: 32199722

Observation of Myocardial Involvement in Patients Recovered From COVID-19 by Using Cardiac Magnetic Resonance Imaging, In a Tertiary Care Hospital, Bangladesh.

Ghafoor N, Islam MM, Shakil SN, Deepa KP, Dutta AK, Medha KA, Siddiqui M, Siraj N, Parven JA, Showkat MS. Mymensingh Med J. 2022 Oct;31(4):1108-1114. PMID: 36189559

Patterns of myocardial injury in recovered troponin-positive COVID-19 patients assessed by cardiovascular magnetic resonance.

Kotecha T, Knight DS, Razvi Y, Kumar K, Vimalesvaran K, Thornton G, Patel R, Chacko L, Brown JT, Coyle C, Leith D, Shetye A, Ariff B, Bell R, Captur G, Coleman M, Goldring J, Gopalan D, Heightman M, Hillman T, Howard L, Jacobs M, Jeetley PS, Kanagaratnam P, Kon OM, Lamb LE, Manisty CH, Mathurdas P, Mayet J, Negus R, Patel N, Pierce I, Russell G, Wolff A, Xue H, Kellman P, Moon JC, Treibel TA, Cole GD, Fontana M. Eur Heart J. 2021 May 14;42(19):1866-1878. doi: 10.1093/eurheartj/ehab075. PMID: 33596594 Free PMC article.

Cardiac Magnetic Resonance Imaging Findings in 2954 COVID-19 Adult Survivors: A Comprehensive Systematic Review.

Shafiabadi Hassani N, Talakoob H, Karim H, MozafariBazargany M, Rastad H. J Magn Reson Imaging. 2022 Mar;55(3):866-880. doi: 10.1002/jmri.27852. Epub 2021 Jul 26. PMID: 34309139 Free PMC article.

Cardiac involvement in coronavirus disease 2019 assessed by cardiac magnetic resonance imaging: a meta-analysis.

Kato S, Azuma M, Fukui K, Kodama S, Nakayama N, Kitamura H, Hagiwara E, Ogura T, Horita N, Namkoong H, Kimura K, Tamura K, Utsunomiya D. Heart Vessels. 2022 Sep;37(9):1570-1582. doi: 10.1007/s00380-022-02055-6. Epub 2022 Mar 16. PMID: 35294611 Free PMC article.

High-resolution Free-breathing late gadolinium enhancement Cardiovascular magnetic resonance to diagnose myocardial injuries following COVID-19 infection.

Bustin A, Sridi S, Gravinay P, Legghe B, Gosse P, Ouattara A, Rozé H, Coste P, Gerbaud E, Desclaux A, Boyer A, Prevel R, Gruson D, Bonnet F, Issa N, Montaudon M, Laurent F, Stuber M, Camou F, Cochet H. Eur J Radiol. 2021 Nov;144:109960. doi: 10.1016/j.ejrad.2021.109960. Epub 2021 Sep 20. PMID: 34600236 Free PMC article.

T2-mapping increase is the prevalent imaging biomarker of myocardial involvement in active COVID-19: a Cardiovascular Magnetic Resonance study.

Galea N, Marchitelli L, Pambianchi G, Catapano F, Cundari G, Birtolo LI, Maestrini V, Mancone M, Fedele F, Catalano C, Francone M. J Cardiovasc Magn Reson. 2021 Jun 10;23(1):68. doi: 10.1186/s12968-021-00764-x. PMID: 34107985 Free PMC article.

Low Prevalence of Late Myocardial Injury on Cardiac MRI Following COVID-19 Infection.

Orbach A, Ghugre NR, Biswas L, Connelly KA, Chan A, Strauss BH, Wright GA, Roifman I. J Magn Reson Imaging. 2023 Dec;58(6):1777-1784. doi: 10.1002/jmri.28668. Epub 2023 Mar 5. PMID: 36872614

Cardiac Magnetic Resonance Imaging in Coronavirus Disease 2019 (COVID-19): A Systematic Review of Cardiac Magnetic Resonance Imaging Findings in 199 Patients.

Ojha V, Verma M, Pandey NN, Mani A, Malhi AS, Kumar S, Jagia P, Roy A, Sharma S. J Thorac Imaging. 2021 Mar 1;36(2):73-83. doi: 10.1097/RTI.0000000000000574. PMID: 33306666

[Role of cardiac magnetic resonance imaging in myocarditis patients with biopsy negative: a retrospective case series study].

Yang SJ, Li JH, Li L, Chen XY, Yin G, Zhou YP, Xu XQ, Li L, Wang HY, Zhao SH. Zhonghua Xin Xue Guan Bing Za Zhi. 2021 Jan 11;49(1):23-30. doi: 10.3760/cma.j.cn112148-20200908-00718. Online ahead of print. PMID: 33429482 Chinese.

Differences in Cardiac Magnetic Resonance Imaging Markers Between Patients With COVID-19-associated Myocardial Injury and Patients With Clinically Suspected Myocarditis.

Maurus S, Weckbach LT, Marschner C, Kunz WG, Ricke J, Kazmierczak PM, Bieber S, Brado J, Kraechan A, Hellmuth JC, Hausleiter J, Massberg S, Grabmaier U, Curta A. J Thorac Imaging. 2021 Sep 1;36(5):279-285. doi: 10.1097/RTI.0000000000000599. PMID: 34108409

Cardiovascular magnetic resonance imaging and spectroscopy in clinical long-COVID-19 syndrome: a prospective case-control study.

Gorecka M, Jex N, Thirunavukarasu S, Chowdhary A, Corrado J, Davison J, Tarrant R, Poenar AM, Sharrack N, Parkin A, Sivan M, Swoboda PP, Xue H, Vassiliou V, Kellman P, Plein S, Halpin SJ, Simms AD, Greenwood JP, Levelt E. J Cardiovasc Magn Reson. 2022 Sep 12;24(1):50. doi: 10.1186/s12968-022-00887-9. PMID: 36089591 Free PMC article.

Multiparametric Cardiovascular Magnetic Resonance in Nonhospitalized COVID-19 Infection Subjects: An Intraindividual Comparison Study.

Zhang J, Luo S, Cai J, Kong X, Zhang L, Qi L, Zhang LJ. J Thorac Imaging. 2024 Mar 1;39(2):86-92. doi: 10.1097/RTI.0000000000000774. Epub 2024 Jan 25. PMID: 38270475

Cardiovascular Magnetic Resonance Imaging in Physically Fit Young Patients Sans Comorbidities Who Recently Recovered from Coronavirus Disease 2019 (COVID-19).

Pawlak A, Furmanek M, Szymański P, Ciechanowicz P, Walecka I, Walecki J, Fal A, Zaczyński A, Król Z, Wierzba W, Gil K, Gil R. Ann Agric Environ Med. 2024 Sep 25;31(3):357-361. doi: 10.26444/aaem/183591. Epub 2024 Jun 17. PMID: 39344724 Free article.

Prospective Case-Control Study of Cardiovascular Abnormalities 6 Months Following Mild COVID-19 in Healthcare Workers.

Joy G, Artico J, Kurdi H, Seraphim A, Lau C, Thornton GD, Oliveira MF, Adam RD, Aziminia N, Menacho K, Chacko L, Brown JT, Patel RK, Shiwani H, Bhuva A, Augusto JB, Andiapen M, McKnight A, Noursadeghi M, Pierce I, Evain T, Captur G, Davies RH, Greenwood JP, Fontana M, Kellman P, Schelbert EB, Treibel TA, Manisty C, Moon JC; COVIDsortium Investigators. JACC Cardiovasc Imaging. 2021 Nov;14(11):2155-2166. doi: 10.1016/j.jcmg.2021.04.011. Epub 2021 May 8. PMID: 33975819 Free PMC article.

Demographic, multi-morbidity and genetic impact on myocardial involvement and its recovery from COVID-19: protocol design of COVID-HEART-a UK, multicentre, observational study.

Gorecka M, McCann GP, Berry C, Ferreira VM, Moon JC, Miller CA, Chiribiri A, Prasad S, Dweck MR, Bucciarelli-Ducci C, Dawson D, Fontana M, Macfarlane PW, McConnachie A, Neubauer S, Greenwood JP; COVID-HEART investigators. J Cardiovasc Magn Reson. 2021 Jun 10;23(1):77. doi: 10.1186/s12968-021-00752-1. PMID: 34112195 Free PMC article.

Cardiac remodeling and inflammation detected by magnetic resonance imaging in COVID-19 survivors.

Schaustz EB, Secco JCP, Barroso JM, Ferreira JR, Tortelly MB, Pimentel AL, Figueiredo ACBS, Albuquerque DC, Sales ARK, Rosado de-Castro PH, Pinheiro MVT, Souza OF, Medei E, Luiz RR, Silvestre-Sousa A, Camargo GC, Moll-Bernardes R. Int J Cardiol Heart Vasc. 2024 Aug 27;54:101499. doi: 10.1016/j.ijcha.2024.101499. eCollection 2024 Oct. PMID: 39280695 Free PMC article.

Myocardial Injury by COVID-19 Infection Assessed by Cardiovascular Magnetic Resonance Imaging　- A Prospective Multicenter Study.

Kato S, Kitai T, Utsunomiya D, Azuma M, Fukui K, Hagiwara E, Ogura T, Ishibashi Y, Okada T, Kitakata H, Shiraishi Y, Torii S, Ohashi K, Takamatsu K, Yokoyama A, Hirata KI, Matsue Y, Node K. Circ J. 2024 Aug 23;88(9):1450-1458. doi: 10.1253/circj.CJ-23-0729. Epub 2024 Mar 29. PMID: 38556299 Free article.

European Association of Cardiovascular Imaging survey on cardiovascular multimodality imaging in acute myocarditis.

Bohbot Y, Pezel T, Demirkıran A, Androulakis E, Houshmand G, Szabo L, Manka R, Botezatu SB, Rodríguez-Palomares JF, Biering-Sørensen T, Podlesnikar T, Dweck MR, Lembo M. Eur Heart J Cardiovasc Imaging. 2024 Jun 28;25(7):892-900. doi: 10.1093/ehjci/jeae092. PMID: 38568982

CMR Predictors of Favorable Outcome in Myocarditis: A Single-Center Experience.

Baritussio A, Cheng CY, Simeti G, Ocagli H, Lorenzoni G, Giordani AS, Basso C, Rizzo S, De Gaspari M, Motta R, De Conti G, Perazzolo Marra M, Tarantini G, Iliceto S, Gregori D, Marcolongo R, Caforio ALP. J Clin Med. 2024 Feb 21;13(5):1229. doi: 10.3390/jcm13051229. PMID: 38592081 Free PMC article.

Acute Lymphocytic Myocarditis in a Young Male Post-COVID-19.

Bohné M, Bohnen S, Willems S, Klingel K, Kivelitz D, Bahlmann E. Case Rep Cardiol. 2023 Jun 22;2023:7646962. doi: 10.1155/2023/7646962. eCollection 2023. PMID: 37397607 Free PMC article.

Effectiveness and safety of IL1 inhibition with anakinra in chronic refractory idiopathic myocarditis.

Malandrino D, Bello F, Lopalco G, Cantarini L, Olivotto I, Emmi G, Prisco D. Intern Emerg Med. 2024 Mar;19(2):583-588. doi: 10.1007/s11739-023-03514-2. Epub 2023 Dec 29. PMID: 38158463

[Cardiac compromise in patients recovered from COVID-19 without troponin elevation assessed by cardiac magnetic resonance imaging].

Carlessi A, Perello L, Pantaley C, Borsini A, Rossi L, Giménez F, Leonardi J, Ballina A, Maillo M, Di-Rienzo P, Gonzalo P, González-Vara M, Vegetti L, Wustten S, Costa L, Vergara D, Froullet C. Arch Cardiol Mex. 2022 Apr 7;93(Supl 6):42-49. doi: 10.24875/ACM.21000335. PMID: 35389603 Free article. Spanish.

Utilization of cardiovascular magnetic resonance (CMR) imaging for resumption of athletic activities following COVID-19 infection: an expert consensus document on behalf of the American Heart Association Council on Cardiovascular Radiology and Intervention (CVRI) Leadership and endorsed by the Society for Cardiovascular Magnetic Resonance (SCMR).

Ruberg FL, Baggish AL, Hays AG, Jerosch-Herold M, Kim J, Ordovas KG, Reddy G, Shenoy C, Weinsaft JW, Woodard PK. J Cardiovasc Magn Reson. 2022 Dec 21;24(1):73. doi: 10.1186/s12968-022-00907-8. PMID: 36539786 Free PMC article. Review.

Long-term cardiac follow-up of athletes infected with SARS-CoV-2 after resumption of elite-level sports.

van Hattum JC, Daems JJN, Verwijs SM, Wismans LV, van Diepen MA, Groenink M, Boekholdt SM, Planken RN, van Randen A, Hirsch A, Moen MH, Pinto YM, Wilde AAM, Jørstad HT. Heart. 2024 Jan 29;110(4):254-262. doi: 10.1136/heartjnl-2023-323058. PMID: 37678891 Free PMC article.

Complete remission of giant cell myocarditis by prednisolone monotherapy: A case with mild inflammation demonstrated by mismatch between T2-high intensity areas and late gadolinium enhancement.

Soma T, Kinjo T, Goto S, Sasaki S, Tomita H. J Cardiol Cases. 2024 Jan 15;29(4):182-185. doi: 10.1016/j.jccase.2023.12.007. eCollection 2024 Apr. PMID: 38646085 Free PMC article.

Cardiac Magnetic Resonance Imaging of COVID-19-Associated Cardiac Sequelae: A Systematic Review.

Boparai MS, Musheyev B, Khan U, Koduru T, Hinson J, Skopicki HA, Duong TQ. Rev Cardiovasc Med. 2022 Nov 30;23(12):389. doi: 10.31083/j.rcm2312389. eCollection 2022 Dec. PMID: 39076661 Free PMC article.

Cardiac sequelae after coronavirus disease 2019 recovery: a systematic review.

Ramadan MS, Bertolino L, Zampino R, Durante-Mangoni E; Monaldi Hospital Cardiovascular Infection Study Group. Clin Microbiol Infect. 2021 Sep;27(9):1250-1261. doi: 10.1016/j.cmi.2021.06.015. Epub 2021 Jun 23. PMID: 34171458 Free PMC article.

MRI of cardiac involvement in COVID-19.

Rafiee MJ, Friedrich MG. Br J Radiol. 2024 Aug 1;97(1160):1367-1377. doi: 10.1093/bjr/tqae086. PMID: 38656976 Free PMC article. Review.

Cardiovascular magnetic resonance for evaluation of cardiac involvement in COVID-19: recommendations by the Society for Cardiovascular Magnetic Resonance.

Ferreira VM, Plein S, Wong TC, Tao Q, Raisi-Estabragh Z, Jain SS, Han Y, Ojha V, Bluemke DA, Hanneman K, Weinsaft J, Vidula MK, Ntusi NAB, Schulz-Menger J, Kim J. J

Cardiovasc Magn Reson. 2023 Mar 27;25(1):21. doi: 10.1186/s12968-023-00933-0. PMID: 36973744 Free PMC article. Review.

An unusual case of apical myocarditis: a case report.

Das A, Kidambi A, Plein S, Dall'Armellina E. Eur Heart J Case Rep. 2020 Nov 7;4(6):1-5. doi: 10.1093/ehjcr/ytaa347. eCollection 2020 Dec. PMID: 33634222 Free PMC article.

COVID-19 Infection and Myocarditis: A State-of-the-Art Systematic Review.

Jaiswal V, Sarfraz Z, Sarfraz A, Mukherjee D, Batra N, Hitawala G, Yaqoob S, Patel A, Agarwala P, Ruchika, Sarfraz M, Bano S, Azeem N, Naz S, Jaiswal A, Sharma P, Chaudhary G. J Prim Care Community Health. 2021 Jan-Dec;12:21501327211056800. doi: 10.1177/21501327211056800. PMID: 34854348 Free PMC article.

High Prevalence of Pericardial Involvement in College Student Athletes Recovering From COVID-19.

Brito D, Meester S, Yanamala N, Patel HB, Balcik BJ, Casaclang-Verzosa G, Seetharam K, Riveros D, Beto RJ 2nd, Balla S, Monseau AJ, Sengupta PP. JACC Cardiovasc Imaging. 2021 Mar;14(3):541-555. doi: 10.1016/j.jcmg.2020.10.023. Epub 2020 Nov 4. PMID: 33223496 Free PMC article.

Symptom Persistence Despite Improvement in Cardiopulmonary Health - Insights from longitudinal CMR, CPET and lung function testing post-COVID-19.

Cassar MP, Tunnicliffe EM, Petousi N, Lewandowski AJ, Xie C, Mahmod M, Samat AHA, Evans RA, Brightling CE, Ho LP, Piechnik SK, Talbot NP, Holdsworth D, Ferreira VM, Neubauer S, Raman B. EClinicalMedicine. 2021 Nov;41:101159. doi: 10.1016/j.eclinm.2021.101159. Epub 2021 Oct 20. PMID: 34693230 Free PMC article.

Systematic review of case reports on COVID-19 associated myocarditis: a discussion on treatments.

Lim V, Topiwala G, Apinova E, Diioia M. Virol J. 2024 Oct 9;21(1):252. doi: 10.1186/s12985-024-02499-4. PMID: 39385302 Free PMC article.

Patients Recovered From COVID-19 Show Ongoing Subclinical Myocarditis as Revealed by Cardiac Magnetic Resonance Imaging.

Ng MY, Ferreira VM, Leung ST, Yin Lee JC, Ho-Tung Fong A, To Liu RW, Man Chan JW, Wu AKL, Lung KC, Crean AM, Fan-Ngai Hung I, Siu CW. JACC Cardiovasc Imaging. 2020 Nov;13(11):2476-2478. doi: 10.1016/j.jcmg.2020.08.012. Epub 2020 Aug 28. PMID: 33153536 Free PMC article. No abstract available.

CMR Findings in COVID-19 Recovered Patients: A Review on Parametric Mapping, Feature-Tracking, and LGE.

Mojica-Pisciotti ML, Panovský R, Holeček T, Opatřil L. Rev Cardiovasc Med. 2022 Oct 21;23(11):355. doi: 10.31083/j.rcm2311355. eCollection 2022 Nov. PMID: 39076192 Free PMC article. Review.

Clinical characteristics, diagnosis and short-term outcomes of COVID-19-associated acute myocarditis in China.

Liu H, Zhou P, Huang Y, Yan S, Zhou L, Gao C, Wang L, Tang J, Zhou Q, Li X, Zhuang X, Zhai M, Huang L, Zhao X, Greenberg B, Hsi DH, Zhang Y, Zhang J. ESC Heart Fail. 2024 Sep 19. doi: 10.1002/ehf2.15048. Online ahead of print. PMID: 39297314 Free article.

Intraventricular Conundrum in a SARS-CoV-2-Positive Patient With Elevated Biomarkers of Myocardial Injury.

Servato ML, Valente FX, García-Moreno LG, Casas G, Fernández-Galera R, Burcet G, Teixidó-Tura G, Calabria HC, González IF, Rodríguez-Palomares JF. JACC Case Rep. 2021 Apr;3(4):566-572. doi: 10.1016/j.jaccas.2021.01.030. Epub 2021 Mar 31. PMID: 33821246 Free PMC article.

Absence of long-term structural and functional cardiac abnormalities on multimodality imaging in a multi-ethnic group of COVID-19 survivors from the early stage of the pandemic.

Sewanan LR, Di Tullio MR, Laine AF, D'Souza B, Leb J, Mironov A, Khan A, Stanger DE, Konofagou EE, Goldsmith RL, Jambawalikar SR, Hirschfeld CB, Castillo M, Durkin KJ, Dashnaw S, Thomas Vaughan J, Einstein AJ. Eur Heart J Imaging Methods Pract. 2023 Oct 26;1(2):qyad034. doi: 10.1093/ehjimp/qyad034. eCollection 2023 Sep. PMID: 39045071 Free PMC article.

SARS-CoV-2 Myocarditis in a High School Athlete after COVID-19 and Its Implications for Clearance for Sports.

Das BB. Children (Basel). 2021 May 21;8(6):427. doi: 10.3390/children8060427. PMID: 34063781 Free PMC article.

A Case of Systemic Capillary Leak Syndrome with Severe Cardiac Dysfunction after mRNA Vaccination for COVID-19
https://pubmed.ncbi.nlm.nih.gov/35345835/

A Case of Takotsubo Cardiomyopathy Triggered by Asthma Exacerbation After mRNA-based Vaccination for COVID-19
https://pubmed.ncbi.nlm.nih.gov/37362462/

Improvement of Symptoms and Cardiac Magnetic Resonance Abnormalities in Patients with Post-Acute Sequelae of SARS-CoV-2 Cardiovascular Syndrome (PASC-CVS) after Guideline-Oriented Therapy.

Gyöngyösi M, Hasimbegovic E, Han E, Zlabinger K, Spannbauer A, Riesenhuber M, Hamzaraj K, Bergler-Klein J, Hengstenberg C, Kammerlander A, Kastl S, Loewe C, Beitzke D. Biomedicines. 2023 Dec 14;11(12):3312. doi: 10.3390/biomedicines11123312. PMID: 38137533 Free PMC article.

Transformative Effect of COVID-19 Pandemic on Magnetic Resonance Imaging Services in One Tertiary Cardiovascular Center.

Shelkovnikova TA, Maksimova AS, Ryumshina NI, Mochula OV, Vaizov VK, Ussov WY, Anfinogenova ND. J Imaging. 2023 May 28;9(6):108. doi: 10.3390/jimaging9060108. PMID: 37367456 Free PMC article.

Popovic M, Cvetic V, Popadic V, Ilic K, Radojevic A, Klasnja A, Milic N, Rajovic N, Lasica R, Gostiljac D, Klasnja S, Mahmutovic E, Zdravkovic M. The Correlation between Cardiac Magnetic Resonance Findings and Post-COVID-19: The Impact of Myocardial Injury on Quality of Life. Diagnostics (Basel). 2024 Sep 2;14(17):1937. PMID: **39272722** PMCID: PMC11394307 DOI: 10.3390/diagnostics14171937

Myocarditis and COVID-19 related issues.

Ciabatti M, Zocchi C, Olivotto I, Bolognese L, Pieroni M. Glob Cardiol Sci Pract. 2023 Sep 30;2023(4):e202328. doi: 10.21542/gcsp.2023.28. eCollection 2023 Sep 30. PMID: 38404624 Free PMC article. Review.

Cardiac tissue model of immune-induced dysfunction reveals the role of free mitochondrial DNA and the therapeutic effects of exosomes.

Lu RXZ, Rafatian N, Zhao Y, Wagner KT, Beroncal EL, Li B, Lee C, Chen J, Churcher E, Vosoughi D, Liu C, Wang Y, Baker A, Trahtemberg U, Li B, Pierro A, Andreazza AC, Dos Santos CC, Radisic M. Sci Adv. 2024 Mar 29;10(13):eadk0164. doi: 10.1126/sciadv.adk0164. Epub 2024 Mar 27. PMID: 38536913 Free PMC article.

Cardiac Magnetic Resonance Imaging Is Useful for Follow-up of Extremely Rare Pediatric COVID-19 Fulminant Myocarditis.

Kinoshita M, Higashi K, Takaoka H, Sakai T, Murayama D, Uchikawa H, Kanaeda T, Nishikawa Y, Aoki S, Yashima S, Suzuki K, Yoshida K, Sasaki H, Suzuki-Eguchi N, Daimon M, Kobayashi Y. Circ J. 2023 Nov 24;87(12):1843. doi: 10.1253/circj.CJ-23-0485. Epub 2023 Nov 7. PMID: 37940599 Free article. No abstract available.

Society for Cardiovascular Magnetic Resonance 2021 cases of SCMR and COVID-19 case collection series.

Johnson JN, Loriaux DB, Jenista E, Kim HW, Baritussio A, De Garate Iparraguirre E, Bucciarelli-Ducci C, Denny V, O'Connor B, Siddiqui S, Fujikura K, Benton CW, Weinsaft JW, Kochav J, Kim J, Madamanchi C, Steigner M, Kwong R, Chango-Azanza D, Chapa M, Rosales-Uvera S, Sitwala P, Filev P, Sahu A, Craft J, Punnakudiyil GJ, Jayam V, Shams F, Hughes SG, Lee JCY, Hulten EA, Steel KE, Chen SSM. J Cardiovasc Magn Reson. 2022 Jul 4;24(1):42. doi: 10.1186/s12968-022-00872-2. PMID: 35787291 Free PMC article. Review.

How to perform a cardio-thoracic magnetic resonance imaging in COVID-19: comprehensive assessment of heart, pulmonary arteries, and lung parenchyma.

Galea N, Catapano F, Marchitelli L, Cundari G, Maestrini V, Panebianco V, Mancone M, Fedele F, Catalano C, Francone M. Eur Heart J Cardiovasc Imaging. 2021 Jun 22;22(7):728-731. doi: 10.1093/ehjci/jeaa335. PMID: 33325495 Free PMC article.

COVID-19-related subclinical myocarditis resulting in mural left ventricular thrombus.

Sagheer U, Shotwell MK, Umer M, Furtado W, Joshi J, Kalra DK. QJM. 2023 Dec 27;116(12):1016-1017. doi: 10.1093/qjmed/hcad195. PMID: 37632783 No abstract available.

Unexpected finding of myocardial depression in 2 healthy young patients with COVID-19 pneumonia: possible support for COVID-19-related myocarditis.

Blaivas M. J Am Coll Emerg Physicians Open. 2020 Jun 13;1(4):375-378. doi: 10.1002/emp2.12098. eCollection 2020 Aug. PMID: 32838381 Free PMC article

ΕΠΙΔΡΑΣΗ ΣΕ ΓΟΝΑΔΕΣ

Τόσο για την επίδραση των εμβολίων στην γυναικεία γονιμότητα, όσο και στην ανδρική (ποιότητα του σπέρματος), υπάρχουν αντικρουόμενες πληροφορίες.

Οι δημοσιευμένες μελέτες ανακοινώνουν ότι δεν υπάρχει δυσμενής επίπτωση. Πληροφορίες από ιδιώτες και στατιστικά στοιχεία δείχνουν το αντίθετο.
Το ίδιο ισχύει και για την ανδρική γονιμότητα.

Requena, A., Vergara, V., González-Ravina, C., Ruiz, M. E., & Cruz, M. (2023). The type of SARS-CoV-2 vaccine does not affect ovarian function in assisted reproduction cycle. *Fertility and sterility*, *119*(4), 618–623. https://doi.org/10.1016/j.fertnstert.2022.12.022

Cardona Maya WD, Omolaoye TS, du Plessis SS. Re: The Impact of COVID-19 Vaccine on Sperm Quality. Eur Urol. 2022 Sep;82(3):327-328. doi: 10.1016/j.eururo.2022.06.021. Epub 2022 Jun 24. PMID: 35787937; PMCID: PMC9226291.

Ma YC, Cheng C, Yuan C, Xiang LY, Wen J, Jin X. The effect of COVID-19 vaccines on sperm parameters: a systematic review and meta-analysis. Asian J Androl. 2023;25(4):468-473. doi: 10.4103/aja2022100. PMID: 36510860; PMCID: PMC10411248.

Wassan Nori, Dina Akeel Salman,
Seminal fluid changes in the COVID-19 era: During infection and Post-vaccination,
Gynecology and Obstetrics Clinical Medicine, Volume 3, Issue 2, 2023,
Pages 88-93, ISSN 2667-1646, https://doi.org/10.1016/j.gocm.2023.04.001.
(https://www.sciencedirect.com/science/article/pii/S2667164623000349)

ΑΥΞΗΣΗ ΤΗΣ ΕΜΦΑΝΙΣΗΣ ΣΟΒΑΡΩΝ ΛΟΙΜΩΞΕΩΝ ΑΠΟ ΑΠΛΑ ΠΑΘΟΓΟΝΑ ΠΙΘΑΝΩΣ ΜΕ ΥΠΑΙΤΙΟΤΗΤΑ ΤΩΝ ΕΜΒΟΛΙΩΝ

Υπάρχει παγκοσμίως διάχυτη η απορία και ανησυχία : γιατι συνήθη παθογόνα που προκαλούσαν ήπιες λοιμώξεις, τώρα προκαλούν επιθετικές διεισδυτικές νόσους (why simple pathogens now cause invasive infections).

Κάποιοι το αποδίδουν στην επίδραση του ιού και άλλοι στην επίδραση των COVID εμβολίων στο ανοσοποιητικό σύστημα, ή και στην τροποποίηση των μικροβιακών στελεχών με τα οποία έρχονταν οι άνθρωποι σε επαφή λόγω των περιοριστικών και υγειονομικών μέτρων κατά τηνπανδημία.

Davanzo, G.G.; Codo, A.C.; Brunetti, N.S.; Boldrini, V.; Knittel, T.L.; Monterio, L.B.; de Moraes, D.; Ferrari, A.J.R.; de Souza, G.F.; Muraro, S.P.; et al. SARS-CoV-2 Uses CD4 to Infect T Helper Lymphocytes. medRxiv 2020, 2020, 20200329

De Cock, K. M. (2025). Global Health's Evolution and Search for Identity. *Emerging Infectious Diseases*, *31*(1), 1-7. https://doi.org/10.3201/eid3101.241026.

Li, C., Tse, H., Zhu, C., Choi, G., Lee, A., Yang, J....Ip, M. (2025). Invasive Group B Streptococcus Infections Caused by Hypervirulent Clone of S. agalactiae Sequence Type 283, Hong Kong, China, 2021. *Emerging Infectious Diseases*, *31*(1), 149-154. https://doi.org/10.3201/eid3101.231627.

Liao, H., Lyon, C. J., Ying, B., & Hu, T. (2024). Climate change, its impact on emerging infectious diseases and new technologies to combat the challenge. *Emerging Microbes & Infections*, *13*(1). https://doi.org/10.1080/22221751.2024.2356143

https://www.medicalnewstoday.com/articles/5-stages-of-infection

https://www.qld.gov.au/health/condition/infections-and-parasites/bacterial-infections/invasive-group-a-streptococcal-disease

https://www.uptodate.com/contents/whats-new-in-infectious-diseases

Sepsis Alliance. Sepsis and Bacterial Infections. 2023. https://www.sepsis.org/sepsisand/bacterial-infections/ Updated September 20, 2023.

https://www.biology.ox.ac.uk/article/covid-19-lockdowns-significantly-reduced-transmission-of-invasive-bacterial-diseases

Brueggemann, Angela B et al. Changes in the incidence of invasive disease due to *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Neisseria meningitidis* during the COVID-19 pandemic in 26 countries and territories in the Invasive Respiratory Infection Surveillance Initiative: a prospective analysis of surveillance data The Lancet Digital Health, Volume 3, Issue 6, e360 - e370

https://www.manchester.ac.uk/about/news/does-covid-really-damage-your-immune-system-and-make-you-more-vulnerable-to-infections-the-evidence-is-lacking/

Vivier E, Malissen B. Innate and adaptive immunity: specificities and signaling hierarchies revisited. Nat Immunol. 2005 Jan;6(1):17-21. doi: 10.1038/ni1153. Erratum in: Nat Immunol. 2005 Feb;6(2):219. PMID: 15611777; PMCID: PMC7097365.

https://www.ncbi.nlm.nih.gov/books/NBK279396/

https://bio.libretexts.org/Bookshelves/Microbiology/Microbiology_(Kaiser)/Unit_6%253A_Adaptive_Immunity/12%253A_Introduction_to_Adaptive_Im

Innate and adaptive immune response in SARS-CoV-2 infection-Current perspectives REVIEW article. Front. Immunol., 22 November 2022 . Sec. Viral Immunology Volume 13 - 2022 | **https://doi.org/10.3389/fimmu.2022.1053437**

Έμφυτη και προσαρμοστική ανοσολογική απόκριση στη μόλυνση SARS-CoV-2-Τρέχουσες προοπτικές

Boekel L, Kummer L Y, van Dam K P J, et al. Adverse events after first COVID-19 vaccination in patients with autoimmune diseases. Lancet Rheumatol 2021; published online June 18. https://doi.org/10.1016/S2665-9913(21)00181-8.

Increased disease activity in 5% of the patients

Supplementary appendix

ΑΥΞΗΣΗ ΤΗΣ ΕΠΙΡΡΕΠΕΙΑΣ ΤΩΝ ΕΜΒΟΛΙΑΣΜΕΝΩΝ ΣΕ ΜΟΛΥΝΣΗ ΑΠΟ SARS-CO- 2

Αυτό το φαινομενικά παράδοξο, να μολύνονται περισσότερο και να νοσούν ενίοτε βαρύτερα οι εμβολιασμένοι, δεν έχει πλήρως διευκρινιστεί πού οφείλεται…

Liu Y, Soh WT, Kishikawa JI, Hirose M, Nakayama EE, Li S, Sasai M, Suzuki T, Tada A, Arakawa A, Matsuoka S. An infectivity-enhancing site on the SARS-CoV-2 spike protein targeted by antibodies. Cell. 2021;184(13):3452–66. CAS PubMed PubMed Central Google Scholar

Cho A, Muecksch F, Schaefer-Babajew D, Wang Z, Finkin S, Gaebler C, Ramos V, Cipolla M, Mendoza P, Agudelo M, Bednarski E. Anti-SARS-CoV-2 receptor-binding domain antibody evolution after mRNA vaccination. Nature. 2021;600(7889):517–22. CAS PubMed PubMed Central Google Scholar

ΕΜΦΑΝΙΣΗ ΣΕ ΕΜΒΟΛΙΑΣΜΕΝΟΥΣ ΕΝΟΣ ΣΥΝΔΡΟΜΟΥ ΠΑΡΟΜΟΙΟΥ ΜΕ COVID (LONG COVID-LIKE ILLNESS) - LONG VAX - POST-VAX SYNDROME

Ένα ποσοστό ανθρώπων, εμφανίζει μετά COVID λοίμωξη πληθώρα ενοχλητικών συμπτωμάτων, για διάστημα που ξεπερνά το τρίμηνο : επίμονη κεφαλαλγία, μεγάλη καταβολή, μυική αδυναμία, ανώμαλο καρδιακό ρυθμό, διακύμανση της αρτηριακής πίεσης, παραισθησίες. Αυτή η κατάσταση ονομάζεται long COVID.

Αν ένας εμβολιασμένος εμφανίσει τα ίδια επιμονα συμπτώματα μετά εμβολιασμό, χρησιμοποιούμε κατ αναλογίαν τον όρο post vax και αν παραμείνουν πέραν του τριμήνου τον όρο long vax.

https://www.science.org/content/article/rare-cases-coronavirus-vaccines-may-cause-long-covid-symptoms

ΕΜΜΕΝΟΝΤΑ ΣΥΜΠΤΩΜΑΤΑ ΜΕΤΑ COVID ΕΜΒΟΛΙΑΣΜΟ (PERSISTENT POST COVID VACCINATIONS SYMPTOMS - LONG VAX)

Scholkmann F, May CA. COVID-19, post-acute COVID-19 syndrome (PACS, “long COVID”) and post-COVID-19 vaccination syndrome (PCVS, “post-COVIDvac-syndrome”): Similarities and differences. Pathol Res Practice. 2023. https://doi.org/10.1016/j.prp.2023.154497. Article Google Scholar https://www.pei.de/EN/newsroom/positions/covid-19-vaccines/statement-postvac.html

Statement from the Paul-Ehrlich-Institut on "Post-Vac Syndrome" after COVID-19 Vaccination (as of 19 May 2023)

Neuropathic symptoms with SARS-CoV-2 vaccination. Farinaz Safavi, Lindsey Gustafson, Brian Walitt, Tanya Lehky, Sara Dehbashi, Amanda Wiebold, Yair Mina, Susan Shin, Baohan Pan, Michael Polydefkis, Anne Louise Oaklander, Avindra NathmedRxiv 2022.05.16.22274439; doi: https://doi.org/10.1101/2022.05.16.22274439

https://www.medpagetoday.com/neurology/generalneurology/107644

Among 241 people who self-reported a post-vaccination syndrome (PVS), the five most common symptoms were exercise intolerance (71%), excessive fatigue (69%), numbness (63%), brain fog (63%), and neuropathy (63%), reported Harlan Krumholz, MD, of Yale School of Medicine in New Haven, Connecticut, and co-authors in a paper posted on the preprint server *medRxiv*opens in a new tab or window. The paper has not been peer-reviewed.

Couzin-Frankel J, Vogel GJS. Vaccines may cause rare, Long Covid-like symptoms. 2022;375(6579):364–6. View Article Google Scholar

***Lam I**. C. H., Zhang R., Man K. K. C., Wong C. K. H., Chui C. S. L., Lai F. T. T., et al. (2024). Persistence in risk and effect of COVID-19 vaccination on long-term health consequences after SARS-CoV-2 infection. Nat. Commun. 15 (1), 1716. 10.1038/s41467-024-45953-1* [DOI] [PMC free article] [PubMed] [Google Scholar]

https://www.medpagetoday.com/neurology/generalneurology/105697

Long post-COVID vaccination syndrome

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DOI: 10.15761/JBN.1000133https://www.oatext.com/long-post-cOVID-vaccination-syndrome.php

Inquiry into Long COVID and Repeated ...

Inquiry into Long COVID and Repeated COVID Infections Submission 195

Σημαντική μετα-ανάλυση σύμφωνα με τα αποτελέσματα της οποίας χρειάζονται περισσότερες καλά τεκμηριωμένες μελέτες για να εξαχθούν ορθά συμπεράσματα
Manuscript title: Impact of COVID-19 vaccination on long COVID: a systematic review
Authors:
Oyungere[l] Byambasuren[1], Paulina Stehlik[1], Justin Clark[1], Kylie Alcorn[2], Paul Glasziou[1]
[1] Institute for Evidence-Based Healthcare, Bond University, QLD Australia
[2] Gold Coast University Hospital, Griffith University, Gold Coast, QLD Australia

ΕΠΙΔΡΑΣΗ ΤΟΥ COVID ΕΜΒΟΛΙΑΣΜΟΎ ΣΤΑ ΣΥΜΠΤΏΜΑΤΑ ΑΣΘΕΝΏΝ ΜΕ LONG COVID

Πολλοί έχουν δημοσιεύσει ευεργετική επίδραση των COVID εμβολίων σε ασθενείς με long COVID, ενώ άλλοι ανακοινώνουν ότι τα συμπτώματα δεν βελτιώθηκαν ή χειροτέρεψαν.

ΔΗΜΟΣΙΕΥΣΕΙΣ ΠΟΥ ΑΝΑΦΕΡΟΥΝ ΑΠΟΥΣΙΑ ΒΕΛΤΙΩΣΗΣ Ή ΕΠΙΔΕΙΝΩΣΗ ΣΕ ΑΣΘΕΝΕΙΣ ΜΕ LONG COVID ΜΕΤΑ ΤΟΝ ΕΜΒΟΛΙΑΣΜΟ

Asadi-Pooya AA, Nemati M, Shahisavandi M, Nemati H, Karimi A, Jafari A, et al. (2024) How does COVID-19 vaccination affect long-COVID symptoms? PLoS ONE 19(2): e0

prolonged symptoms of long-COVID for more than one year after the initial infection

Wisnivesky JP, Govindarajulu U, Bagiella E, Goswami R, Kale M, Campbell KN, et al. Association of vaccination with the persistence of post-COVID symptoms. 2022;37(7):1748–53. View Article Google Scholar

The findings suggest that COVID vaccination is not associated with improvement in PASC. Additional studies are needed to better understand the mechanisms underlying PASC and to develop effective treatments.

The article was withdrawn from the SSNR electronic Library

ΔΗΜΟΣΙΕΥΣΕΙΣ ΠΟΥ ΑΝΑΦΕΡΟΥΝ ΑΠΟΦΥΓΗ ΕΜΦΑΝΙΣΗΣ LONG COVID Ή ΒΕΛΤΙΩΣΗ ΤΟΥ LONG COVID SYNDROME ΜΕΤΆ COVID ΕΜΒΟΛΙΑΣΜΟ

https://www.bmj.com/content/377/bmj-2021-069676

https://www.medscape.com/viewarticle/994385?form=fpf

https://www.cidrap.umn.edu/covid-19/study-puts-understanding-long-covid-and-vaccination-question

Trinh, Nhung TH et al.. Effectiveness of COVID-19 vaccines to prevent long COVID: data from Norway. The Lancet Respiratory Medicine, Volume 12, Issue 5, e33 - e34

Català M, Mercadé-Besora N, Kolde R, Trinh NTH, Roel E, Burn E, Rathod-Mistry T, Kostka K, Man WY, Delmestri A, Nordeng HME, Uusküla A, Duarte-Salles T, Prieto-Alhambra D, Jödicke AM. The effectiveness of COVID-19 vaccines to prevent long COVID symptoms: staggered cohort study of data from the UK, Spain, and Estonia. Lancet Respir Med. 2024 Mar;12(3):225-236. doi: 10.1016/S2213-2600(23)00414-9. Epub 2024 Jan 11. PMID: 38219763.

Gao P, Liu J, Liu M. Effect of COVID-19 Vaccines on Reducing the Risk of Long COVID in the Real World: A Systematic Review and Meta-Analysis. Int J Environ Res Public Health. 2022 Sep 29;19(19):12422. doi: 10.3390/ijerph191912422. PMID: 36231717; PMCID: PMC9566528.

Watanabe A, Iwagami M, Yasuhara J, Takagi H, Kuno T. Protective effect of COVID-19 vaccination against long COVID syndrome: A systematic review and meta-analysis. Vaccine. 2023 Mar 10;41(11):1783-1790. doi: 10.1016/j.vaccine.2023.02.008. Epub 2023 Feb 8. PMID: 36774332; PMCID: PMC9905096.

Ceban F, Kulzhabayeva D, Rodrigues NB, Di Vincenzo JD, Gill H, Subramaniapillai M, Lui LMW, Cao B, Mansur RB, Ho RC, Burke MJ, Rhee TG, Rosenblat JD, McIntyre RS. COVID-19 vaccination for the prevention and treatment of long COVID: A systematic review and meta-analysis. Brain Behav Immun. 2023 Jul;111:211-229. doi: 10.1016/j.bbi.2023.03.022. Epub 2023 Mar 27. Erratum in: Brain Behav Immun. 2024 Jan;115:758. doi: 10.1016/j.bbi.2023.09.020. PMID: 36990297; PMCID: PMC10067136.

Arnold D.T., Milne A., Samms E., Stadon L., Maskell N.A., Hamilton F.W. Symptoms After COVID-19 Vaccination in Patients With Persistent Symptoms After Acute Infection: A Case Series. Ann Intern Med. 2021;174:1334–1336. - PMC - PubMed

Marra AR, Kobayashi T, Suzuki H, Alsuhaibani M, Hasegawa S, Tholany J, et al. The effectiveness of coronavirus disease 2019 (COVID-19) vaccine in the prevention of post–COVID-19 conditions: A systematic literature review and meta-analysis. 2022;2(1):e192. DOI: https://doi.org/10.1017/ash.2022.336. pmid:36505947 View Article PubMed/NCBI Google Scholar

Belluck PJNYT. Some Long Covid Patients Feel Much Better After Getting the Vaccine. 2021. 296680. https://doi.org/10.1371/journal.pone.0296680

Iwasaki A. How Vaccines Might Improve Long Covid. Elemental; 2021. View Article Google Scholar

https://news.va.gov/133417/va-study-vaccination-preventing-long-covid/

https://evidence.nihr.ac.uk/alert/vaccines-reduce-the-risk-of-long-covid/

ΑΝΥΠΟΣΤΑΤΟΙ ΚΑΘΗΣΥΧΑΣΤΙΚΟΙ ΙΣΧΥΡΙΣΜΟΙ ΓΙΑ ΤΗΝ ΜΑΚΡΟΠΡΟΘΕΣΜΗ ΑΣΦΑΛΕΙΑ ΤΩΝ COVID ΕΜΒΟΛΙΩΝ

Paul Goepfert, M.D., director of the Alabama Vaccine Research Clinic, stated that no long-term harm is expected from the COVID vaccines https://www.uab.edu/reporter/resources/be-healthy/item/9544-what-are-the-long-term-side-effects-of-covid-vaccines-3-things-to-know

https://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/coronavirus-vaccine/art-20484859

ΕΠΙΔΡΑΣΕΙΣ ΤΩΝ ΕΜΒΟΛΙΩΝ ΣΤΟ ΑΝΟΣΟΠΟΙΗΤΙΚΟ ΣΥΣΤΗΜΑ - ΑΝΟΣΟΤΡΟΠΟΠΟΙΗΣΗ

Benn CS, Netea MG, Selin LK, **Aaby P.** A small jab - a big effect: nonspecific immunomodulation by vaccines. *Trends Immunol* (2013) 34(9):431–9. doi: 10.1016/j.it.2013.04.004

Morra ME, Kien ND, Elmaraezy A, Abdelaziz OAM, Elsayed AL, Halhouli O, et al. Early vaccination protects against childhood leukemia: a systematic review and meta-analysis. *Sci Rep* (2017) 7(1):15986. doi: 10.1038/s41598-017-16067-0

Waaler HT. B.C.G. and leukaemia mortality. *Lancet* (1970) 2(7686):1314–. doi: 10.1016/S0140-6736(70)92276-2

Berkeley JS. BCG vaccination and leukaemia mortality. *Health Bull (Edinb)* (1971) 29(3):167–9.

Comstock GW. Leukaemia and B.C.G. A controlled trial. *Lancet* (1971) 2(7733):1062–3. doi: 10.1016/S0140-6736(71)90381-3

Hems G, Stuart A. B.C.G. and leukaemia. *Lancet* (1971) 1(7691):183–. doi: 10.1016/S0140-6736(71)91949-0

Kinlen LJ, Pike MC. B.C.G. vaccination and leukaemia. Evidence of vital statistics. *Lancet (London England)* (1971) 2(7721):398–402. doi: 10.1016/S0140-6736(71)90114-0

Medical Research C. BCG and vole bacillus vaccines in the prevention of tuberculosis in adolescence and early adult life. *Bull World Health Organ* (1972) 46(3):371–85.

Rosenthal SR, Crispen RG, Thorne MG, Piekarski N, Raisys N, Rettig PG. BCG vaccination and leukemia mortality. *JAMA* (1972) 222(12):1543–4. doi: 10.1001/jama.222.12.1543

//

Changes in Peripheral Immune Cells after the Third Dose of SARS-CoV-2 mRNA-BNT162b2 Vaccine and Disease Outcomes in Cancer Patients Receiving Immune Checkpoint Inhibitors: A Prospective Analysis of the Vax-on-Third-Profile Study.

Anthony M Kyriakopoulos, Greg Nigh, Peter A McCullough, Stephanie Seneff, Autoimmune and Neoplastic Outcomes After the mRNA Vaccination: The Role of T Regulatory Cell Responses , International Journal of Vaccine Theory, Practice, and Research : Vol. 3 No. 2 (2024): Injuries, Causes, and Treatments, Part 2

Nelli F, Signorelli C, Fabbri A, Giannarelli D, Virtuoso A, Giron Berrios JR, Marrucci E, Fiore C, Schirripa M, Chilelli MG, Primi F, Panichi V, Topini G, Silvestri MA, Ruggeri EM. Cancers (Basel). 2023 Jul 14;15(14):3625. doi: 10.3390/cancers15143625. PMID: 37509286 Free PMC article.

Murphy DM, Cox DJ, Connolly SA, Breen EP, Brugman AA, Phelan JJ, et al. Trained immunity is induced in humans after immunization with an adenoviral vector COVID-19 vaccine. *J Clin Invest* (2023) 133(2). doi: 10.1172/JCI162581

PubMed Abstract | CrossRef Full Text | Google Scholar

Föhse FK, Geckin B, Overheul GJ, van de Maat J, Kilic G, Bulut O, et al. The BNT162b2 mRNA vaccine against SARS-CoV-2 reprograms both adaptive and innate immune responses. *medRxiv* (2021). doi: 10.1101/2021.05.03.21256520

Li C, Lee A, Grigoryan L, Arunachalam PS, Scott MKD, Trisal M, et al. Mechanisms of innate and adaptive immunity to the Pfizer-BioNTech BNT162b2 vaccine. *Nat Immunol* (2022) 23(4):543–55. doi: 10.1038/s41590-022-01163-9

PubMed Abstract | CrossRef Full Text | Google Scholar

Lee MH, Kim BJ. COVID-19 vaccine development based on recombinant viral and bacterial vector systems: combinatorial effect of adaptive and trained immunity. *J Microbiol* (2022) 60(3):321–34. doi: 10.1007/s12275-022-1621-2

PubMed Abstract | CrossRef Full Text | Google Scholar

Noé A, Dang TD, Axelrad C, Burrell E, Germano S, Elia S, Burgner D, Perrett KP, Curtis N and Messina NL (2023) BNT162b2 COVID-19 vaccination in children alters cytokine responses to heterologous pathogens and Toll-like receptor agonists. *Front. Immunol.* 14:1242380. doi: 10.3389/fimmu.2023.1242380

Alberto Rubio-Casillas, Cesar Manuel Rodriguez-Quintero, Elrashdy M. Redwan, Munishwar Nath Gupta, Vladimir N. Uversky, Mikolaj Raszek, Do vaccines increase or decrease susceptibility to diseases other than those they protect against?,Vaccine,Volume 42, Issue 3, 2024, Pages 426-440, ISSN 0264-410X, https://doi.org/10.1016/j.vaccine.2023.12.060. (https://www.sciencedirect.com/science/article/pii/S0264410X23015062)

T-Cell Immune Responses to SARS-CoV-2 Infection and Vaccination.

Notarbartolo S. Vaccines (Basel). 2024 Sep 30;12(10):1126. doi: 10.3390/vaccines12101126. PMID: 39460293 Free PMC article. Review.

High IgG4 antibody levels generated in response to repeated inoculation with mRNA COVID-19 vaccines could be associated with a higher mortality rate from unrelated diseases and infections by suppressing the immune system. Since most COVID-19 vaccinated countries are reporting high percentages of excess mortality not directly attributable to deaths from such disease, the NSEs of mRNA vaccines on overall mortality should be studied in depth.

ΑΠΟΔΥΝΑΜΩΣΗ ΤΟΥ ΑΝΟΣΟΠΟΙΗΤΙΚΟΥ ΣΥΣΤΗΜΑΤΟΣ

Seneff S., *Nigh G., Kyriakopoulos A.M., McCullough P.A. Innate Immune Suppression by SARS-CoV-2 MRNA Vaccinations: The Role of G-Quadruplexes, Exosomes, and MicroRNAs. Food Chem. Toxicol. 2022;164:113008. doi: 10.1016/j.fct.2022.113008.* [DOI] [PMC free article] [PubMed] [Google Scholar

Boretti, A. mRNA vaccine boosters and impaired immune system response in immune compromised individuals: a narrative review. *Clin Exp Med* **24**, 23 (2024). https://doi.org/10.1007/s10238-023-01264-1

Uversky VN, Redwan EM, Makis W, Rubio-Casillas A. IgG4 antibodies induced by repeated vaccination may generate immune tolerance to the SARS-CoV-2 spike protein. Vaccines. 2023;11(5):991.
CAS PubMed PubMed Central Google Scholar

ΑΝΟΣΟΣΦΑΙΡΙΝΕΣ ΤΗΣ ΤΑΞΗΣ IgG4

Van Der NeutKolfschoten M, Schuurman J, Losen M, Bleeker WK, Martínez-Martínez P, Vermeulen E, Den Bleker TH, Wiegman L, Vink T, Aarden LA, De Baets MH. Anti-inflammatory activity of human IgG4 antibodies by dynamic Fab arm exchange. Science. 2007;317(5844):1554–7. Google Scholar

Irrgang P, Gerling J, Kocher K, Lapuente D, Steininger P, Habenicht K, Wytopil M, Beileke S, Schäfer S, Zhong J, Ssebyatika G. Class switch towards non-inflammatory, spike-specific IgG4 antibodies after repeated SARS-CoV-2 mRNA vaccination. Sci immun. 2022;8(79):eade2798. Google Scholar

Moura AD, da Costa HH, Correa VA, de Lima SAK, Lindoso JA, De Gaspari E, Hong MA, Cunha-Junior JP, Prudencio CR. Assessment of avidity related to IgG subclasses in SARS-CoV-2 Brazilian infected patients. Sci Rep. 2021;11(1):17642. CAS PubMed PubMed Central Google Scholar

Aochi S*., Uehara M., Yamamoto M. IgG4-related Disease Emerging after COVID-19 mRNA Vaccination. Intern. Med. 2023;62:1547–1551. doi: 10.2169/internalmedicine.1125-22.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Irrgang P.*, Gerling J., Kocher K., Lapuente D., Steininger P., Habenicht K., Wytopil M., Beileke S., Schäfer S., Zhong J., et al. Class switch toward noninflammatory, spike-specific IgG4 antibodies after repeated SARS-CoV-2 mRNA vaccination. Sci. Immunol. 2023;8:eade2798. doi: 10.1126/sciimmunol.ade2798.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Uversky V.N*., Redwan E.M., Makis W., Rubio-Casillas A. IgG4 Antibodies Induced by Repeated Vaccination May Generate Immune Tolerance to the SARS-CoV-2 Spike Protein. Vaccines. 2023;11:991. doi: 10.3390/vaccines11050991.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Patel N.R*., Anzalone M.L., Buja L.M., Elghetany M.T. Sudden cardiac death due to coronary artery involvement by IgG4-related disease: A rare, serious complication of a rare disease. Arch. Pathol. Lab. Med. 2014;138:833–836. doi: 10.5858/arpa.2012-0614-CR.* [DOI] [PubMed] [Google Scholar]

Gutierrez P.S*., Schultz T., Siqueira S.A., de Figueiredo Borges L. Sudden coronary death due to IgG4-related disease. Cardiovasc. Pathol. 2013;22:505–507. doi: 10.1016/j.carpath.2013.05.003.* [DOI] [PubMed] [Google Scholar]

Martín-Nares E*., Saavedra-González V., Fagundo-Sierra R., Santinelli-Núñez B.E., Romero-Maceda T., Calderón-Vasquez K., Hernandez-Molina G. Serum immunoglobulin free light chains and their association with clinical phenotypes, serology and activity in patients with IgG4-related disease. Sci. Rep. 2021;11:1832. doi: 10.1038/s41598-021-81321-5.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Tsai H.C*., Tung H.Y., Liu C.W., Su C.F., Sun Y.S., Chen W.S., Chen M.H., Lai C.C., Liao H.T., Yang Y.Y., et al. Significance of high serum IgG4 in complete or non-full-fledged IgG4-related disease-a retrospective investigation of 845 patients and its clinical relevance. Clin. Rheumatol. 2022;41:115–122. doi: 10.1007/s10067-021-05772-x.* [DOI] [PubMed] [Google Scholar]

ΦΥΣΙΚΗ ΑΝΟΣΙΑ ΕΝΑΝΤΙ ΑΝΟΣΙΑΣ ΕΞ ΕΜΒΟΛΙΩΝ

Wadman M. Having SARS-CoV-2 once confers much greater immunity than a vaccine—but vaccination remains vital. Science. 2021;373(6559):1067–8. CAS PubMed Google Scholar

Wadman M. Having SARS-CoV-2 once confers much greater immunity than a vaccine—but vaccination remains vital. Science. 2021;373(6559):1067–8. CAS PubMed Google Scholar

Shenai MB, Rahme R, Noorchashm H. Equivalency of protection from natural immunity in COVID-19 recovered versus fully vaccinated persons: a systematic review and pooled analysis. Cureus. 2021. https://doi.org/10.7759/cureus.19102. Article PubMed PubMed Central Google Scholar

Gazit S, Shlezinger R, Perez G, Lotan R, Peretz A, Ben-Tov A, Cohen D, Muhsen K, Chodick G, Patalon T. Comparing SARS-CoV-2 natural immunity to vaccine-induced immunity: reinfections versus breakthrough infections. Clin Infect Dis. 2021. https://doi.org/10.1093/cid/ciac262. Article Google Scholar

Gazit S, Shlezinger R, Perez G, Lotan R, Peretz A, Ben-Tov A, Herzel E, Alapi H, Cohen D, Muhsen K, Chodick G. The incidence of SARS-CoV-2 reinfection in persons with naturally acquired immunity with and without subsequent receipt of a single dose of BNT162b2 vaccine: a retrospective cohort study. Ann Intern Med. 2022;175(5):674–81. PubMed Google Scholar

ΕΝΔΥΝΑΜΩΣΗ ΤΗΣ ΦΥΣΙΚΗΣ ΑΝΟΣΙΑΣ (STRENGTHENING NATURAL IMMUNITY)

Anil Kumar Anal, Sushil Koirala, Anisha Karna, Muhammad Umar, Sarina Pradhan Thapa, Immunomodulation and enhancing the immunity: Unveiling the potential of designer diets, Future Foods,Volume 8, 2023, 100246, ISSN 2666-8335, https://doi.org/10.1016/j.fufo.2023.100246. (https://www.sciencedirect.com/science/article/pii/S2666833523000321)

Unlocking insights: Navigating COVID-19 challenges and Emulating future pandemic Resilience strategies with strengthening natural immunity.

Wimalawansa SJ. Heliyon. 2024 Jul 17;10(15):e34691. doi: 10.1016/j.heliyon.2024.e34691. eCollection 2024 Aug 15. PMID: 39166024 Free PMC article. Review.

Gasmi A, Shanaida M, Oleshchuk O, Semenova Y, Mujawdiya PK, Ivankiv Y, Pokryshko O, Noor S, Piscopo S, Adamiv S, Bjørklund G. Natural Ingredients to Improve Immunity. Pharmaceuticals (Basel). 2023 Apr 1;16(4):528. doi: 10.3390/ph16040528. PMID: 37111285; PMCID: PMC10143734.

Tieu S., *Charchoglyan A., Wagter-Lesperance L., Karimi K., Bridle B., Karrow N., Mallard B. Immunoceuticals: Harnessing Their Immunomodulatory Potential to Promote Health and Wellness. Nutrients. 2022;14:4075. doi: 10.3390/nu14194075.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Philip C. Calder . Nutrition, immunity and COVID-19. BMJ, 3 (1) (2020), p. 74
View at publisher CrossrefGoogle Scholar

Flávia Giacometti Cavalheiro, Débora Parra Baptista, Bruno Domingues Galli, Fernanda Negrão, Marcos Nogueira Eberlin, Mirna Lúcia Gigante
High protein yogurt with addition of lactobacillus helveticus: peptide profile and angiotensin-converting enzyme ACE-inhibitory activity
Food Chem., 333 (2020), Article 127482
Google Scholar

Ali Chaari, Ghizlane Bendriss, Dalia Zakaria, Clare McVeigh
Importance of dietary changes during the coronavirus pandemic: how to upgrade your immune response
Front. Public Health, 8 (2020), p. 476
View in Scopus
Google Scholar

Ahmed S. Gouda, Fatima G. Adbelruhman, Hamedah Sabbah Alenezi, Bruno Mégarbane
Theoretical benefits of yogurt-derived bioactive peptides and probiotics in COVID-19 patients–a narrative review and hypotheses
Saudi J. Biol. Sci., 28 (10) (2021), pp. 5897-5905
View PDFView articleView in ScopusGoogle Scholar

Vishwakarma S., *Panigrahi C., Barua S., Sahoo M., Mandliya S. Food nutrients as inherent sources of immunomodulation during COVID-19 pandemic. Lebensm.-Wiss. Und-Technol. 2022;158:113154. doi: 10.1016/j.lwt.2022.113154.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Hassoun A., *Harastani R., Jagtap S., Trollman H., Garcia-Garcia G., Awad N., Zannou O., Galanakis C., Gökşen G., Nayik G., et al. Truths and myths about superfoods in the era of the COVID-19 pandemic. Crit. Rev. Food Sci. Nutr. 2022:1–18. doi: 10.1080/10408398.2022.2106939.* [DOI] [PubMed] [Google Scholar]

Khanna K., *Kohli S.K., Kaur R., Bhardwaj A., Bhardwaj V., Ohri P., Sharma A., Ahmad A., Bhardwaj R., Ahmad P. Herbal immune-boosters: Substantial warriors of pandemic COVID-19 battle. Phytomedicine. 2021;85:153361. doi: 10.1016/j.phymed.2020.153361.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Prajapati S.K., *Malaiya A., Mishra G., Jain D., Kesharwani P., Mody N., Ahmadi A., Paliwal R., Jain A. An exhaustive comprehension of the role of herbal medicines in Pre- and Post-COVID manifestations. J. Ethnopharmacol. 2022;296:115420. doi: 10.1016/j.jep.2022.115420.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Arshad M.S., *Khan U., Sadiq A., Khalid W., Hussain M., Yasmeen A., Asghar Z., Rehana H. Coronavirus disease (COVID-19) and immunity booster green foods: A mini review. Food Sci. Nutr. 2020;8:3971–3976. doi: 10.1002/fsn3.1719.* [DOI] [PMC free article] [PubMed] [Google Scholar] [Retracted]

Mitra S., *Paul S., Roy S., Sutradhar H., Emran T., Nainu F., Khandaker M., Almalki M., Wilairatana P., Mubarak M. Exploring the Immune-Boosting Functions of Vitamins and Minerals as Nutritional Food Bioactive Compounds: A Comprehensive Review. Molecules.*

2022;27:555. doi: 10.3390/molecules27020555. [DOI] [PMC free article] [PubMed] [Google Scholar]

Mohammed Iddir, Alex Brito, Giulia Dingeo, Sofia Sosa Fernandez Del Campo, Hanen Samouda, Michael R.La Frano, Torsten Bohn
Strengthening the immune system and reducing inflammation and oxidative stress through diet and nutrition: considerations during the Covid-19 crisis
Nutrients, 12 (6) (2020), pp. 1-39, 10.3390/nu12061562
View at publisherGoogle Scholar

Boozari M., *Hosseinzadeh H. Natural products for COVID-19 prevention and treatment regarding to previous coronavirus infections and novel studies. Phytother. Res. 2020;35:864–876. doi: 10.1002/ptr.6873.* [DOI] [PubMed] [Google Scholar]

Francis T., *Sooriyaarachchi P., Jayawardena R. Usage of nutritional supplements to improve immunity during the COVID-19 pandemic: An online survey. Clin. Nutr. Open Sci. 2022;43:6–19. doi: 10.1016/j.nutos.2022.04.003.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Venter C.*, Eyerich S., Sarin T., Klatt K.C. Nutrition and the Immune System: A Complicated Tango. Nutrients. 2020;12:818. doi: 10.3390/nu12030818.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Vimalanathan S.*, Shehata M., Sadasivam K., Delbue S., Dolci M., Pariani E., D'Alessandro S., Pleschka S. Broad Antiviral Effects of Echinacea purpurea against SARS-CoV-2 Variants of Concern and Potential Mechanism of Action. Microorganisms. 2022;10:2145. doi: 10.3390/microorganisms10112145.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Kolev E*., Mircheva L., Edwards M.R., Johnston S.L., Kalinov K., Stange R., Gancitano G., Berghe W.V., Kreft S. Echinacea Purpurea For the Long-Term Prevention of Viral Respiratory Tract Infections During COVID-19 Pandemic: A Randomized, Open, Controlled, Exploratory Clinical Study. Front. Pharmacol. 2022;13:856410. doi: 10.3389/fphar.2022.856410.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Fuzimoto A.D. *An overview of the anti-SARS-CoV-2 properties of Artemisia annua, its antiviral action, protein-associated mechanisms, and repurposing for COVID-19 treatment. J. Integr. Med. 2021;19:375–388. doi: 10.1016/j.joim.2021.07.003.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Poles J., *Karhu E., McGill M., McDaniel H.R., Lewis J.E. The effects of twenty-four nutrients and phytonutrients on immune system function and inflammation: A narrative review. J. Clin. Transl. Res. 2021;7:333–376.* [PMC free article] [PubMed] [Google Scholar]

Gasmi A., *Mujawdiya P.K., Lysiuk R., Shanaida M., Peana M., Gasmi Benahmed A., Beley N., Kovalska N., Bjorklund G. Quercetin in the Prevention and Treatment of Coronavirus Infections: A Focus on SARS-CoV-2. Pharmaceuticals. 2022;15:1049. doi: 10.3390/ph15091049.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Shakoor H., *Feehan J., Apostolopoulos V., Platat C., Al Dhaheri A.S., Ali H.I., Ismail L.C., Bosevski M., Stojanovska L. Immunomodulatory Effects of Dietary Polyphenols. Nutrients.*

2021;13:728. doi: 10.3390/nu13030728. [DOI] [PMC free article] [PubMed] [Google Scholar]

***Salli K**., Lehtinen M.J., Tiihonen K., Ouwehand A.C. Xylitol's Health Benefits beyond Dental Health: A Comprehensive Review. Nutrients. 2019;11:1813. doi: 10.3390/nu11081813.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Farnoosh G**., Akbariqomi M., Badri T., Bagheri M., Izadi M., Saeedi-Boroujeni A., Rezaei E., Ghaleh H., Aghamollaei H., Fasihi-Ramandi M., et al. Efficacy of a Low Dose of Melatonin as an Adjunctive Therapy in Hospitalized Patients with COVID-19: A Randomized, Double-blind Clinical Trial. Arch. Med. Res. 2020;53:79–85. doi: 10.1016/j.arcmed.2021.06.006.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Faridzadeh A**., Tabashiri A., Heidarian Miri H., Mahmoudi M. The role of melatonin as an adjuvant in the treatment of COVID-19: A systematic review. Heliyon. 2022;8:e10906. doi: 10.1016/j.heliyon.2022.e10906.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Giovane R.A**., Di Giovanni-Kinsley S., Keeton E. Micronutrients for potential therapeutic use against COVID-19; a review. Clin. Nutr. ESPEN. 2021;46:9–13. doi: 10.1016/j.clnesp.2021.09.744.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Borges L.,** Gennari-Felipe M., Dias B.B., Hatanaka E. Melatonin, Zinc, and Vitamin C: Potential Adjuvant Treatment for COVID-19 Patients. Front. Nutr. 2021;8:821824. doi: 10.3389/fnut.2021.821824.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Rawat D.,** Roy A., Maitra S., Gulati A., Khanna P., Baidya D.K. Vitamin C and COVID-19 treatment: A systematic review and meta-analysis of randomized controlled trials. Diabetes Metab. Syndr. 2021;15:102324. doi: 10.1016/j.dsx.2021.102324.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Ao T.,** Kikuta J., Ishii M. The Effects of Vitamin D on Immune System and Inflammatory Diseases. Biomolecules. 2021;11:1624. doi: 10.3390/biom11111624.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Bae M.,** Kim H. Mini-Review on the Roles of Vitamin C, Vitamin D, and Selenium in the Immune System against COVID-19. Molecules. 2020;25:5346. doi: 10.3390/molecules25225346.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Soltani-Zangbar M.S**., Mahmoodpoor A., Dolati S., Shamekh A., Valizadeh S., Yousefi M., Sanaie S. Serum levels of vitamin D and immune system function in patients with COVID-19 admitted to intensive care unit. Gene Rep. 2022;26:101509. doi: 10.1016/j.genrep.2022.101509.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Chen Y.M**., Wei J.L., Qin R.S., Hou J.P., Zang G.C., Zhang G.Y., Chen T.T. Folic acid: A potential inhibitor against SARS-CoV-2 nucleocapsid protein. Pharm. Biol. 2022;60:862–878. doi: 10.1080/13880209.2022.2063341.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Eskander M**., Razzaque M. Can Maintaining Optimal Magnesium Balance Reduce the Disease Severity of COVID-19 Patients? Front. Endocrinol. 2022;13:843152. doi: 10.3389/fendo.2022.843152.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Wallace T.*C. Combating COVID-19 and Building Immune Resilience: A Potential Role for Magnesium Nutrition? J. Am. Coll. Nutr. 2020;39:685–693. doi: 10.1080/07315724.2020.1785971.* [DOI] [PubMed] [Google Scholar]

Weyh C*., Kruger K., Peeling P., Castell L. The Role of Minerals in the Optimal Functioning of the Immune System. Nutrients. 2022;14:644. doi: 10.3390/nu14030644.* [DOI] [PMC free article] [PubMed] [Google Scholar

Wessels I., *Fischer H.J., Rink L. Dietary and Physiological Effects of Zinc on the Immune System. Annu. Rev. Nutr. 2021;41:133–175. doi: 10.1146/annurev-nutr-122019-120635.* [DOI] [PubMed] [Google Scholar]

Fath M.K*., Naderi M., Hamzavi H., Ganji M., Shabani S., Ghahroodi F.N., Khalesi B., Pourzardosht N., Hashemi Z.S., Khalili S. Molecular mechanisms and therapeutic effects of different vitamins and minerals in COVID-19 patients. J. Trace. Elem. Med. Biol. 2022;73:127044. doi: 10.1016/j.jtemb.2022.127044.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Understanding How Minerals Contribute to Optimal Immune Function. J Immunol Res. 2023.

What You Really Need to Do to Boost Your Immunity

13 Tips to Strengthen Your Immune System

Choose Foods that Boost Your Immunity and Fight Infection

Health

UC Health | In Science Lives Hope

https://www.uchealth.com › ...

· Μετάφραση αυτής της σελίδας

8 Απρ 2020 — Consuming foods high in vitamin C such as *grapefruits, oranges, tangerines, sweet red pepper, broccoli, strawberries, kale, and kiwifruit* are thought to ...

Natural Immunity Boosters to Help You Through Winter and ...

Mount Carmel Health System

https://www.mountcarmelhealth.com › ...

· Μετάφραση αυτής της σελίδας

20 Ιαν 2025 — Regular moderate exercise can *boost* circulation and *improve the* movement of *immune* cells throughout your body. Activities like brisk walking, ...

https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.cuimc.columbia.edu/news/what-you-really-need-do-boost-your-immunity&ved=2ahUKEwjA3PiNu7uLAxXjZ_EDHUt0LFEQFnoECDkQAQ&usg=AOvVaw131AjxViIEPcNhsJXK9WgK

ΕΠΙΔΡΑΣΗ ΤΩΝ ΕΜΒΟΛΙΩΝ ΣΤΟ ΑΝΑΠΝΕΥΣΤΙΚΟ ΣΥΣΤΗΜΑ

ΔΥΣΠΝΟΙΑ (dyspnea, shortness of breath)

Δεν είναι από τα συνήθως αναφερόμενα συμπτώματα μετά εμβολιασμό με COVID εμβόλιο (πόνος στο σημείο της ένεσης, καταβολή, κεφαλαλγία και πυρετός). Πρέπει να εμβάλλει σε υποψία πνευμονικής εμβολής, περικαρδίτιδας, μυοκαρδίτιδας, πνευμονίας κ.λπ.

GEARGES C, FAHMY M, AZAZ CHEEMA M, IFTIKHAR A. PFIZER COVID-19 VACCINE CAUSES SHORTNESS OF BREATH IN A 24-YEAR-OLD PATIENT: A CASE REPORT. Chest. 2022 Oct;162(4):A2387. doi: 10.1016/j.chest.2022.08.1961. Epub 2022 Oct 10. PMCID: PMC9548791.

Hesam-Shariati S, Fatehi P, Abouzaripour M, Fathi F, Hesam-Shariati N, Hesam Shariati MB. Increased pulmonary embolism in patients with COVID-19: a case series and literature review. Trop Dis Travel Med Vaccines. 2021;7(1):16. Published 2021 Jun 12. doi:10.1186/s40794-021-00145-3

Muster V, Gary T, Raggam RB, Wölfler A, Brodmann M. Pulmonary embolism and thrombocytopenia following ChAdOx1 vaccination. Lancet. 2021;397(10287):1842. doi:10.1016/S0140-6736(21)00871-0

ΑΣΘΜΑ

Acute asthma exacerbation due to SARS-CoV-2 vaccine (Pfizer-BioNTech BNT162b2 mRNA COVID-19 vaccine [Comirnaty®])
https://pubmed.ncbi.nlm.nih.gov/36122668/

ΠΡΟΣΒΟΛΗ ΤΟΥ ΚΑΤΩΤΕΡΟΥ ΑΝΑΠΝΕΥΣΤΙΚΟΥ ΣΥΣΤΗΜΑΤΟΣ

ARDS vaccine-induced acute respiratory distress syndrome

Acute Respiratory Distress Syndrome After Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV-2) Vaccination: Findings From an Autopsy.

Kawano F, Kato M, Tsuchida Y, Okawa J, Arimoto H. Cureus. 2024 Sep 28;16(9):e70370. doi: 10.7759/cureus.70370. eCollection 2024 Sep. PMID: 39469356 Free PMC article.

Yoshimura Y, Sasaki H, Miyata N, Miyazaki K, Okudela K, Tateishi Y, Hayashi H, Kawana-Tachikawa A, Iwashita H, Maeda K, Ihama Y, Hatayama Y, Ryo A, Tachikawa N. An autopsy case of COVID-19-like acute respiratory distress syndrome after mRNA-1273 SARS-CoV-2 vaccination. Int J Infect Dis. 2022 Aug;121:98-101. doi: 10.1016/j.ijid.2022.04.057. Epub 2022 Apr 30. PMID: 35500794; PMCID: PMC9054706.

Serazin NA*, Edem B, Williams SR, Ortiz JR, Kawade A, Das MK, et al. Acute respiratory distress syndrome (ARDS) as an adverse event following immunization: case definition & guidelines for data collection, analysis, and presentation of immunization safety data. Vaccine. 2021;39:3028–3036. doi: 10.1016/j.vaccine.2021.01.053.* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΠΝΕΥΜΟΝΙΑ

Acute Eosinophilic Pneumonia Associated With the Anti-COVID-19 Vaccine AZD1222
https://pubmed.ncbi.nlm.nih.gov/34812326/

ΔΙΑΜΕΣΗ ΠΝΕΥΜΟΝΙΤΙΣ (ILD)

Matsuzaki S, *Kamiya H, Inoshima I, et al. COVID-19 mRNA vaccine-induced pneumonitis. Intern Med 2022;61:81–6. 10.2169/internalmedicine.8310-21* [DOI] [PMC free article] [PubMed] [Google Scholar]

So C, *Izumi S, Ishida A, et al. COVID-19 mRNA vaccine-related interstitial lung disease: two case reports and literature review. Respirol Case Rep 2022;10:e0938. 10.1002/rcr2.938* [DOI] [PMC free article] [PubMed] [Google Scholar]

Park JY*, Kim J-H, Lee IJ, et al. COVID-19 vaccine-related interstitial lung disease: a case study. Thorax 2022;77:102–4. 10.1136/thoraxjnl-2021-217609* [DOI] [PubMed] [Google Scholar

Yoshifuji A, Ishioka K, Masuzawa Y, Suda S, Murata S, Uwamino Y, et al. COVID-19 vaccine induced interstitial lung disease. J Infect Chemother. 2022;28:95–98. doi: 10.1016/j.jiac.2021.09.010. [DOI] [PMC free article] [PubMed] [Google Scholar]

Ehteshami-Afshar S, Raj R. COVID-19 mRNA vaccines and interstitial lung disease exacerbation: causation or just a temporal association Am J Respir Crit Care Med 2022;206:919. 10.1164/rccm.202205-0902LE [DOI] [PMC free article] [PubMed] [Google Scholar]

Ishioka Y, Makiguchi T, Itoga M, Tanaka H, Taima K, Goto S, Tasaka S. Acute Exacerbation of Interstitial Lung Disease After SARS-CoV-2 Vaccination: A Case Series. Chest. 2022 Dec;162(6):e311-e316. doi: 10.1016/j.chest.2022.08.2213. PMID: 36494131; PMCID: PMC9723271. https://pubmed.ncbi.nlm.nih.gov/36494131/

Sakayori M, Hagiwara E, Baba T, Kitamura H, Sekine A, Ikeda S, Tabata E, Yamada S, Fujimoto K, Ogura T. Incidence of acute exacerbation in patients with interstitial lung disease after COVID-19 vaccination. J Infect Chemother. 2023 Jan;29(1):105-108. doi: 10.1016/j.jiac.2022.09.006. Epub 2022 Sep 13. PMID: 36113847; PMCID: PMC9468306.

Case report: Acute exacerbation of interstitial pneumonia related to messenger RNA COVID-19 vaccination.

Amiya S, Fujimoto J, Matsumoto K, Yamamoto M, Yamamoto Y, Yoneda M, Kuge T, Miyake K, Shiroyama T, Hirata H, Takeda Y, Kumanogoh A. Int J Infect Dis. 2022 Mar;116:255-257. doi: 10.1016/j.ijid.2022.01.031. Epub 2022 Jan 19. PMID: 35065256 Free PMC article.

Antimelanoma Differentiation-Associated Gene 5 Antibody-Positive Interstitial Lung Disease After Vaccination With COVID-19 mRNA Vaccines.

Kitajima T, Funauchi A, Nakajima T, Marumo S, Imura Y, Fukui M. J Rheumatol. 2022 Oct;49(10):1158-1162. doi: 10.3899/jrheum.220259. Epub 2022 Jun 15. PMID: 35705246

Acute exacerbation of idiopathic pulmonary fibrosis after bivalent {tozinameran and famtozinameran} mRNA COVID-19 vaccination.

Tsumura K, Zaizen Y, Umemoto S, Tsuneyoshi S, Matama G, Okamoto M, Tominaga M, Hoshino T. Respir Med Case Rep. 2023 Dec 9;46:101960. doi: 10.1016/j.rmcr.2023.101960. eCollection 2023. PMID: 38178926 Free PMC article.

DeDent A.M., Farrand E. Vaccine-induced interstitial lung disease: a rare reaction to COVID-19 vaccination. Thorax. 2022;77(1):9–10. - PubMed

Lee MT, Lee JW, Lee HJ, Lee JM, Choi JC, Gu KM, Jung SY. Interstitial lung disease following COVID-19 vaccination: a disproportionality analysis using the Global Scale Pharmacovigilance Database (VigiBase). BMJ Open Respir Res. 2023 Dec 11;10(1):e001992. doi: 10.1136/bmjresp-2023-001992. PMID: 38081769; PMCID: PMC10729117.

***Park JY,** Kim JH, Lee IJ, Kim HI, Park S, Hwang YI, et al. COVID-19 vaccine-related interstitial lung disease: a case study. Thorax;thoraxjnl-2021-217609. 2022;77:102–104. doi: 10.1136/thoraxjnl-2021-217609.* [DOI] [PubMed] [Google Scholar]

***DeDent AM**, Farrand E. Vaccine-induced interstitial lung disease: a rare reaction to COVID-19 vaccination. Thorax 2022;77:9–10. 10.1136/thoraxjnl-2021-217985* [DOI] [PubMed] [Google Scholar]

***Kono A**, Yoshioka R, Hawke P, et al. Correction to: a case of severe interstitial lung disease after COVID-19 vaccination. QJM 2022;115:hcac066. 10.1093/qjmed/hcac066* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΙΝΩΣΗ

Acute exacerbation of idiopathic pulmonary fibrosis after SARS-CoV-2 vaccination
https://pubmed.ncbi.nlm.nih.gov/35144990/

Ghincea A., Ryu C., Herzog E.L. An acute exacerbation of idiopathic pulmonary fibrosis after BNT162b2 mRNA COVID-19 vaccination: a case report. Chest. 2022;161(2):e71–e73. - PMC - PubMed

Sgalla G., Magrì T., Lerede M., Comes A., Richeldi L. COVID-19 vaccine in patients with exacerbation of idiopathic pulmonary fibrosis. Am J Respir Crit Care Med. 2022;206(2):219–221. - PMC - PubMed

Bando T., Takei R., Mutoh Y., Sasano H., Yamano Y., Yokoyama T., et al. Acute exacerbation of idiopathic pulmonary fibrosis after SARS-CoV-2 vaccination. Eur Respir J. 2022;59(3) - PMC - PubMed

ΕΠΙΔΡΑΣΗ ΤΩΝ ΕΜΒΟΛΙΩΝ ΣΤΟ ΚΑΡΔΙΑΓΓΕΙΑΚΟ ΣΥΣΤΗΜΑ.

Sun, C. L. F., Jaffe, E., & Levi, R. (2022). Increased emergency cardiovascular events among under-40 population in Israel during vaccine rollout and third COVID-19 wave. *Scientific reports*, *12*(1), 6978. https://doi.org/10.1038/s41598-022-10928-z

Jabagi MJ, Botton J, Bertrand M, et al. Myocardial infarction, stroke, and pulmonary embolism after BNT162b2 mRNA COVID-19 vaccine in people aged 75 or older. JAMA. 2022;327(1):80-82.

Sen A, Bakken IJ, Govatsmark RES, Varmdal T, Bønaa KH, Mukamal KJ, Håberg SE, Janszky I. Influenza vaccination and risk for cardiovascular events: a nationwide self-controlled case series study. BMC Cardiovasc Disord. 2021;21(1):31. doi: 10.1186/s12872-020-01836-z. - DOI - PMC - PubMed

A spectrum of cardiac manifestations post Pfizer-BioNTech COVID-19 vaccination
https://pubmed.ncbi.nlm.nih.gov/34191024/

A spectrum of cardiac manifestations post Pfizer-BioNTech COVID-19 vaccination
https://academic.oup.com/qjmed/article/114/9/661/6311674

Acute cardiac side effects after COVID-19 mRNA vaccination: a case series
https://pubmed.ncbi.nlm.nih.gov/35655235/

ΜΥΟΚΑΡΔΙΤΙΔΑ, ΠΕΡΙΚΑΡΔΙΤΙΔΑ ΑΠΟ COVID ΕΜΒΟΛΙΑ

Israel reports link between rare cases of heart inflammation and COVID-19 vaccination in young men Gretchen Vogel, Science Now, 2021

Cytokinopathy with aberrant cytotoxic lymphocytes and profibrotic myeloid response in SARS-CoV-2 mRNA vaccine–associated myocarditis Anis Barmada, Sci Immunol, 2023

by TH Lynge · 2019 · Cited by 89 — The aim of the present study was to assess incidence of SCD-*myocarditis* in the young *Danish* population using well-defined SCD cases.

Sweden, Denmark pause Moderna COVID-19 vaccine for ...

Reuters

https://www.reuters.com › healthcare-pharmaceuticals

6 Oct 2021 — The risk of *myocarditis* is substantially increased for those who contract COVID-19, and vaccination is the best way to protect against this.".

Covid-19: Sweden, Norway, and Finland suspend use of ...

The BMJ

https://www.bmj.com › content › bmj

by M **Paterlini** · **2021** · Cited by 32 — *Myocarditis is a rare side effect of all mRNA vaccines*, especially in boys and young men and mainly after the second dose. Data indicate that ...

[**Finland joins Sweden and Denmark in limiting Moderna ...**]

Reuters

https://www.reuters.com › world › europe › finland-pa...

7 Oct 2021 — The risk of myocarditis is substantially increased for those who contract COVID-19, and vaccination is the best way to protect against this."

Prevalence, characteristics, and mortality of patients with ...

Lunds universitet

https://portal.research.lu.se › publications › prevalence-...

by **R Lauppe** · **2022** · Cited by 31 — In 2018, prevalence of ATTR-CM per 100 000 inhabitants ranged from 1.4 in *Denmark* to 5.0 in *Sweden*; a steep increase over time was observed in *Sweden*

Myocarditis - Symptoms and causes

Mayo Clinic

https://www.mayoclinic.org › ... › Diseases & Conditions

4 Jun 2024 — *Myocarditis* can cause chest pain, shortness of breath, and rapid or irregular heartbeats. Infection with a virus is one cause of *myocarditis*.

A Simone, J Herald, A Chen, *et al.*
Acute myocarditis following COVID-19 mRNA vaccination in adults aged 18 years or older
JAMA Intern Med, 181 (2021), pp. 1668-1670
View at publisherCrossrefView in ScopusGoogle Scholar

- **Shay DK**, Shimabukuro TT, DeStefano F. (2021) Myocarditis Occurring After Immunization With mRNA-Based COVID-19 Vaccines. JAMA Cardiol.
- **Montgomery J,** Ryan M, Engler R, et al. (2021) Myocarditis Following Immunization With mRNA COVID-19 Vaccines in Members of the US Military. JAMA Cardiol.
- **Grace Lee.** (2021) The Importance of Context in COVID-19 Vaccine Safety. N Engl J Med
- **Abu Mouch S**, Roguin A, Hellou E, et al. (2021) Myocarditis following COVID-19 mRNA vaccination. Vaccine 39(29):3790-3793
- **Barda N,** Dagan N, Ben-Shlomo Y, et al. (2021) Safety of the BNT162b2 mRNA Covid-19 vaccine in a nationwide setting. N Engl J Med
- K Parmar, S Subramanyam, G del Rio-Pertuz, P Sethi, E Argueta-Sosa

Kornowski, R., & Witberg, G. (2022). Acute myocarditis caused by COVID-19 disease and following COVID-19 vaccination. *Open heart*, *9*(1), e001957. https://doi.org/10.1136/openhrt-2021-001957

In April, 2021, international news media first reported rare cases of young men in Israel who had developed myocarditis shortly after vaccination with the Pfizer- BioNTech mRNA vaccine against SARS-CoV-2.

Reuters. Israel examining heart inflammation cases in people who received Pfizer COVID shot. April 25, 2021. https://www.reuters.com/world/middle-east/israel-examining-heart-inflammation-cases-people-who-received-pfizer-covid-shot-2021-04-25/

Since then, many observational studies from Asia,2 Europe,3–5 the Middle East, and North America have found COVID-19 mRNA vaccination to be associated with a short-term increased risk of myocarditis. Furthermore, this association has been established using multiple types of analysis, including comparisons of observed-to-expected rates, case-control studies, self-controlled cases series, and cohort studies.

European Medicines Agency. Meeting highlights from the Pharmacovigilance Risk Assessment Committee (PRAC) 3-6 May 2021. 2021. https://www.ema.europa.eu/en/news/meeting-highlights-pharmacovigilance-risk-assessment-committee-prac-3-6-may-2021

Wong H-L et al.: Risk of ***myocarditis and*** pericarditis after the COVID-19mRNA vaccination in the USA: a cohort study in claims databases. ***Lancet 2022***;399:2191-2199
PMID: **35691322** PMCID: PMC9183215 DOI: 10.1016/S0140-6736(22)00791-7

Comment in :

Agata Katarzyna Sularz, Alina Hua, Tevfik Ismail,
SARS-CoV-2 vaccines and myocarditis, Clinical Medicine,Volume 23, Issue 5,
2023, Pages 495-502, ISSN 1470-2118,
https://doi.org/10.7861/clinmed.2023-0049.
(https://www.sciencedirect.com/science/article/pii/S1470211824045573)

Husby A, Køber L. COVID-19 mRNA vaccination and myocarditis or pericarditis. Lancet. 2022 Jun 11;399(10342):2168-2169. PMID: 35691306; PMCID: PMC9183212. DOI: 10.1016/S0140-6736(22)00842-X

Findings of a more pronounced risk of myocarditis after mRNA-1273 in comparison with BNT162b2 have been observed

Prevalence of abnormal cardiovascular magnetic resonance findings in recovered patients from COVID-19: a systematic review and meta-analysis.

Kim JY, Han K, Suh YJ. J Cardiovasc Magn Reson. 2021 Sep 3;23(1):100. doi: 10.1186/s12968-021-00792-7. PMID: 34479603 Free PMC article.

B Heidecker, N Dagan, R Balicer, *et al.*
Myocarditis following COVID-19 vaccine: incidence, presentation, diagnosis, pathophysiology, therapy, and outcomes put into perspective. A clinical consensus document supported by the Heart Failure Association of the European Society of Cardiology (ESC) and the ESC Working Group on Myocardial and Pericardial Diseases
Eur J Heart Fail, 24 (2022), pp. 2000-2018
View at publisherCrossrefView in ScopusGoogle Scholar46

ALP Caforio, S Pankuweit, E Arbustini, *et al.*
Current state of knowledge on aetiology, diagnosis, management, and therapy of myocarditis: a position statement of the European Society of Cardiology Working Group on Myocardial and Pericardial Diseases
Eur Heart J, 34 (2013), pp. 2636-2648
2648a–2648d
View at publisher
CrossrefView in ScopusGoogle Scholar47

G Amir, A Rotstein, Y Razon, *et al.*
CMR Imaging 6 Months After Myocarditis Associated with the BNT162b2 mRNA COVID-19 Vaccine
Pediatr Cardiol, 43 (2022), pp. 1522-1529
View at publisherCrossrefView in ScopusGoogle Scholar48

TF Ismail, A Hua, S Plein, *et al.*
The role of cardiovascular magnetic resonance in the evaluation of acute myocarditis and inflammatory cardiomyopathies in clinical practice - a comprehensive review
Eur Heart J Cardiovasc Imaging, 23 (2022), pp. 450-464
View at publisherCrossrefView in ScopusGoogle Scholar

Kim HW, Jenista ER, Wendell DC, Azevedo CF, Campbell MJ, Darty SN, Parker MA, Kim RJ. Patients With Acute Myocarditis Following mRNA COVID-19 Vaccination. JAMA

Cardiol. 2021 Oct 1;6(10):1196-1201. PMID: 34185046; PMCID: PMC8243258. doi:10.1001/jamacardio.2021.2828 Published online June 29, 2021
Free PMC article.

Montgomery J, Ryan M, Engler R, Hoffman D, McClenathan B, Collins L, Loran D, Hrncir D, Herring K, Platzer M, Adams N, Sanou A, Cooper LT Jr. Myocarditis Following Immunization With mRNA COVID-19 Vaccines in Members of the US Military. JAMA Cardiol. 2021 Oct 1;6(10):1202-1206. doi: 10.1001/jamacardio.2021.2833. PMID: 34185045; PMCID: PMC8243257.

Pudasaini S, Le NH, Huscher D, Holert F, Hillus D, Tober-Lau P, Kurth F, Sander LE, Möckel M. Levels of high-sensitive troponin T and mid-regional pro-adrenomedullin after COVID-19 vaccination in vulnerable groups: monitoring cardiovascular safety of COVID-19 vaccination. Front Cardiovasc Med. 2024 Oct 18;11:1435038. DOI: 10.3389/fcvm.2024.1435038

Karam R, Iskandar K, Watfa M, Zeitoun A. Serious adverse events following immunization with COVID-19 vaccines in Lebanon: a retrospective analysis of the National Pharmacovigilance Database. BMC Public Health. 2024 Oct 21;24(1):2905. PMID: **39434043** PMCID: PMC11495130 DOI: 10.1186/s12889-024-20297-z

Rafaniello, C.; Gaio, M.; Zinzi, A.; Sullo, M.G.; Liguori, V.;Ferraro, M.; Petronzelli, F.; Felicetti, P.; Marchione, P.; Marra, A.R.; et al. Disentangling a Thorny Issue: Myocarditis and Pericarditis Post COVID-19 and Following mRNA COVID-19 Vaccines. Pharmaceuticals 2022, 15, 525. https://doi.org/10.3390/ph15050525

Witberg G, Barda N, Hoss S, et al. Myocarditis after Covid-19 Vaccination in a Large Health Care Organization. N Engl J Med 2021. doi:10.1056/NEJMoa2110737

Albert E, Aurigemma G, Saucedo J, Gerson DS. Myocarditis following COVID-19 vaccination. Radiol Case Rep 2021;16:2142-5. doi:10.1016/j.radcr.2021.05.03

Mevorach D, Anis E, Cedar N, et al. Myocarditis after BNT162b2 mRNA vaccine against COVID-19 in Israel. N Engl J Med. 2021;385(23):2140-2149. doi:10.1056/NEJMoa2109730

Witberg G, Barda N, Hoss S, et al. Myocarditis after COVID-19 vaccination in a large health care organization. N Engl J Med 2021; 385: 2132–39.

Ammirati E, Cavalotti C, Milazzo A, et al. Temporal relation between second dose BNT162b2 mRNA Covid-19 vaccine and cardiac involvement in a patient with previous SARS-COV-2 infection. Int J Cardiol Heart Vasc 2021;34:100774. doi:10.1016/j. ijcha.2021.100774

Abu Mouch S, Roguin A, Hellou E , Ishai A, Shoshan U, Mahamid L, Zoabi M, Aisman M, Goldschmid N, Berar Yanay N. Myocarditis following COVID-19 mRNA vaccination. Vaccine 2021 Jun 29;39 (29):3790-3793.
PMID: **34092429** PMCID: PMC8162819 DOI: 10.1016/j.vaccine.2021.05.087

Husby A, Hansen JV, Fosbøl E, et al. SARS-CoV-2 vaccination and myocarditis or myopericarditis: population based cohort study. BMJ. 2021;375:e068665. doi:10.1136/bmj-2021-068665

Lai FTT, Li X, Peng K, et al. Carditis after COVID-19 vaccination with a messenger RNA vaccine and an inactivated virus vaccine: a case-control study. Ann Intern Med 2022; 175: 362–70.

Patone M, Mei XW, Handunnetthi L, et al. Risks of myocarditis, pericarditis, and cardiac arrhythmias associated with COVID-19 vaccination or SARS-CoV-2 infection. Nat Med 2022; 28: 410–22.

Karlstad Ø, Hovi P, Husby A, et al. SARS-CoV-2 vaccination and myocarditis in a Nordic cohort study of 23 million residents. JAMA Cardiol 2022; 7: 600-612. published online April 20. https://doi.org/10.1001/jamacardio.2022.0583.

Bozkurt B, Kamat I, Hotez PJ. Myocarditis with COVID-19 mRNA Vaccines. Circulation. 2021 Aug 10;144(6):471-484. doi: 10.1161/CIRCULATIONAHA.121.056135. Epub 2021 Jul 20. PMID: 34281357; PMCID: PMC8340726. https://doi.org/10.1161/CIRCULATIONAHA.121.056135

Oster ME, Shay DK, Su JR, et al. Myocarditis cases reported after mRNA-based COVID-19 vaccination in the US from December 2020 to August 2021. JAMA 2022; 327: 331–40.

Schauer J, Buddhe S, Gulhane A, et al. Persistent cardiac magnetic resonance imaging findings in a cohort of adolescents with post-coronavirus disease 2019 mRNA vaccine myopericarditis. J Pediatr 2022; published online March 26. https://doi.org/10.1016/j.jpeds.2022.03.032.

Ling RR, Ramanathan K, Tan FL, et al. Myopericarditis following COVID-19 vaccination and non-COVID-19 vaccination: a systematic review and meta-analysis. Lancet Respir Med 2022; published online April 11. https://doi.org/10.1016/S2213-2600(22)00059-5.

Heymans S, Cooper LT. Myocarditis after COVID-19 mRNA vaccination: clinical observations and potential mechanisms. Nat Reviews Cardiol. 2022;19(2):75–7.

Focus on Myocarditis and Pericarditis after COVID-19 mRNA Vaccines. https://www.publichealthontario.ca/-/media/documents/ncov/vaccines/2021/11/myocarditis-pericarditis-mrna-vaccines.pdf?sc_lang=en%20. Published online 2022.

Witberg G, Barda N, Hoss S, Richter I, Wiessman M, Aviv Y, Kornowski R. Myocarditis after Covid-19 vaccination in a large health care organization. N Eng J Med. 2021;385(23):2132–9. https://doi.org/10.1056/nejmoa2110737.

Das BB, Moskowitz WB, Taylor MB, Palmer A. Myocarditis and pericarditis following mRNA COVID-19 vaccination: what do we know so far? Children (Basel). 2021; July 18; 8(7):607. DOI: 10.3390/children8070607 PMID: **34356586** PMCID: PMC8305058

Furqan M, Chawla S, Majid M, Mazumdar S, Mahalwar G, Harmon E, Klein A. COVID-19 Vaccine-Related Myocardial and Pericardial Inflammation. Curr Cardiol

Rep. 2022 Dec;24(12):2031-2041. PMID: **36441403** PMCID: PMC9703393 DOI: 10.1007/s11886-022-01801-6

Castiello T, Georgiopoulos G, Finocchiaro G, et al. . COVID-19 and myocarditis: a systematic review and overview of current challenges. Heart Fail Rev. 2021;1-11. doi:10.1007/s10741-021-10087-9 - DOI - PMC - PubMed

Starekova J, Bluemke DA, Bradham WS, et al. . Evaluation for myocarditis in competitive student athletes recovering from coronavirus disease 2019 with cardiac magnetic resonance imaging. JAMA Cardiol. Published online January 14, 2021. doi:10.1001/jamacardio.2020.7444 - DOI - PMC - PubMed

Martinez MW, Tucker AM, Bloom OJ, et al. . Prevalence of inflammatory heart disease among professional athletes with prior COVID-19 infection who received systematic return-to-play cardiac screening. JAMA Cardiol. Published online March 4, 2021. doi:10.1001/jamacardio.2021.0565 - DOI - PMC - PubMed

Bautista García J, Peña Ortega P, Bonilla Fernández JA, Cárdenes León A, Ramírez Burgos L, Caballero Dorta E. Acute myocarditis after administration of the BNT162b2 vaccine against COVID-19. Rev Esp Cardiol (Engl Ed). Published online March 20, 2021. doi:10.1016/j.rec.2021.04.005 - DOI - PMC - PubMed

Albert E, Aurigemma G, Saucedo J, Gerson DS. Myocarditis following COVID-19 vaccination. Radiol Case Rep. 2021;16(8):2142-2145. doi:10.1016/j.radcr.2021.05.033 - DOI - PMC - PubMed

Fazlollahi A, Zahmatyar M, Noori M, Nejadghaderi SA, Sullman MJM, Shekarriz-Foumani R, Kolahi AA, Singh K, Safiri S. Cardiac complications following mRNA COVID-19 vaccines: A systematic review of case reports and case series. Rev Med Virol. 2022 Jul;32(4):e2318. doi: 10.1002/rmv.2318 . Epub 2021 Dec 17. PMID: 34921468. Review

Lane S, Yeomans A, Shakir S. Reports of myocarditis and pericarditis following mRNA COVID-19 vaccination: a systematic review of spontaneously reported data from the UK, Europe and the USA and of the scientific literature. BMJ Open. 2022 May 25;12(5):e059223. doi: 10.1136/bmjopen-2021-059223. Erratum in: BMJ Open. 2022

Lane S, Yeomans A, Shakir S. Systematic review of spontaneous reports of myocarditis and pericarditis in transplant recipients and immunocompromised patients following COVID-19 mRNA vaccination. BMJ Open. 2022 Jul 1;12(7):e060425. PMID: **35777878** PMCID: PMC9251904 DOI: 10.1136/bmjopen-2021-060425

Chen C, Fu F, Ding L, Fang J, Xiao J. Booster dose of COVID-19 mRNA vaccine does not increase risks of myocarditis and pericarditis compared with primary vaccination: New insights from the vaccine adverse event reporting system. Front Immunol. 2022 Sep 12;13:938322. PMID: **36172346** PMCID: PMC9510366 DOI: 10.3389/fimmu.2022.938322

Hatziantoniou S, Anastassopoulou C, Lazaros G, Vasileiou K, Tsioufis C, Tsakris A. Comparative assessment of myocarditis and pericarditis reporting rates related to mRNA COVID-19 vaccines in Europe and the United States. Expert Rev Vaccines.

2022 Nov;21(11):1691-1696. DOI: 10.1080/14760584.2022.2100765 . Epub 2022 Jul 25. PMID: 35815358

Anastassopoulou C, Hatziantoniou S, Vlachopoulos C, Spanakis N, Tsioufis C, Tsakris A, Lazaros G. Temporal relationship of myocarditis and pericarditis following COVID-19 vaccination: A pragmatic approach. Int J Cardiol. 2022 Jul 1;358:136-139. DOI: 10.1016/j.ijcard.2022.04.024 Epub 2022 Apr 15. PMID: 35436559; PMCID: PMC9011898.

Buchan SA, Seo CY, Johnson C, Alley S, Kwong JC, Nasreen S, Calzavara A, Lu D, Harris TM, Yu K, Wilson SE. Epidemiology of Myocarditis and Pericarditis Following mRNA Vaccination by Vaccine Product, Schedule, and Interdose Interval Among Adolescents and Adults in Ontario, Canada. JAMA Netw Open. 2022 Jun 1;5(6):e2218505 .PMID: **35749115** PMCID: PMC9233237 DOI:10.1001/jamanetworkopen.2022.18505

Weintraub ES, Oster ME, Klein NP. Myocarditis or Pericarditis Following mRNA COVID-19 Vaccination. JAMA Netw Open. 2022 Jun 1;5(6):e2218512. doi: 10.1001/jamanetworkopen.2022.18512. PMID: 35749119; PMCID: PMC9340663.

Goddard K, Lewis E, Fireman B, et al. Risk of myocarditis and pericarditis following BNT162b2 and mRNA-1273 COVID-19 vaccination. SSRN. March 16, 2022. Accessed April 1, 2022. https://ssrn.com/abstract=4059218

Shimabukuro T. Update on Myocarditis Following mRNA COVID-19 Vaccination. Presentation to the Vaccines and Related Biological Products Advisory Committee. Available online: https://www.fda.gov/media/159007/download.

Semenzato L, Le Vu S, Botton J, et al. Long-Term Prognosis of Patients With Myocarditis Attributed to COVID-19 mRNA Vaccination, SARS-CoV-2 Infection, or Conventional Etiologies. ***JAMA.*** 2024;332(16):1367–1377. doi:10.1001/jama.2024.16380

Diaz GA, Parsons GT, Gering SK, Meier AR, Hutchinson IV, Robicsek A. Myocarditis and Pericarditis After Vaccination for COVID-19. ***JAMA.*** 2021;326(12):1210–1212. doi:10.1001/jama.2021.13443

Published Online: August 4, 2021. doi:10.1001/jama.2021.13443

Oster ME, Shay DK, Su JR, et al. Myocarditis Cases Reported After mRNA-Based COVID-19 Vaccination in the US From December 2020 to August 2021. ***JAMA.*** 2022;327(4):331–340. doi:10.1001/jama.2021.24110

Ammirati E, Moslehi JJ. Diagnosis and Treatment of Acute Myocarditis: A Review. JAMA. 2023 Apr 4;329(13):1098-1113. doi: 10.1001/jama.2023.3371. PMID: 37014337. https://jamanetwork.com/journals/jama/fullarticle/2803039

Walter K. What Is Acute Myocarditis? ***JAMA.*** 2023;330(6):574. doi:10.1001/jama.2023.5526

Simone A, Herald J, Chen A, et al. Acute Myocarditis Following COVID-19 mRNA Vaccination in Adults Aged 18 Years or Older. ***JAMA Intern Med.*** 2021;181(12):1668–1670. doi:10.1001/jamainternmed.2021.5511

Dionne A, Sperotto F, Chamberlain S, Baker AL, Powell AJ, Prakash A, Castellanos DA, Saleeb SF, de Ferranti SD, Newburger JW, Friedman KG Association of Myocarditis With BNT162b2 Messenger RNA COVID-19 Vaccine in a Case Series of Children. JAMA Cardiol. 2021 Dec 1;6(12):1446-1450. doi: 10.1001/jamacardio.2021.3471. PMID: 34374740 Free PMC article.

Navar AM, McNally E, Yancy CW, O'Gara PT, Bonow RO Temporal Associations Between Immunization With the COVID-19 mRNA Vaccines and Myocarditis: The Vaccine Safety Surveillance System Is Working. . JAMA Cardiol. 2021 Oct 1;6(10):1117-1118. doi: 10.1001/jamacardio.2021.2853. PMID: 34185044 No abstract available.

Shay DK, Shimabukuro TT, DeStefano F Myocarditis Occurring After Immunization With mRNA-Based COVID-19 Vaccines. . JAMA Cardiol. 2021 Oct 1;6(10):1115-1117. doi: 10.1001/jamacardio.2021.2821. PMID: 34185047 No abstract available.

Pillay J, Gaudet L, Wingert A, Bialy L, Mackie AS, Paterson DI, Hartling L. Incidence, risk factors, natural history, and hypothesised mechanisms of myocarditis and pericarditis following covid-19 vaccination: living evidence syntheses and review. BMJ. 2022 Jul 13;378:e069445. doi: 10.1136/bmj-2021-069445. PMID: 35830976 Free PMC article. Review.

Gać P, Hajdusianek W, Żórawik A, Poręba M, Poręba R. Extracellular Volume and Fibrosis Volume of Left Ventricular Myocardium Assessed by Cardiac Magnetic Resonance in Vaccinated and Unvaccinated Patients with a History of SARS-CoV-2 Infection. Cardiovasc Toxicol. 2024 Oct 15. doi: 10.1007/s12012-024-09929-3. Online ahead of print. PMID: 39404974

Jeon HE, Lee S, Lee J, Roh G, Park HJ, Lee YS, Kim YJ, Kim HK, Shin JH, Lee YJ, Gil CO, Jeon ES, Nam JH, Lim BK. SARS-CoV2 mRNA vaccine intravenous administration induces myocarditis in chronic inflammation. PLoS One. 2024 Oct 10;19(10):e0311726. doi: 10.1371/journal.pone.0311726. eCollection 2024. PMID: 39388490 Free PMC article.

Zhang K, Terebessy E, Zhu J, Birken C, Borkhoff CM, Gershon A, Moraes TJ, Kendzerska T, Pakhale S, To T. Uptake and cardiac events of COVID-19 vaccinations among Canadian youth and young adults. PLOS Glob Public Health. 2024 Jul 31;4(7):e0003363. doi: 10.1371/journal.pgph.0003363. eCollection 2024. PMID: 39083505 Free PMC article.

Ba CF, Chen BH, Shao LS, Zhang Y, Shi C, Wu LM, Xu JR CMR Manifestations, Influencing Factors and Molecular Mechanism of Myocarditis Induced by COVID-19 Mrna Vaccine. . Rev Cardiovasc Med. 2022 Oct 11;23(10):339. doi: 10.31083/j.rcm2310339. eCollection 2022 Oct. PMID: 39077131 Free PMC article. Review.

Pruzansky AJ, Slade JJ, Stephenson M, Pursnani S. A Review of Cardiovascular Complications among Pregnant Patients with COVID-19. Rev Cardiovasc Med. 2022 Nov 16;23(11):383. doi: 10.31083/j.rcm2311383. eCollection 2022 Nov. PMID: 39076200 Free PMC article. Review.

Tschöpe C, Ammirati E, Bozkurt B, et al. . Myocarditis and inflammatory cardiomyopathy: current evidence and future directions. Nat Rev Cardiol. 2021;18(3):169-193. doi:10.1038/s41569-020-00435-x - DOI - PMC - PubMed

Hadley SM, Prakash A, Baker AL, de Ferranti SD, Newburger JW, Friedman KG, Dionne A. Follow-up cardiac magnetic resonance in children with vaccine-associated myocarditis. Eur J Pediatr. 2022 Jul;181(7):2879-2883. Epub 2022 Apr 28. PMID: 35482094; PMCID: PMC9046711 DOI: 10.1007/s00431-022-04482-z

Dove ML, Slesnick TC, Oster ME, Hashemi S, Patel T, Wilson HC. Cardiac Magnetic Resonance Findings of Coronavirus Disease 2019 (COVID-19) Vaccine-Associated Myopericarditis at Intermediate Follow-Up: A Comparison with Classic Myocarditis. J Pediatr. 2023 Sep;260:113462. Epub 2023 May 11. PMID: **37172812** PMCID:PMC10171891 DOI: 10.1016/j.jpeds.2023.113462

- Cardiovascular magnetic resonance imaging and clinical follow-up in patients with clinically suspected myocarditis after COVID-19 vaccination.

- Cardiac Magnetic Resonance Imaging Findings and Clinical Features of COVID-19 Vaccine-Associated Myocarditis, Compared With Those of Other Types of Myocarditis.

Kim SG, Lee JY, Jeong WG, Lee JE, Kim YH. J Korean Med Sci. 2024 Jan 29;39(4):e42. doi: 10.3346/jkms.2024.39.e42. PMID: 38288542 Free PMC article.

- Cardiac MRI Findings in COVID-19 Vaccine-Related Myocarditis: A Pooled Analysis of 468 Patients.

Samimisedeh P, Jafari Afshar E, Shafiabadi Hassani N, Rastad H. J Magn Reson Imaging. 2022 Oct;56(4):971-982. doi: 10.1002/jmri.28268. Epub 2022 May 25. PMID: 35612967 Free PMC article. Review.

- The utility of cardiac magnetic resonance imaging in the diagnosis of adult patients with acute myocarditis: a systematic review and meta-analysis.

Khanna S, Amarasekera AT, Li C, Bhat A, Chen HHL, Gan GCH, Ugander M, Tan TC. Int J Cardiol. 2022 Sep 15;363:225-239. doi: 10.1016/j.ijcard.2022.06.047. Epub 2022 Jun 18. PMID: 35724801 Review.

Cardiovascular magnetic resonance imaging and clinical follow-up in patients with clinically suspected myocarditis after COVID-19 vaccination.

Talib N, Fronza M, Marschner CA, Thavendiranathan P, Karur GR, Hanneman K. J Cardiovasc Magn Reson. 2024 Summer;26(1):101036. doi: 10.1016/j.jocmr.2024.101036. Epub 2024 Mar 11. PMID: 38479457 Free PMC article.

Patients with Post-COVID-19 Vaccination Myocarditis Have More Favorable Strain in Cardiac Magnetic Resonance Than Those With Viral Myocarditis.

Vaiyani D, Elias MD, Biko DM, Whitehead KK, Harris MA, Partington SL, Fogel MA. Pediatr Cardiol. 2023 Jun;44(5):1108-1117. doi: 10.1007/s00246-023-03150-9. Epub 2023 Apr 1. PMID: 37004523 Free PMC article.

A distinct septal pattern of late gadolinium enhancement specific for COVID-induced myocarditis: A multicenter cardiovascular magnetic resonance study.

Haberka M, Rajewska-Tabor J, Wojtowicz D, Jankowska A, Miszalski-Jamka K, Janus M, Dorniak K, Kulawiak-Gałąska D, Stasiow B, Rozmiarek S, Fijałkowska J, Elikowski W, Ławrynowicz M, Śpiewak M, Koziński M, Pyda M. Kardiol Pol. 2023;81(5):463-471. doi: 10.33963/KP.a2023.0054. Epub 2023 Mar 5. PMID: 36871296 Free article.

Myocardial Injury Pattern at MRI in COVID-19 Vaccine-Associated Myocarditis.

Fronza M, Thavendiranathan P, Chan V, Karur GR, Udell JA, Wald RM, Hong R, Hanneman K. Radiology. 2022 Sep;304(3):553-562. doi: 10.1148/radiol.212559. Epub 2022 Feb 15. PMID: 35166587 Free PMC article.

Cardiac Involvement in Patients Recovered From COVID-2019 Identified Using Magnetic Resonance Imaging.

Huang L, Zhao P, Tang D, Zhu T, Han R, Zhan C, Liu W, Zeng H, Tao Q, Xia L. JACC Cardiovasc Imaging. 2020 Nov;13(11):2330-2339. doi: 10.1016/j.jcmg.2020.05.004. Epub 2020 May 12. PMID: 32763118 Free PMC article.

Natural History of Myocardial Injury After COVID-19 Vaccine-Associated Myocarditis.

Mustafa Alhussein M, Rabbani M, Sarak B, Dykstra S, Labib D, Flewitt J, Lydell CP, Howarth AG, Filipchuck N, Kealey A, Colbert J, Guron N, Kolman L, Merchant N, Bandali M, Bristow M, White JA. Can J Cardiol. 2022 Nov;38(11):1676-1683. doi: 10.1016/j.cjca.2022.07.017. Epub 2022 Aug 6. PMID: 35944800 Free PMC article.

Post-COVID-19 vaccination myocarditis: a prospective cohort study pre and post vaccination using cardiovascular magnetic resonance.

Ng MY, Tam CH, Lee YP, Fong HTA, Wong CK, Ng WKC, Yeung MHY, Ling WI, Tsao S, Wan EYF, Ferreira V, Yan AT, Siu CW, Yiu KH, Hung IF. J Cardiovasc Magn Reson. 2023 Dec 7;25(1):74. doi: 10.1186/s12968-023-00985-2. PMID: 38057820 Free PMC article.

Myocarditis following COVID-19 vaccination: magnetic resonance imaging study.

Shiyovich A, Witberg G, Aviv Y, Eisen A, Orvin K, Wiessman M, Grinberg T, Porter A, Kornowski R, Hamdan A. Eur Heart J Cardiovasc Imaging. 2022 Jul 21;23(8):1075-1082. doi: 10.1093/ehjci/jeab230. PMID: 34739045

Short term outcome of myocarditis and pericarditis following COVID-19 vaccines: a cardiac magnetic resonance imaging study.

Galea N, Cundari G, Di Dedda E, Chimenti C, Aquaro GD, Barison A, Cau R, Di Cesare E, Di Renzi P, Esposito A, Faletti R, Gatti M, Liguori C, Lovato L, Mantini C, Monti CB, Palmisano A, Pradella S, Ricci F, Saba L, Secchi F, Catalano C, Francone M. Int J Cardiovasc Imaging. 2023 May;39(5):1031-1043. doi: 10.1007/s10554-023-02799-w. Epub 2023 Mar 13. PMID: 36913155 Free PMC article.

Cardiac magnetic resonance -detected myocardial injury is not associated with long-term symptoms in patients hospitalized due to COVID-19.

Yar A, Uusitalo V, Vaara SM, Holmström M, Vuorinen AM, Heliö T, Paakkanen R, Kivistö S, Syväranta S, Hästbacka J. PLoS One. 2023 Mar 8;18(3):e0282394. doi: 10.1371/journal.pone.0282394. eCollection 2023. PMID: 36888600 Free PMC article.

Prognostic Value of Right Ventricular Function in Patients With Suspected Myocarditis Undergoing Cardiac Magnetic Resonance.

Bernhard B, Schnyder A, Garachemani D, Fischer K, Tanner G, Safarkhanlo Y, Stark AW, Schütze J, Pavlicek-Bahlo M, Greulich S, Johner C, Wahl A, Benz DC, Kwong RY, Gräni C. JACC Cardiovasc Imaging. 2023 Jan;16(1):28-41. doi: 10.1016/j.jcmg.2022.08.011. Epub 2022 Oct 19. PMID: 36599567 Free article.

Characteristics of COVID-19 Myocarditis With and Without Multisystem Inflammatory Syndrome.

Li DL, Davogustto G, Soslow JH, Wassenaar JW, Parikh AP, Chew JD, Dendy JM, George-Durrett KM, Parra DA, Clark DE, Hughes SG. Am J Cardiol. 2022 Apr 1;168:135-141. doi: 10.1016/j.amjcard.2021.12.031. Epub 2022 Jan 19. PMID: 35058054 Free PMC article.

Outcomes of Cardiovascular Magnetic Resonance Imaging in Patients Recently Recovered From Coronavirus Disease 2019 (COVID-19).

Puntmann VO, Carerj ML, Wieters I, Fahim M, Arendt C, Hoffmann J, Shchendrygina A, Escher F, Vasa-Nicotera M, Zeiher AM, Vehreschild M, Nagel E. JAMA Cardiol. 2020 Nov 1;5(11):1265-1273. doi: 10.1001/jamacardio.2020.3557. PMID: 32730619 Free PMC article.

Multiparametric cardiac magnetic resonance reveals persistent myocardial inflammation in patients with exertional heat illness.

Luo S, Xu ST, Zhang J, Schoepf UJ, Varga-Szemes A, Carpenter CRT, Zhang LY, Ma Y, Li Z, Wang Y, Huang WW, Zhi BB, Dou WQ, Qi L, Zhang LJ. Eur Radiol. 2023 Nov;33(11):8165-8176. doi: 10.1007/s00330-023-09706-w. Epub 2023 May 5. PMID: 37145150

Cardiac magnetic resonance abnormalities in patients with acute myocarditis proven by septal endomyocardial biopsy.

Peretto G, Merlo M, Gentile P, Porcari A, Palmisano A, Vignale D, Sormani P, Rizzo S, De Gaspari M, Basso C, Bella PD, Sala S, Ammirati E, Sinagra G, Esposito A, Pedrotti P. Clin Res Cardiol. 2023 Mar;112(3):392-400. doi: 10.1007/s00392-022-02103-1. Epub 2022 Sep 16. PMID: 36112234 Free article.

Cardiac magnetic resonance imaging of myocarditis and pericarditis following COVID-19 vaccination: a multicenter collection of 27 cases.

Di Dedda EA, Barison A, Aquaro GD, Ismail TF, Hua A, Mantini C, Ricci F, Pontone G, Volpe A, Secchi F, Di Renzi P, Lovato L, Niro F, Liguori C, De Biase C, Monti L, Cirò A, Marano R, Natale L, Moliterno E, Esposito A, Vignale D, Faletti R, Gatti M, Porcu M, Saba L, Chimenti C, Galea N, Francone M. Eur Radiol. 2022 Jul;32(7):4352-4360. doi: 10.1007/s00330-022-08566-0. Epub 2022 Mar 1. PMID: 35230520 Free PMC article.

COVID-19 Vaccination-Associated Myocarditis in Adolescents.

Jain SS, Steele JM, Fonseca B, Huang S, Shah S, Maskatia SA, Buddhe S, Misra N, Ramachandran P, Gaur L, Eshtehardi P, Anwar S, Kaushik N, Han F, Chaudhuri NR, Grosse-Wortmann L. Pediatrics. 2021 Nov;148(5):e2021053427. doi: 10.1542/peds.2021-053427. Epub 2021 Aug 13. PMID: 34389692

Brendel JM, Klingel K, Gräni C, Blankstein R, Kübler J, Hagen F, Gawaz M, Nikolaou K, Krumm P, Greulich S. Multiparametric Cardiac Magnetic Resonance Imaging to Discriminate Endomyocardial Biopsy-Proven Chronic Myocarditis From Healed Myocarditis. JACC Cardiovasc Imaging. 2024 Oct;17(10):1182-1195. doi: 10.1016/j.jcmg.2024.06.009. Epub 2024 Aug 7. PMID: 39115501.

Cardiac magnetic resonance follow-up of COVID-19 vaccine associated acute myocarditis.

Kravchenko D, Isaak A, Mesropyan N, Bischoff LM, Pieper CC, Attenberger U, Kuetting D, Zimmer S, Hart C, Luetkens JA. Front Cardiovasc Med. 2022 Nov 9;9:1049256. doi: 10.3389/fcvm.2022.1049256. eCollection 2022. PMID: 36440045 Free PMC article.

Özen S, Kibar Gül AE, Gülhan B, Işıksalan Özbülbül N, Kanık Yüksek S, Terin H, Mustafaoğlu Ö, Bayraktar P, Ece İ, Çetin İİ, Üçkardeş F, Bayhan Gİ, Özkaya Parlakay A. Admission and follow-up cardiac magnetic resonance imaging findings in BNT162b2 Vaccine-Related myocarditis in adolescents. Infect Dis (Lond). 2023 Mar;55(3):199-206. doi: 10.1080/23744235.2022.2157478. Epub 2022 Dec 28. PMID: 36576105.

Cardiac MRI Findings of Myocarditis After COVID-19 mRNA Vaccination in Adolescents.

Chelala L, Jeudy J, Hossain R, Rosenthal G, Pietris N, White CS. AJR Am J Roentgenol. 2022 Apr;218(4):651-657. doi: 10.2214/AJR.21.26853. Epub 2021 Oct 27. PMID: 34704459

Short-term outcome of late gadolinium changes detected on cardiovascular magnetic resonance imaging following coronavirus disease 2019 Pfizer/BioNTech vaccine-related myocarditis in adolescents.

Krupickova S, Voges I, Mohiaddin R, Bautista C, Li W, Herberg J, Daubeney PEF, Pennell DJ, Fraisse A. Pediatr Radiol. 2023 May;53(5):892-899. doi: 10.1007/s00247-022-05573-7. Epub 2023 Jan 9. PMID: 36622403 Free PMC article.

Patel YR, Louis DW, Atalay M, Agarwal S, Shah NR. Cardiovascular magnetic resonance findings in young adult patients with acute myocarditis following mRNA COVID-19 vaccination: a case series. J Cardiovasc Magn Reson. 2021 Sep 9;23(1):101. doi: 10.1186/s12968-021-00795-4. PMID: 34496880; PMCID: PMC8425992.

Case Report: Transient Increase of CMR T1 Mapping Indices in a Patient With COVID-19 mRNA Vaccine Induced Acute Myocarditis.

Ansari U, Britsch S, Rogowski S, Duerschmied D, Papavassiliu T. Front Cardiovasc Med. 2022 Apr 27;9:880717. doi: 10.3389/fcvm.2022.880717. eCollection 2022. PMID: 35571183 Free PMC article.

Correlations between high sensitive troponin I and acute myocarditis extent in cardiac magnetic resonance imaging.

Marcusohn E, Barbara A, Epstein D, Massalha S, Zukermann R. J Cardiovasc Med (Hagerstown). 2023 Jun 1;24(6):334-339. doi: 10.2459/JCM.0000000000001468. Epub 2023 Apr 12. PMID: 37115968

Truong DT, Dionne A, Muniz JC, McHugh KE, Portman MA, Lambert LM, Thacker D, Elias MD, Li JS, Toro-Salazar OH, Anderson BR, Atz AM, Bohun CM, Campbell MJ, Chrisant M, D'Addese L, Dummer KB, Forsha D, Frank LH, Frosch OH, Gelehrter SK, Giglia TM, Hebson C, Jain SS, Johnston P, Krishnan A, Lombardi KC, McCrindle BW, Mitchell EC, Miyata K, Mizzi T, Parker RM, Patel JK, Ronai C, Sabati AA, Schauer J, Sexson Tejtel SK, Shea JR, Shekerdemian LS, Srivastava S, Votava-Smith JK, White S, Newburger JW. Clinically Suspected Myocarditis Temporally Related to COVID-19 Vaccination in Adolescents and Young Adults: Suspected Myocarditis After COVID-19 Vaccination. Circulation. 2022 Feb;145(5):345-356. doi: 10.1161/CIRCULATIONAHA.121.056583. Epub 2021 Dec 6. PMID: 34865500.

Sebai F, Brun S, Petermann A, Ribes D, Prévot G, Cariou E, Lavie-Badie Y, Faguer S, Galinier M, Carrié D, Rousseau H, Pugnet G, Lairez O. Cardiac magnetic resonance imaging with late gadolinium enhancement in acute myocarditis: Towards differentiation between immune-mediated and viral-related aetiologies. Arch Cardiovasc Dis. 2019 Oct;112(10):559-566. doi: 10.1016/j.acvd.2019.09.001. Epub 2019 Oct 21. PMID: 31648948.

Right and left ventricular cardiac magnetic resonance imaging derived peak systolic strain is abnormal in children with myocarditis.

Rhee E, Dobrila J, Kaur H, Patel MD, Uppu SC. Int J Cardiovasc Imaging. 2024 Jan;40(1):139-147. doi: 10.1007/s10554-023-02975-y. Epub 2023 Oct 20. PMID: 37861812

Feature Tracking-Derived Peak Systolic Strain Compared to Late Gadolinium Enhancement in Troponin-Positive Myocarditis: A Case-Control Study.

Weigand J, Nielsen JC, Sengupta PP, Sanz J, Srivastava S, Uppu S. Pediatr Cardiol. 2016 Apr;37(4):696-703. doi: 10.1007/s00246-015-1333-z. Epub 2015 Dec 31. PMID: 26717912

The application of cardiac magnetic resonance imaging (CMR) in myocarditis after COVID-19 vaccines : Case series from single medical center in Taiwan.

Wang YH, Lu YW, Chan SW, Kuo L, Chen SA. J Chin Med Assoc. 2024 Feb 1;87(2):151-155. doi: 10.1097/JCMA.0000000000001049. Epub 2023 Dec 27. PMID: 38150597

Cardiac Magnetic Resonance Imaging in COVID-19 Vaccine-Associated Myocarditis Compared With Classical Myocarditis.

Aviv Y, Shiyovich A, Plakht Y, Witberg G, Weissman M, Shafir G, Kornowski R, Hamdan A. JACC Adv. 2023 Nov 24;2(10):100726. doi: 10.1016/j.jacadv.2023.100726. eCollection 2023 Dec. PMID: 38938491 Free PMC article.

Post-acute midterm follow-up cardiac MRI findings and clinical outcomes in patients with COVID-19 vaccine-associated myocarditis: a comprehensive systematic review and meta-analysis.

Samimisedeh P, Jafari Afshar E, Tayebi A, Rastad H. Infect Dis (Lond). 2024 Mar;56(3):193-205. doi: 10.1080/23744235.2023.2286289. Epub 2023 Nov 24. PMID: 38000007

Prognostic Role of Early Cardiac Magnetic Resonance in Myocardial Infarction With Nonobstructive Coronary Arteries.

Bergamaschi L, Foà A, Paolisso P, Renzulli M, Angeli F, Fabrizio M, Bartoli L, Armillotta M, Sansonetti A, Amicone S, Stefanizzi A, Rinaldi A, Niro F, Lovato L, Gherbesi E, Carugo S, Pasquale F, Casella G, Galiè N, Rucci P, Bucciarelli-Ducci C, Pizzi C. JACC Cardiovasc Imaging. 2024 Feb;17(2):149-161. doi: 10.1016/j.jcmg.2023.05.016. Epub 2023 Jul 19. PMID: 37480903

CMR findings after COVID-19 and after COVID-19-vaccination-same but different?

Doeblin P, Jahnke C, Schneider M, Al-Tabatabaee S, Goetze C, Weiss KJ, Tanacli R, Faragli A, Witt U, Stehning C, Seidel F, Elsanhoury A, Kühne T, Tschöpe C, Pieske B, Kelle S. Int J Cardiovasc Imaging. 2022 Sep;38(9):2057-2071. doi: 10.1007/s10554-022-02623-x. Epub 2022 May 12. PMID: 37726611 Free PMC article.

Clinical course and follow-up of pediatric patients with COVID-19 vaccine-associated myocarditis compared to non-vaccine-associated myocarditis within the prospective multicenter registry-"MYKKE".

Rolfs N, Huber C, Schwarzkopf E, Mentzer D, Keller-Stanislawski B, Opgen-Rhein B, Frede W, Rentzsch A, Hecht T, Boehne M, Grafmann M, Kiski D, Graumann I, Foth R, Voges I, Schweigmann U, Ruf B, Fischer M, Wiegand G, Klingel K, Pickardt T, Friede T, Messroghli D, Schubert S, Seidel F; MYKKE Consortium. Am Heart J. 2024 Jan;267:101-115. doi: 10.1016/j.ahj.2023.11.006. Epub 2023 Nov 11. PMID: 37956921 Free article.

Comparison of Cardiac Activated Fibroblast Imaging and Magnetic Resonance Imaging in Patients with COVID-19-Related Myocarditis.

Su Y, Liu X, Xie B, Zhang B, Yang Q, Yang MF. Rev Cardiovasc Med. 2024 May 9;25(5):161. doi: 10.31083/j.rcm2505161. eCollection 2024 May. PMID: 39076498 Free PMC article.

Cardiovascular magnetic resonance imaging patterns of acute COVID-19 mRNA vaccine-associated myocarditis in young male patients: A first single-center experience.

Evertz R, Schulz A, Lange T, Backhaus SJ, Vollmann D, Kowallick JT, von Haehling S, Hasenfuß G, Schuster A. Front Cardiovasc Med. 2022 Aug 23;9:965512. doi: 10.3389/fcvm.2022.965512. eCollection 2022. PMID: 36082124 Free PMC article.

Myocarditis Following COVID-19 Vaccination: Cardiac Imaging Findings in 118 Studies.

Keshavarz P, Yazdanpanah F, Emad M, Hajati A, Nejati SF, Ebrahimian Sadabad F, Azrumelashvili T, Mizandari M, Raman SS. Tomography. 2022 Jul 30;8(4):1959-1973. doi: 10.3390/tomography8040164. PMID: 36006062 Free PMC article. Review.

Shi X, Zhang Z, Yin F, Liu W, Wang Y, Zhou X, Xu Y, Chen X, Zhu X. Cardiac magnetic resonance imaging (MRI) for detecting acute myocardial injury of fulminant myocarditis survivors after extracorporeal membrane oxygenation (ECMO) treatment in adults. Clin Radiol. 2024 Aug;79(8):589-598. doi: 10.1016/j.crad.2024.05.003. Epub 2024 May 7. PMID: 38797607.

Feltes G, Sánchez Sánchez V, Pérez-David E, Moreno-Hurtrez JL, Jiménez JD, Núñez-Gil IJ. The Role of Cardiac Magnetic Resonance in mRNA COVID-19 Vaccine-Related Myopericarditis: An Evolutive Case Series. J Cardiovasc Dev Dis. 2024 Aug 25;11(9):259. doi: 10.3390/jcdd11090259. PMID: 39330317; PMCID: PMC11432323.

Longitudinal Assessment of Left Ventricular Function in Patients with Myopericarditis After mRNA COVID-19 Vaccination.

Nv B, McCollum S, Faherty E, Steele JM, Karnik R. Pediatr Cardiol. 2024 Oct;45(7):1524-1532. doi: 10.1007/s00246-023-03200-2. Epub 2023 Jun 9. PMID: 37294336 Free PMC article.

COVID-19 Vaccine-Related Myocardial and Pericardial Inflammation.

Furqan M, Chawla S, Majid M, Mazumdar S, Mahalwar G, Harmon E, Klein A. Curr Cardiol Rep. 2022 Dec;24(12):2031-2041. doi: 10.1007/s11886-022-01801-6. Epub 2022 Nov 28. PMID: 36441403 Free PMC article. Review.

Cardiac Magnetic Resonance Imaging as a Risk Stratification Tool in COVID-19 Myocarditis.

Nedeljkovic-Arsenovic O, Ristić A, Đorđević N, Tomić M, Krljanac G, Maksimović R. Diagnostics (Basel). 2024 Apr 10;14(8):790. doi: 10.3390/diagnostics14080790. PMID: 38667436 Free PMC article.

Lee CH, Kong EJ. FDG PET/MRI of Acute Myocarditis After mRNA COVID-19 Vaccination. Clin Nucl Med. 2022 May 1;47(5):e421-e422. doi: 10.1097/RLU.0000000000004123. PMID: 35234199; PMCID: PMC8983619.

Parametric mapping by cardiovascular magnetic resonance imaging in sudden cardiac arrest survivors.

Gil KE, Truong VT, Zareba KM, Varghese J, Simonetti OP, Rajpal S. Int J Cardiovasc Imaging. 2023 Aug;39(8):1547-1555. doi: 10.1007/s10554-023-02864-4. Epub 2023 May 5. PMID: 37147450

A case of myopericarditis recurrence after third dose of BNT162b2 vaccine against SARS-CoV-2 in a young subject: link or causality?

Mapelli M, Amelotti N, Andreini D, Baggiano A, Campodonico J, Moltrasio M, Majocchi B, Mantegazza V, Vignati C, Ribatti V, Catto V, Sicuso R, Moltrasio M, Pontone G, Agostoni P. Eur Heart J Suppl. 2022 May 18;24(Suppl C):C243-C247. doi: 10.1093/eurheartj/suac018. eCollection 2022 May. PMID: 35602257 Free PMC article.

Cytokinopathy with aberrant cytotoxic lymphocytes and profibrotic myeloid response in SARS-CoV-2 mRNA vaccine-associated myocarditis.

Barmada A, Klein J, Ramaswamy A, Brodsky NN, Jaycox JR, Sheikha H, Jones KM, Habet V, Campbell M, Sumida TS, Kontorovich A, Bogunovic D, Oliveira CR, Steele J, Hall EK, Pena-Hernandez M, Monteiro V, Lucas C, Ring AM, Omer SB, Iwasaki A, Yildirim I, Lucas CL. Sci Immunol. 2023 May 12;8(83):eadh3455. doi: 10.1126/sciimmunol.adh3455. Epub 2023 May 5. PMID: 37146127 Free PMC article.

Acute myocarditis after a second dose of the mRNA COVID-19 vaccine: a report of two cases.

Mansour J, Short RG, Bhalla S, Woodard PK, Verma A, Robinson X, Raptis DA. Clin Imaging. 2021 Oct;78:247-249. doi: 10.1016/j.clinimag.2021.06.019. Epub 2021 Jun 18. PMID: 34166884 Free PMC article.

Post-RNA (mRNA) Vaccination Myocarditis: CMR Features.

Das KM, Mansoori TA, Shamisi AA, AlBastaki UM, Gorkom KV, Alkoteesh JA. Diagnostics (Basel). 2022 Apr 20;12(5):1034. doi: 10.3390/diagnostics12051034. PMID: 35626190 Free PMC article.

Myocarditis and coronavirus disease 2019 vaccination: A systematic review and meta-summary of cases.

Saputra PBT, Kurniawan RB, Trilistyoati D, Farabi MJA, Susilo H, Alsagaff MY, Oktaviono YH, Sutanto H, Gusnanto A, Dyah Kencono Wungu C. Biomol Biomed. 2023 Jul 3;23(4):546-567. doi: 10.17305/bb.2022.8779. PMID: 36803547 Free PMC article. Review.

CMR Manifestations, Influencing Factors and Molecular Mechanism of Myocarditis Induced by COVID-19 Mrna Vaccine.

Ba CF, Chen BH, Shao LS, Zhang Y, Shi C, Wu LM, Xu JR. Rev Cardiovasc Med. 2022 Oct 11;23(10):339. doi: 10.31083/j.rcm2310339. eCollection 2022 Oct. PMID: 39077131 Free PMC article. Review.

Di Lisi D, Madaudo C, Carmina MG, Clemenza F, Scelfo D, La Franca E, Pieri M, Vitale G, Galassi AR, Novo G. Prognosis of myocarditis stratified by initial clinical presentation: Does "intermediate" risk still play a role? Am Heart J Plus. 2024 Sep 7;46:100458. doi: 10.1016/j.ahjo.2024.100458. PMID: 39310054; PMCID: PMC11416600.

Comparative analysis of late gadolinium enhancement assessment techniques for monitoring fibrotic changes in myocarditis follow-up.

Károlyi M, Polacin M, Kolossváry M, Sokolska JM, Matziris I, Weber L, Alkadhi H, Manka R. Eur Radiol. 2024 Nov;34(11):7264-7274. doi: 10.1007/s00330-024-10756-x. Epub 2024 May 4. PMID: 38703188 Free PMC article.

COVID-19 mRNA vaccine-related myocarditis: A PRISMA systematic review, imaging approach and differential diagnoses.

Yeo SZJ, Ho CL. Radiol Case Rep. 2023 Dec 22;19(3):1008-1019. doi: 10.1016/j.radcr.2023.11.070. eCollection 2024 Mar. PMID: 38226053 Free PMC article.

Characteristics and Prognostic Relevance of Ventricular Arrhythmia in Patients with Myocarditis.

Kahle AK, Güde R, Schwarzl JM, Münkler P, Akbulak RÖ, Jahnke C, Bohnen S, Würger T, Schwarzl M, Willems S, Radunski UK, Meyer C. J Cardiovasc Dev Dis. 2022 Jul 29;9(8):243. doi: 10.3390/jcdd9080243. PMID: 36005407 Free PMC article.

Outcome and Morphofunctional Changes on Cardiac Magnetic Resonance in Patients With Acute Myocarditis Following mRNA COVID-19 Vaccination.

Ammirati E, Lupi L, Palazzini M, Ciabatti M, Rossi VA, Gentile P, Uribarri A, Vecchio CR, Nassiacos D, Cereda A, Conca C, Tumminello G, Piriou N, Lelarge C, Pedrotti P, Stucchi M, Peretto G, Galasso M, Huang F, Ianni U, Procopio A, Saponara G, Cimaglia P, Tomasoni D, **Moroni F**, Turco A, Sala S, Di Tano G, Bollano E, Moro C, Abbate A, Della Bona R, Porto I, Carugo S, Campodonico J, Pontone G, Grosu A, Bolognese L, Salamanca J, Diez-Villanueva P, Ozieranski K, Tyminska A, Sardo Infirri L, Bromage D, Cannatà A, Hong KN, Adamo M, Quattrocchi G, Foà A, Potena L, Garascia A, Giannattasio C, Adler ED, Sinagra G, Ruschitzka F, Camici PG, Metra M, Pieroni M. Circ Heart Fail. 2023 Jun;16(6):e010315. doi: 10.1161/CIRCHEARTFAILURE.122.010315. Epub 2023 May 15. PMID: 37183708 Free article. No abstract available.

Long-term imaging analysis of a myocarditis case: Utilizing strain with echocardiography and cardiovascular magnetic resonance findings.

Noro S, Awaya T, Hayama H, Toyoda Y, Fujisaki J, Maetani I, Moroi M, Nakamura M. J Cardiol Cases. 2024 Mar 5;29(6):265-268. doi: 10.1016/j.jccase.2024.02.009. eCollection 2024 Jun. PMID: 38826761 Free PMC article.

Acute myocarditis after receiving first dose of BNT162b2 mRNA vaccine.

Wu B, Mittal N, Adler ED, Hong KN. J Cardiol Cases. 2022 Jun;25(6):348-350. doi: 10.1016/j.jccase.2021.12.009. Epub 2022 Jan 7. PMID: 35018202 Free PMC article.

mRNA Coronavirus Disease 2019 Vaccine-Associated Myopericarditis in Adolescents: A Survey Study.

Kohli U, Desai L, Chowdhury D, Harahsheh AS, Yonts AB, Ansong A, Sabati A, Nguyen HH, Hussain T, Khan D, Parra DA, Su JA, Patel JK, Ronai C, Bohun M, Freij BJ, O'Connor MJ, Rosanno JW, Gupta A, Salavitabar A, Dorfman AL, Hansen J, Frosch O, Profita EL, Maskatia S, Thacker D, Shrivastava S, Harris TH, Feingold B, Berger S, Campbell M, Idriss SF, Das S, Renno MS, Knecht K, Asaki SY, Patel S, Ashwath R, Shih R, Phillips J, Das B,

Ramachandran P, Sagiv E, Bhat AH, Johnson JN, Taggart NW, Imundo J, Nakra N, Behere S, Patel A, Aggarwal A, Aljemmali S, Lang S, Batlivala SP, Forsha DE, Conners GP, Shaw J, Smith FC, Pauliks L, Vettukattil J, Shaffer K, Cheang S, Voleti S, Shenoy R, Komarlu R, Ryan SJ, Snyder C, Bansal N, Sharma M, Robinson JA, Arnold SR, Salvatore CM, Kumar M, Fremed MA, Glickstein JS, Perrotta M, Orr W, Rozema T, Thirumoorthi M, Mullett CJ, Ang JY. J Pediatr. 2022 Apr;243:208-213.e3. doi: 10.1016/j.jpeds.2021.12.025. Epub 2021 Dec 22. PMID: 34952008 Free PMC article.

Sports participation and myocarditis: Influence of sport types on disease severity.

Bouchau R, Cariou E, Deney A, Belaid S, Itier R, Blanchard V, Fournier P, Duparc A, Galinier M, Carrié D, Lairez O, Lavie-Badie Y. Int J Cardiol Heart Vasc. 2021 Oct 26;37:100895. doi: 10.1016/j.ijcha.2021.100895. eCollection 2021 Dec. PMID: 34765717 Free PMC article

Babbitt CJ, Babbitt MJ, Byrne F, Morphew T. Pediatric Myopericarditis Presenting to the Emergency Department as Chest Pain: A Comparative Study With Myocarditis. Pediatr Emerg Care. 2022 Feb 1;38(2):e761-e765. PMID: **35100774** DOI: 10.1097/PEC.0000000000002376

The value of dual-energy computed tomography in the evaluation of myocarditis.

Kantarcı M, Bayraktutan Ü, Akbulut A, Taydaş O, Ceviz N, Güven F, Oğul H, Aydın S. Diagn Interv Radiol. 2023 Mar 29;29(2):276-282. doi: 10.5152/dir.2022.21749. Epub 2023 Jan 27. PMID: 36987908 Free PMC article.

Imaging for Cardiovascular Complications of COVID-19: Cardiac Manifestations in Context.

Crosier R, Kafil TS, Paterson DI. Can J Cardiol. 2023 Jun;39(6):779-792. doi: 10.1016/j.cjca.2023.01.022. Epub 2023 Jan 31. PMID: 36731604 Free PMC article. Review.

COVID-19 mRNA Vaccination-Induced Myopericarditis in an Otherwise Healthy Young Male: An Evidence-Based Approach to Differentiating From Perimyocarditis.

Latchupatula L, Benayon M, Yang L, Ganame J, Tandon V. Cureus. 2024 May 9;16(5):e59999. doi: 10.7759/cureus.59999. eCollection 2024 May. PMID: 38736762 Free PMC article.

Myocardial Injury and Altered Gene Expression Associated With SARS-CoV-2 Infection or mRNA Vaccination.

Altman NL, Berning AA, Saxon CE, Adamek KE, Wagner JA, Slavov D, Quaife RA, Gill EA, Minobe WA, Jonas ER, Carroll IA, Huebler SP, Raines J, Messenger JC, Ambardekar AV, Mestroni L, Rosenberg RM, Rove J, Campbell TB, Bristow MR. JACC Basic Transl Sci. 2023 Feb;8(2):124-137. doi: 10.1016/j.jacbts.2022.08.005. Epub 2022 Oct 19. PMID: 36281440 Free PMC article.

[Pericardial and myocardial involvement after SARS-CoV-2 infection: a cross-sectional descriptive study in healthcare workers].

Eiros R, Barreiro-Pérez M, Martín-García A, Almeida J, Villacorta E, Pérez-Pons A, Merchán S, Torres-Valle A, Sánchez-Pablo C, González-Calle D, Pérez-Escurza O, Toranzo

I, Díaz-Peláez E, Fuentes-Herrero B, Macías-Álvarez L, Oliva-Ariza G, Lecrevisse Q, Fluxa R, Bravo-Grande JL, Orfao A, Sánchez PL; en representación de los investigadores CCC (cardiac COVID-19 healthcare workers). Rev Esp Cardiol. 2022 Sep;75(9):735-747. doi: 10.1016/j.recesp.2021.10.021. Epub 2022 Jan 13. PMID: 35039707 Free PMC article. Spanish.

Left Ventricular Function in Patients with Myopericarditis After mRNA COVID-19 Vaccination: Comment.

Kleebayoon A, Mungmunpuntipantip R, Wiwanitkit V. Pediatr Cardiol. 2023 Oct;44(7):1632-1633. doi: 10.1007/s00246-023-03212-y. Epub 2023 Jun 22. PMID: 37347243 No abstract available.

Isolated myocardial edema in cardiac magnetic resonance - in search of a management strategy.

Małek ŁA, Śpiewak M. Trends Cardiovasc Med. 2023 Oct;33(7):395-402. doi: 10.1016/j.tcm.2022.04.001. Epub 2022 Apr 9. PMID: 35405307 Review.

Mycophenolate Mofetil Use in Severe Myocarditis Complicating Systemic Lupus.

Allaoui A, El Ouarradi A, Jabbouri R, Naitelhou A. Cureus. 2022 Jun 9;14(6):e25789. doi: 10.7759/cureus.25789. eCollection 2022 Jun. PMID: 35812561 Free PMC article.

Monitoring the evolution of myocarditis following COVID-19 mRNA vaccination with serial cardiac magnetic resonance imaging.

Camastra G, Ciolina F, Corsi MP, Gemmiti MP, Arcari L. Int J Cardiovasc Imaging. 2022 Sep;38(9):2077-2079. doi: 10.1007/s10554-022-02603-1. Epub 2022 Apr 13. PMID: 37726604 Free PMC article. No abstract available.

A Case Series of Myocarditis Related to the COVID-19 Vaccine.

Ahmed HO, Ahmed MM, Elrasheid O. Cureus. 2022 Oct 4;14(10):e29892. doi: 10.7759/cureus.29892. eCollection 2022 Oct. PMID: 36348838 Free PMC article.

A Rare Presentation of Probable Training-Related Chronic Myopericarditis in an Endurance Cyclist: A Case Report.

Mohamad AA, Mohamed NA. Korean J Fam Med. 2024 Mar;45(2):116-120. doi: 10.4082/kjfm.23.0082. Epub 2024 Feb 14. PMID: 38351744 Free PMC article.

Objective Comparison of Clinical and Cardiac Magnetic Resonance Biomarkers in Adolescents Presenting With Acute Chest Pain and Elevated Troponins Pre-COVID and Post-COVID Vaccination.

Gulhane A, Soriano B, Stanescu L, Schauer J, Ferguson M, Romberg E, Bhutta S, Otto R, Caris E, Mallenahalli S, Portman M, Litt H, Buddhe S. J Magn Reson Imaging. 2024 May;59(5):1867-1873. doi: 10.1002/jmri.28971. Epub 2023 Aug 25. PMID: 37622988 No abstract available.

Corrigendum to "A comparison of four self-controlled study designs in an analysis of COVID-19 vaccines and myocarditis using five European databases" [Vaccine 42 (12) (2024) 3039-3048].

Schultze A, Martin I, Messina D, Bots S, Belitser S, Carreras-Martínez JJ, Correcher-Martinez E, Urchueguía-Fornes A, Martín-Pérez M, García-Poza P, Villalobos F, Pallejà-Millán M, Bissacco CA, Segundo E, Souverein P, Riefolo F, Durán CE, Gini R, Sturkenboom M, Klungel O, Douglas I. Vaccine. 2024 Oct 12:126438. doi: 10.1016/j.vaccine.2024.126438. Online ahead of print. PMID: 39396886 Free article. No abstract available.

Pillay J, Gaudet L, Wingert A, Bialy L, Mackie AS, Paterson DI, et al. Incidence, risk factors, natural history, and hypothesized mechanisms of myocarditis and pericarditis following covid-
19 vaccination: living evidence syntheses and review. BMJ. 2022;378:e069445. https://doi.org/10.1136/bmj-2021-069445.

Article reviews available data regarding development of myocarditis and pericarditis post-COVID vaccination and possible mechanism.

> Myocarditis/pericarditis following vaccination with BNT162b2, CoronaVac, and ChAdOx1 among adolescent and adult in Malaysia.
>
> **Ab Rahman N**, Lim MT, Lee FY, Anak Jam EB, Peariasamy KM, Sivasampu S; SAFECOVAC study group. Vaccine X. 2023 Aug;14:100303. doi: 10.1016/j.jvacx.2023.100303. Epub 2023 Apr 15. PMID: 37091730 Free PMC article.
>
> Do COVID-19 viral infection and its mRNA vaccine carry an equivalent risk of myocarditis? Review of the current evidence, insights, and future directions.
>
> **Ulucay AS,** Singh G, Kanuri SH. Indian Heart J. 2023 Jul-Aug;75(4):217-223. doi: 10.1016/j.ihj.2023.06.009. Epub 2023 Jul 1. PMID: 37399904 Free PMC article. Review.

Corrao, G., Franchi, M., Cereda, D., Bortolan, F., Leoni, O., Vignati, E., Pavesi, G., & Gori, A. (2022). Increased risk of myocarditis and pericarditis and reduced likelihood of severe clinical outcomes associated with COVID-19 vaccination: a cohort study in Lombardy, Italy. *BMC infectious diseases*, *22*(1), 844. https://doi.org/10.1186/s12879-022-07823-3 PMID: **36371165** PMCID: PMC9652976 DOI: 10.1186/s12879-022-07823-3

Epidemiology of Myocarditis and Pericarditis Following mRNA Vaccination by Vaccine Product, Schedule, and Interdose Interval Among Adolescents and Adults in Ontario, Canada.

Buchan SA, Seo CY, Johnson C, Alley S, Kwong JC, Nasreen S, Calzavara A, Lu D, Harris TM, Yu K, Wilson SE. JAMA Netw Open. 2022 Jun 1;5(6):e2218505. doi: 10.1001/jamanetworkopen.2022.18505. PMID: 35749115 Free PMC article.

Incidence, risk factors, natural history, and hypothesised mechanisms of myocarditis and pericarditis following covid-19 vaccination: living evidence syntheses and review.

Pillay J, Gaudet L, Wingert A, Bialy L, Mackie AS, Paterson DI, Hartling L. BMJ. 2022 Jul 13;378:e069445. doi: 10.1136/bmj-2021-069445. PMID: 35830976 Free PMC article. Review.

SARS-CoV-2 Vaccination and Myocarditis in a Nordic Cohort Study of 23 Million Residents.

Karlstad Ø, Hovi P, Husby A, Härkänen T, Selmer RM, Pihlström N, Hansen JV, Nohynek H, Gunnes N, Sundström A, Wohlfahrt J, Nieminen TA, Grünewald M, Gulseth HL, Hviid A, Ljung R. JAMA Cardiol. 2022 Jun 1;7(6):600-612. doi: 10.1001/jamacardio.2022.0583. PMID: 35442390 Free PMC article.

Postmarketing active surveillance of myocarditis and pericarditis following vaccination with COVID-19 mRNA vaccines in persons aged 12 to 39 years in Italy: A multi-database, self-controlled case series study.

Massari M, Spila Alegiani S, Morciano C, Spuri M, Marchione P, Felicetti P, Belleudi V, Poggi FR, Lazzeretti M, Ercolanoni M, Clagnan E, Bovo E, Trifirò G, Moretti U, Monaco G, Leoni O, Da Cas R, Petronzelli F, Tartaglia L, Mores N, Zanoni G, Rossi P, Samez S, Zappetti C, Marra AR, Menniti Ippolito F; TheShinISS-Vax|COVID Surveillance Group. PLoS Med. 2022 Jul 28;19(7):e1004056. doi: 10.1371/journal.pmed.1004056. eCollection 2022 Jul. PMID: 35900992 Free PMC article.

Development of myocarditis and pericarditis after COVID-19 vaccination in children and adolescents: A systematic review.

Fatima M, Khan MHA, Ali MS, Osama M, Cheema HA, Ahmed A, Nisar A, Murad MW, Farooq H, Aemaz Ur Rehman M, Swed S, Akbar UA. Clin Cardiol. 2023 Mar;46(3):243-259. doi: 10.1002/clc.23965. Epub 2023 Jan 2. PMID: 36594165 Free PMC article. Review.

RH Matar, R Mansour, H Nakanishi, *et al.*
Clinical characteristics of patients with myocarditis following COVID-19 mRNA vaccination: a systematic review and meta-analysis
J Clin Med, 11 (2022), p. 4521
View at publisher
CrossrefView in ScopusGoogle Scholarhttps://www.sciencedirect.com/science/article/pii/S1470211824045573

Government Department of Health A,. COVID-19 vaccination – guidance on myocarditis and pericarditis after mRNA COVID-19 vaccines. www.predict.org.au/mrna-chest-pain-guideline/ [Accessed 1 August 2023].
Google Scholar

Myocarditis and pericarditis after COVID-19 vaccination: clinical management guidance for healthcare professionals. www.gov.uk/government/publications/myocarditis-and-pericarditis-after-covid-19-vaccination/myocarditis-and-pericarditis-after-covid-19-vaccination-guidance-for-healthcare-professionals

UK Health Security Agency. COVID-19: the green book, chapter 14a. www.gov.uk/government/publications/covid-19-the-green-book-chapter-14a

ΠΝΕΥΜΟΝΙΚΗ ΕΜΒΟΛΗ

Ezeh E, Katabi A, Khawaja I. Iron deficiency anemia as a rare risk factor for recurrent pulmonary embolism and deep vein thrombosis. Cureus 2021; 13: e13721. - PMC - PubMed

Kim EJ, Yoo SJ. Pulmonary Embolism after Vaccination with the COVID-19 Vaccine (Pfizer, BNT162b2): A Case Report. Vaccines (Basel). 2023 Jun 7;11(6):1075. doi: 10.3390/vaccines11061075. PMID: 37376463; PMCID: PMC10303489.

ΑΝΕΥΡΥΣΜΑΤΑ ΑΟΡΤΗΣ

ΨΕΥΔΟΑΝΕΥΡΥΣΜΑΤΑ

Chue KM, Kiat Tok NW, Gao Y. Spontaneous rare visceral pseudoaneurysm presenting with rupture after COVID-19 vaccination. ANZ J Surg 2022;92:915–7.

ΑΡΤΗΡΙΑΚΗ ΥΠΕΡΤΑΣΗ

Athyros VG, *Doumas M. 2021 A possible case of hypertensive crisis with intracranial haemorrhage after an mRNA Anti-COVID-19 vaccine [published online ahead of print, 2021 May 21]. Angiology.;33197211018323. 10.1177/00033197211018323* [DOI] [PubMed]

ΘΡΟΜΒΩΣΕΙΣ

Tobaiqy M, MacLure K, Elkout H, Stewart D. Thrombotic Adverse Events Reported for Moderna, Pfizer and Oxford-AstraZeneca COVID-19 Vaccines: Comparison of Occurrence and Clinical Outcomes in the EudraVigilance Database. Vaccines (Basel). 2021 Nov 15;9(11):1326. doi: 10.3390/vaccines9111326. PMID: 34835256; PMCID: PMC8624459.

Blood Coagulation and Thrombotic Disorders following SARS-CoV-2 Infection and COVID-19 Vaccination.

Sekulovski M, Mileva N, Vasilev GV, Miteva D, Gulinac M, Peshevska-Sekulovska M, Chervenkov L, Batselova H, Vasilev GH, Tomov L, Lazova S, Vassilev D, Velikova T. Biomedicines. 2023 Oct 17;11(10):2813. doi: 10.3390/biomedicines11102813. PMID: 37893186 Free PMC article. Review.

Hwang J, Lee SB, Lee SW, Lee MH, Koyanagi A, Jacob L, Tizaoui K, Yon DK, Shin JI, Smith L. Comparison of vaccine-induced thrombotic events between ChAdOx1 nCoV-19 and Ad26.COV.2.S vaccines. J Autoimmun. 2021 Aug;122:102681. doi: 10.1016/j.jaut.2021.102681. Epub 2021 Jun 15. PMID: 34139631; PMCID: PMC8204660.

Brazete C, Aguiar A, Furtado I, et al. Thrombotic events and COVID-19 vaccines. Int J Tuberc Lung Dis. 2021; 25(9): 701–707. doi: 10.5588/ijtld.21.0298.

Whiteley WN, Ip S, Cooper JA, Bolton T, Keene S, Walker V, Denholm R, Akbari A, Omigie E, Hollings S, Di Angelantonio E, Denaxas S, Wood A, Sterne JAC, Sudlow C; CVD-COVID-UK consortium. Association of COVID-19 vaccines ChAdOx1 and BNT162b2 with major venous, arterial, or thrombocytopenic events: A population-based cohort study of 46 million adults in England. PLoS Med. 2022 Feb 22;19(2):e1003926. doi: 10.1371/journal.pmed.1003926. PMID: 35192597; PMCID: PMC8863280.

Sekulovski M, Mileva N, Vasilev GV, Miteva D, Gulinac M, Peshevska-Sekulovska M, Chervenkov L, Batselova H, Vasilev GH, Tomov L, Lazova S, Vassilev D, Velikova T. Blood Coagulation and Thrombotic Disorders following SARS-CoV-2 Infection and COVID-19 Vaccination. Biomedicines. 2023 Oct 17;11(10):2813. doi: 10.3390/biomedicines11102813. PMID: 37893186; PMCID: PMC10604891.

Hviid A, Hansen JV, Thiesson EM, Wohlfahrt J. Association of AZD1222 and BNT162b2 COVID-19 Vaccination With Thromboembolic and Thrombocytopenic Events in Frontline Personnel : A Retrospective Cohort Study. Ann Intern Med. 2022 Apr;175(4):541-546. doi: 10.7326/M21-2452. Epub 2022 Feb 1. PMID: 35103482; PMCID: PMC8805866.

Kowarz, E.; Krutzke, L.; Reis, J.; Bracharz, S.; Kochanek, S.; Marschalek, R. "Vaccine-Induced COVID-19 Mimicry" Syndrome: Splice reactions within the SARS-CoV-2 Spike open reading frame result in Spike protein variants that may cause thromboembolic events in patients immunized with vector-based vaccines (non-peer reviewed preprint). Res. Sq. **2021**. [Google Scholar] [CrossRef]

COVID19 – the spike protein and blood clotting

Dr. Malcolm Kendrick
https://drmalcolmkendrick.org › 2021/06/03 › covid19...

Thilagar B, Beidoun M, Rhoades R. Kaatz S (2021) COVID-19 and thrombosis: searching for evidence [published correction appears in Hematology Am Soc Hematol Educ Program. 2022 Dec 9;2022(1):725] Hematol Am Soc Hematol Educ Program. 2021;1:621–627. doi: 10.1182/hematology.2021000298. - DOI - PMC - PubMed

Shazley O, Alshazley M. A COVID-positive 52-year- old man presented with venous thromboembolism and disseminated intravascular coagulation following johnson & johnson vaccination: a case- study. Cureus 2021;13:e16383

Autoimmunity roots of the thrombotic events after COVID-19 vaccination

Mishra, Y. K., Elrashdy, F., Tambuwala, M. M., Hassan, S. S., Adadi, P., Seyran, M., Abd El-Aziz, T. M., Rezaei, N., Lal, A., Aljabali, A. A. A., Kandimalla, R., Bazan, N. G., Azad, G. K., Sherchan, S. P., Choudhury, P. P., Serrano-Aroca, Á., Takayama, K., Chauhan, G., Pizzol, D. & Barh, D. & 5 others, , Nov 2021, In: Autoimmunity Reviews. 20, 11, 6 p., 102941.

Dag Berild J., Bergstad Larsen V., Myrup Thiesson E., et al. Analysis of thromboembolic and thrombocytopenic events after the AZD1222, BNT162b2, and MRNA-1273 COVID-19 vaccines in 3 Nordic Countries. JAMA Netw Open. 2022;5(6):e2217375. - PMC - PubMed

Simpson C.R., Shi T., Vasileiou E., et al. First-dose ChAdOx1 and BNT162b2 COVID-19 vaccines and thrombocytopenic, thromboembolic and hemorrhagic events in Scotland. Nat Med. 2021;27(7):1290–1297. - PMC - PubMed

Andrews N.J., Stowe J., Ramsay M.E., Miller E. Risk of venous thrombotic events and thrombocytopenia in sequential time periods after ChAdOx1 and BNT162b2 COVID-19 vaccines: A national cohort study in England. Lancet Reg Health Eur. 2022;13 - PMC - PubMed

ΑΡΤΗΡΙΑΚΕΣ ΘΡΟΜΒΩΣΕΙΣ

de Godoy JMP, Neto FR, da Silva GL, Santos HA, de Godoy HJP. Aortic Thrombosis Associated with Three Types of COVID-19 Vaccine. Case Rep Surg. 2023 Oct 25;2023:3562145. doi: 10.1155/2023/3562145. PMID: 37920172; PMCID: PMC10620018.

Smadja D, Yue QY, Chocron, R, et al. Vaccination against COVID-19: Insight from arterial and venous thrombosis occurrence using data from VigiBase. Eur Respir J 2021: 2100956. doi:[10.1183/13993003.00956-2021](10.1183/13993003.00956-2021) [Google Scholar]()

Global time in days to thrombotic event: 0-63

Acute Arterial Occlusion Following ChAdOx1 nCov-19 (Oxford-AstraZeneca) Vaccination
https://pubmed.ncbi.nlm.nih.gov/35043242/

Bowen Xie, Dana B. Semaan, Natalie D. Sridharan, Mohammad H. Eslami, Catherine Go. Acute limb ischemia secondary to vaccine-induced thrombotic thrombocytopenia,. Annals of Vascular Surgery - Brief Reports and Innovations, Volume 3, Issue 1, 2023, 100153, ISSN 2772-6878, https://doi.org/10.1016/j.avsurg.2022.100153.

M. Jones, A. Boisvert, J. Landry, P.F. Petrasek. Limb ischemia and pulmonary artery thrombosis after the ChAdOx1 nCoV-19 (Oxford-AstraZeneca) vaccine: a case of vaccine-induced immune thrombotic thrombocytopenia. CMAJ, 193 (24) (2021) E906-E10 [Google Scholar]()

Sean Christopher Gaudio, Frank Eugene Gaudio. (2021). A Case Report of Mesenteric Ischemia After COVID-19 Vaccination. *Journal of Surgery*, *9*(4), 216-219. https://doi.org/10.11648/j.js.20210904.23

ΠΕΡΙΦΕΡΙΚΕΣ ΘΡΟΜΒΩΣΕΙΣ – ΠΝΕΥΜΟΝΙΚΗ ΕΜΒΟΛΗ

Lai, D.; Zhang, Y.D.; Lu, J. Venous Thromboembolism Following Two Doses of COVID-19 mRNA Vaccines in the US Population, 2020–2022. Vaccines 2022, 10, 1317. https://doi.org/10.3390/vaccines10081317

Bikdeli, B.; Jiménez, D.; Demelo-Rodriguez, P.; Galeano-Valle,F.; Porras, J.A.; Barba, R.; Ay, C.; Malý,R.; Braester, A.; Imbalzano, E.; et al. Venous Thrombosis within 30 Days after Vaccination against SARS-CoV-2 in a Multinational Venous Thromboembolism Registry. Viruses 2022, 14, 178**.** https://doi.org/10.3390/v14020178

[Pulmonary embolism after SARS-CoV-2 vaccination.]()

Zethelius B, Attelind S, Westman G, Ljung R, Sundström A. Vaccine X. 2024 Oct 15;21:100571. doi: 10.1016/j.jvacx.2024.100571. eCollection 2024 Dec. PMID: 39474208 Free PMC article.

Scendoni R, Petrelli C, Giustozzi M, Logullo FO. Multiple sites of thrombosis without thrombocytopenia after a second dose of Pfizer-BioNTech COVID-19 vaccine. Int J Immunopathol Pharmacol. 2022 Jan-Dec;36:3946320221128534. doi: 10.1177/03946320221128534. PMID: 36123789; PMCID: PMC9486676.

Kim EJ, Yoo SJ. Pulmonary Embolism after Vaccination with the COVID-19 Vaccine (Pfizer, BNT162b2): A Case Report. Vaccines (Basel). 2023 Jun 7;11(6):1075. doi: 10.3390/vaccines11061075. PMID: 37376463; PMCID: PMC10303489.

ΘΡΟΜΒΩΣΗ ΦΛΕΒΩΔΩΝ ΚΌΛΠΩΝ ΕΓΚΕΦΑΛΟΥ

See I, Su JR, Lale A, Woo EJ, Guh AY, Shimabukuro TT, Streiff MB, Rao AK, Wheeler AP, Beavers SF, Durbin AP, Edwards K, Miller E, Harrington TA, Mba-Jonas A, Nair N, Nguyen DT, Talaat KR, Urrutia VC, Walker SC, Creech CB, Clark TA, DeStefano F, Broder KR. US Case Reports of Cerebral Venous Sinus Thrombosis With Thrombocytopenia After Ad26.COV2.S Vaccination, March 2 to April 21, 2021. JAMA. 2021 Jun 22;325(24):2448-2456. doi: 10.1001/jama.2021.7517. PMID: 33929487; PMCID: PMC8087975.

Krzywicka K, Heldner MR, Sánchez van Kammen M, van Haaps T, Hiltunen S, Silvis SM, Levi M, Kremer Hovinga JA, Jood K, Lindgren E, Tatlisumak T, Putaala J, Aguiar de Sousa D, Middeldorp S, Arnold M, Coutinho JM, Ferro JM. Post-SARS-CoV-2-vaccination cerebral venous sinus thrombosis: an analysis of cases notified to the European Medicines Agency. Eur J Neurol. 2021 Nov;28(11):3656-3662. doi: 10.1111/ene.15029. Epub 2021 Aug 4. PMID: 34293217; PMCID: PMC8444640.

Kerr S., Joy M., Torabi F., et al. First dose ChAdOx1 and BNT162b2 COVID-19 vaccinations and cerebral venous sinus thrombosis: A pooled self-controlled case series study of 11.6 million individuals in England, Scotland, and Wales. PLoS Med. 2022;19(2):e1003927. - PMC - PubMed

Zakaria Z, Sapiai NA, Ghani ARI. Cerebral venous sinus thrombosis 2 weeks after the first dose of mRNA SARS-CoV-2 vaccine. Acta Neurochir 2021; 163: 2359–2362. - PMC - PubMed

Jamme M, Mosnino E, Hayon J, et al.. Fatal cerebral venous sinus thrombosis after COVID-19 vaccination. Intensive Care Med 2021; 47: 790–791. - PMC - PubMed

Huynh A, Arnold DM, Ivetic N, Clare R, Hadzi-Tosev M, Liu Y, Smith JW, Bissola AL, Daka M, Kelton JG, Nazy I. Antibodies against platelet factor 4 and the risk of cerebral venous sinus thrombosis in patients with vaccine-induced immune thrombotic thrombocytopenia. J Thromb Haemost. 2023 Oct;21(10):2833-2843. doi: 10.1016/j.jtha.2023.06.026. Epub 2023 Jun 30. PMID: 37394121.

Schulz JB, Berlit P, Diener HC, Gerloff C, Greinacher A, Klein C. 2021 COVID-19 vaccine-associated cerebral venous thrombosis in Germany. medRxiv.04.30.21256383; doi: 10.1101/2021.04.30.21256383. 14 [DOI] [PMC free article] [PubMed]

***Fan BE,** Shen JY, Lim XR, et al. Cerebral venous thrombosis post BNT162b2 mRNA SARS-CoV-2 vaccination: a black swan event. Am J Hematol. 2021;96(9):E357–E361. doi: 10.1002/ajh.26272.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Wiedmann M, Skattør T, Stray-Pedersen A, et al. Vaccine induced immune thrombotic thrombocytopenia causing a severe form of cerebral venous thrombosis with high fatality rate: a case series. Front Neurol 2021;12:721146.

Jamme M, Mosnino E, Hayon J, Franchineau G. Fatal cerebral venous sinus thrombosis after COVID-19 vaccination. Intensive Care Med. 2021;47(7):790–791. doi: 10.1007/s00134-021-06425-y. *[DOI] [PMC free article] [PubMed] [Google Scholar]*

Park, J.; Park, M.-S.; Kim, H.J.; Song, T.-J. Association of Cerebral Venous Thrombosis with mRNA COVID-19 Vaccines: A Disproportionality Analysis of the World Health Organization Pharmacovigilance Database. Vaccines 2022, 10, 799. https://doi.org/10.3390/vaccines10050799

Sharifian-Dorche M, Bahmanyar M, Sharifian- Dorche A, et al. Vaccine-induced immune thrombotic thrombocytopenia and cerebral venous sinus thrombosis post COVID-19 vaccination; a systematic review. J Neurol Sci 2021;428:117607.

Tu T.M., Yi S.J., Koh J.S., et al. Incidence of cerebral venous thrombosis following SARS-CoV-2 infection vs mRNA SARS-CoV-2 vaccination in Singapore. JAMA Netw Open. 2022;5(3):e222940. - PMC - PubMed

Dakay K., Cooper J., Bloomfield J., et al. Cerebral venous sinus thrombosis in COVID-19 infection: A case series and review of the literature. J Stroke Cerebrovasc Dis. 2021;30(1) - PMC - PubMed

McCullough-Hicks M.E., Halterman D.J., Anderson D., Cohen K., Lakshminarayan K. High incidence and unique features of cerebral venous sinus thrombosis in hospitalized patients with COVID-19 infection. Stroke. 2022;53(9):e407–e410. - PMC - PubMed

D'Agostino V., Caranci F., Negro A., Piscitelli V., Tuccillo B., Fasano F., Sirabella G., Marano I., Granata V., Grassi R., et al. A Rare Case of Cerebral Venous Thrombosis and Disseminated Intravascular Coagulation Temporally Associated to the COVID-19 Vaccine Administration. J. Pers. Med. 2021;11:285. doi: 10.3390/jpm11040285. [DOI] [PMC free article] [PubMed] [Google Scholar]

[Cerebral Venous Sinus Thrombosis and Thrombotic Events After Vector-Based COVID-19 Vaccines: A Systematic Review and Meta-analysis.]
Palaiodimou L, Stefanou MI, Katsanos AH, Aguiar de Sousa D, Coutinho JM, Lagiou P, Michopoulos I, Naska A, Giannopoulos S, Vadikolias K, Voumvourakis KI, Papaevangelou V, Vassilakopoulos TI, Tsiodras S, Tsivgoulis G. Neurology. 2021 Nov 23;97(21):e2136-e2147. doi: 10.1212/WNL.0000000000012896. Epub 2021 Oct 5. PMID: 34610990

Palaiodimou L., Stefanou M.I., de Sousa D.A., Coutinho J.M., Papadopoulou M., Papaevangelou V., Vassilakopoulos T.I., Tsiodras S., Filippou D.K., Tsivgoulis G. Cerebral venous sinus thrombosis in the setting of COVID-19 vaccination: A systematic review and meta-analysis. J. Neurol. 2022;269:3413–3419. doi: 10.1007/s00415-022-11101-2. [DOI] [PMC free article] [PubMed] [Google Scholar]

[Characteristics and Outcomes of Patients With Cerebral Venous Sinus Thrombosis in SARS-CoV-2 Vaccine-Induced Immune Thrombotic Thrombocytopenia.]
Sánchez van Kammen M, Aguiar de Sousa D, Poli S, Cordonnier C, Heldner MR, van de Munckhof A, Krzywicka K, van Haaps T, Ciccone A, Middeldorp S, Levi MM, Kremer Hovinga JA, Silvis S, Hiltunen S, Mansour M, Arauz A, Barboza MA, Field TS, Tsivgoulis G, Nagel S, Lindgren E, Tatlisumak T, Jood K, Putaala J, Ferro JM, Arnold M, Coutinho JM; Cerebral Venous Sinus Thrombosis With Thrombocytopenia Syndrome Study Group; Sharma AR, Elkady A, Negro A, Günther A, Gutschalk A, Schönenberger S, Buture A, Murphy S, Paiva Nunes A, Tiede A, Puthuppallil Philip A, Mengel A, Medina A, Hellström Vogel Å, Tawa A, Aujayeb A, Casolla B, Buck B, Zanferrari C, Garcia-Esperon C, Vayne C, Legault C, Pfrepper C, Tracol C, Soriano C, Guisado-Alonso D, Bougon D, Zimatore DS, Michalski D, Blacquiere D, Johansson E, Cuadrado-Godia E, De Maistre E, Carrera E, Vuillier F, Bonneville F, Giammello F, Bode FJ, Zimmerman J, d'Onofrio F, Grillo F, Cotton F, Caparros F, Puy L, Maier F, Gulli G, Frisullo G, Polkinghorne G, Franchineau G, Cangür H, Katzberg H, Sibon I, Baharoglu I, Brar J, Payen JF, Burrow J, Fernandes J, Schouten J, Althaus K, Garambois K, Derex L, Humbertjean L, Lebrato Hernandez L, Kellermair L, Morin … [See abstract for full author list ➔] JAMA Neurol. 2021 Nov 1;78(11):1314-1323. doi: 10.1001/jamaneurol.2021.3619. PMID: 34581763 Free PMC article.

[Cerebral venous sinus thrombosis after adenovirus-vectored COVID-19 vaccination: review of the neurological-neuroradiological procedure.]
Wittstock M, Walter U, Volmer E, Storch A, Weber MA, Großmann A. Neuroradiology. 2022 May;64(5):865-874. doi: 10.1007/s00234-022-02914-z. Epub 2022 Feb 19. PMID: 35184205 Free PMC article. Review.

[US Case Reports of Cerebral Venous Sinus Thrombosis With Thrombocytopenia After Ad26.COV2.S Vaccination, March 2 to April 21, 2021.]
See I, Su JR, Lale A, Woo EJ, Guh AY, Shimabukuro TT, Streiff MB, Rao AK, Wheeler AP, Beavers SF, Durbin AP, Edwards K, Miller E, Harrington TA, Mba-Jonas A, Nair N, Nguyen DT, Talaat KR, Urrutia VC, Walker SC, Creech CB, Clark TA, DeStefano F, Broder KR. JAMA. 2021 Jun 22;325(24):2448-2456. doi: 10.1001/jama.2021.7517. PMID: 33929487 Free PMC article.

[[Cerebral vein/venous sinus thrombosis with thrombocytopenia syndrome after COVID-19 vaccination].]
Kawano H, Hashimoto Y, Hirano T. Rinsho Shinkeigaku. 2021 Sep 28;61(9):594-601. doi: 10.5692/clinicalneurol.cn-001646. Epub 2021 Aug 7. PMID: 34373413 Review. Japanese.

[Extensive Cerebral Venous Sinus Thrombosis Post COVID-19 Vaccination.]
Foo LM, Wan Hitam WH, Ibrahim M, Sonny Teo KS. Cureus. 2023 Jan 11;15(1):e33637. doi: 10.7759/cureus.33637. eCollection 2023 Jan. PMID: 36788859 Free PMC article.

krzywicka K, Heldner MR, van Kammen MS, et al. Post-Sars-Cov-2-vaccination cerebral venous sinus thrombosis: an analysis of cases notified to the european medicines agency. Eur J Neurol. 2021;28(11):3656–3662. doi: 10.1111/ene.15029. - DOI - PMC - PubMed

van de Munckhof A, Krzywicka K, de Sousa DA, et al. Declining mortality of cerebral venous sinus thrombosis with thrombocytopenia after Sars-Cov-2 vaccination. Eur J Neurol. 2022;29(1):339–344. doi: 10.1111/ene.15113. - DOI - PMC - PubMed

Ohaeri C, Thomas DR, Salmon J, Cottrell S, Lyons J, Akbari A, Lyons RA, Torabi F, Davies GG, Williams C. Comparative risk of cerebral venous sinus thrombosis (CVST) following COVID-19 vaccination or infection: A national cohort study using linked electronic health records. Hum Vaccin Immunother. 2022 Nov 30;18(6):2127572. doi: 10.1080/21645515.2022.2127572. Epub 2022 Oct 27. PMID: 36302124; PMCID: PMC9746546.

ΑΝΟΣΟΛΟΓΙΚΟΥ ΤΥΠΟΥ ΘΡΟΜΒΟΠΕΝΙΑ ΜΕ ΘΡΟΜΒΩΣΕΙΣ (Thrombocytopenia with thrombosis syndrome TTS)

Αρκετές περιπτώσεις θρομβοεμβολικών επεισοδίων με θρομβοπενία παρατηρήθηκαν εντός 7- 10 ημερών μετά τη χορήγηση εμβολίου ιδίως της Astra-Zeneka

A. Hviid, J.V. Hansen, E.M. Thiesson, J. Wohlfahrt Association of AZD1222 and BNT162b2 COVID-19 vaccination with thromboembolic and thrombocytopenic events in frontline personnel: a retrospective cohort study Ann Intern Med, 175 (2022), pp. 541-546, 10.7326/M21-2452 View at publisherView in ScopusGoogle Scholar

Hippisley-Cox J, Patone M, Mei XW, Saatci D, Dixon S, Khunti K, Zaccardi F, Watkinson P, Shankar-Hari M, Doidge J, Harrison DA, Griffin SJ, Sheikh A, Coupland CAC. Risk of thrombocytopenia and thromboembolism after covid-19 vaccination and SARS-CoV-2 positive testing: self-controlled case series study. BMJ. 2021 Aug 26;374:n1931. doi: 10.1136/bmj.n1931. PMID: 34446426; PMCID: PMC8388189. PMC - PubMed

- *Tiede A, Sachs UJ, Czwalinna A, et al. Prothrombotic immune thrombocytopenia after COVID-19 vaccine [published online ahead of print, 2021 Apr 28]. Blood. 2021;blood.2021011958. 10.1182/blood.2021011958. 13*

Mekheal E.M., Millet C., Mekheal N., Ghrewati M., Mechineni A., Maroules M. Coincidental or causal? A case report of acquired thrombotic thrombocytopenic purpura following mRNA-1273 Covid-19 vaccination. Hematol Transfus Cell Ther. 2022 - PMC - PubMed

See I., Lale A., Marquez P., et al. Case series of thrombosis with thrombocytopenia syndrome after COVID-19 vaccination-United States, December 2020 to August 2021. Ann Intern Med. 2022;175(4):513–522. - PMC - PubMed

ΑΝΟΣΟΛΟΓΙΚΟΥ ΤΥΠΟΥ ΘΡΟΜΒΩΤΙΚΗ ΘΡΟΜΒΟΠΕΝΙΚΗ ΠΟΡΦΥΡΑ ΛΟΓΩ ΕΜΒΟΛΙΟΥ (Vaccine-induced immune thrombotic thrombocytopenia - VITT)

Sharifian-Dorche M, Bahmanyar M, Sharifian-Dorche A, Mohammadi P, Nomovi M, Mowla A. Vaccine-induced immune thrombotic thrombocytopenia and cerebral venous sinus thrombosis post COVID-19 vaccination; a systematic review. J Neurol Sci. 2021 Sep 15;428:117607. doi: 10.1016/j.jns.2021.117607. Epub 2021 Aug 3. PMID: 34365148; PMCID: PMC8330139.

Elberry MH, Abdelgawad HAH, Hamdallah A, Abdella WS, Ahmed AS, Ghaith HS, Negida A. A systematic review of vaccine-induced thrombotic thrombocytopenia in individuals who received COVID-19 adenoviral-vector-based vaccines. J Thromb Thrombolysis. 2022 May;53(4):798-823. doi: 10.1007/s11239-021-02626-w. Epub 2022 Feb 14. PMID: 35157188; PMCID: PMC8853120.

Kim AY, Woo W, Yon DK, Lee SW, Yang JW, Kim JH, Park S, Koyanagi A, Kim MS, Lee S, Shin JI, Smith L. Thrombosis patterns and clinical outcome of COVID-19 vaccine-induced immune thrombotic thrombocytopenia: A Systematic Review and Meta-Analysis. Int J Infect Dis. 2022 Jun;119:130-139. doi: 10.1016/j.ijid.2022.03.034. Epub 2022 Mar 24. Erratum in: Int J Infect Dis. 2022 Oct;123:166. doi: 10.1016/j.ijid.2022.08.025. PMID: 35339716; PMCID: PMC8942584.

Pottegård A, Lund LC, Karlstad Ø, Dahl J, Andersen M, Hallas J, et al. Arterial events, venous thromboembolism, thrombocytopenia, and bleeding after vaccination with Oxford-AstraZeneca ChAdOx1-S in Denmark and Norway: population based cohort study. BMJ. 2021;373:n1114.

***Hafeez M.U.**, Ikram M., Shafiq Z., Sarfraz A., Sarfraz Z., Jaiswal V., et al. COVID-19 vaccine-associated thrombosis with thrombocytopenia syndrome (TTS): a systematic review and post hoc analysis. Clin Appl Thromb Hemost. 2021;27 doi: 10.1177/10760296211048815.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Andrews N.J.**, Stowe J., Ramsay M.EB., Miller E. Risk of venous thrombotic events and thrombocytopenia in sequential time periods after ChAdOx1 and BNT162b2 COVID-19 vaccines: a national cohort study in England. Lancet Reg Health Eur. 2022;13 doi: 10.1016/j.lanepe.2021.100260.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Yamamoto K. Risk of heparinoid use in cosmetics and moisturizers in individuals vaccinated against severe acute respiratory syndrome coronavirus 2. Thromb J. 2021 Sep 16;19(1):67. doi: 10.1186/s12959-021-00320-8. PMID: 34530838; PMCID: PMC8443895.

Burn, Edward and Roel, Elena and Pistillo, Andrea and Fernandez-Bertolín, Sergio and Aragón, Maria and Reyes, Carlen and Verhamme, Katia and Rijnbeek, Peter and Li, Xintong and Strauss, Victoria and Prieto-Alhambra, Daniel and Duarte-Salles, Talita, Thromboembolic Events and Thrombosis With Thrombocytopenia After COVID-19 Infection and Vaccination in Catalonia, Spain. Available at SSRN: https://ssrn.com/abstract=3886421 or http://dx.doi.org/10.2139/ssrn.3886421

Wise J. Covid-19: European countries suspend use of Oxford-AstraZeneca vaccine after reports of blood clots. BMJ 2021; 372: n699.

Aleem A, Nadeem AJ. Coronavirus (COVID-19) Vaccine-Induced Immune Thrombotic Thrombocytopenia (VITT). 2022 Oct 3. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan–. PMID: 34033367.

Zidan A, Noureldin A, Kumar SA, Elsebaie A, Othman M. COVID-19 Vaccine-Associated Immune Thrombosis and Thrombocytopenia (VITT): Diagnostic Discrepancies and Global Implications. Semin Thromb Hemost. 2023 Feb;49(1):9-14. doi: 10.1055/s-0042-1759684. Epub 2023 Jan 5. PMID: 36603593. https://doi.org/10.1055/s-0042-1759684

Matar RH, Than CA, Nakanishi H, Daniel RS, Smayra K, Sim BL, Beran A, Danoun OA. Outcomes of patients with thromboembolic events following coronavirus disease 2019 AstraZeneca vaccination: a systematic review and meta-analysis. Blood Coagul Fibrinolysis. 2022 Mar 1;33(2):90-112. doi: 10.1097/MBC.0000000000001113. PMID: 34980833; PMCID: PMC8815637. https://doi.org/10.1097/MBC.0000000000001113

Rizk JG, Gupta A, Sardar P, Henry BM, Lewin JC, Lippi G, Lavie CJ. Clinical Characteristics and Pharmacological Management of COVID-19 Vaccine-Induced Immune Thrombotic Thrombocytopenia With Cerebral Venous Sinus Thrombosis: A Review. JAMA Cardiol. 2021 Dec 1;6(12):1451-1460. doi: 10.1001/jamacardio.2021.3444. PMID: 34374713.

Xu H, Zhang B, Xie L. Challenges in treating primary immune thrombocytopenia patients undergoing COVID-19 vaccination: A retrospective study. Open Med (Wars). 2024 Mar 23;19(1):20240928. PMID: **38584820** PMCID: PMC10997003 DOI: 10.1515/med-2024-0928

The study suggests that COVID-19 vaccination may lead to a lower response rate to first-line treatment in *de novo* ITP patients.

Bidari A, Asgarian S, Pour Mohammad A, Naderi D, Anaraki SR, Gholizadeh Mesgarha M, Naderkhani M. Immune thrombocytopenic purpura secondary to COVID-19 vaccination: A systematic review. Eur J Haematol. 2023 Apr;110(4):335-353. PMID: **36562217** PMCID: PMC9880659 DOI: 10.1111/ejh.13917

Lamprinou M, Sachinidis A, Stamoula E, Vavilis T, Papazisis G. COVID-19 vaccines adverse events: potential molecular mechanisms. Immunol Res. 2023 Jun;71(3):356-372. doi: 10.1007/s12026-023-09357-5. Epub 2023 Jan 6. PMID: 36607502; PMCID: PMC9821369.

Montague SJ, Smith CW, Lodwick CS, Stoneley C, Roberts M, Lowe GC, Lester WA, Watson SP, Nicolson PLR. Anti-platelet factor 4 immunoglobulin G levels in vaccine-induced immune thrombocytopenia and thrombosis: Persistent positivity through 7 months. Res Pract Thromb Haemost. 2022 May 4;6(3):e12707. doi: 10.1002/rth2.12707. PMID: 35515079; PMCID: PMC9066380.

Pitkänen HH, Jouppila A, Helin T, Dulipati V, Kotimaa J, Meri S, Kantele A, Jalkanen P, Julkunen I, Lassila R. COVID-19 adenovirus vaccine triggers antibodies against PF4 complexes to activate complement and platelets. Thromb Res. 2021 Dec;208:129-137. doi: 10.1016/j.thromres.2021.10.027. Epub 2021 Nov 6. PMID: 34768097; PMCID: PMC8571998.

Pavord S et al (2021) Clinical features of vaccine-induced immune thrombocytopenia and thrombosis. N Engl J Med 385(18):1680–1689 - DOI - PubMed

Mohseni Afshar Z, Babazadeh A, Janbakhsh A, et al. Vaccine-induced immune thrombotic thrombocytopenia after vaccination against Covid-19: A clinical dilemma for clinicians and patients. Rev Med Virol. 2022; 32(2): e2273. doi:10.1002/rmv.2273

Vaccine-induced immune thrombotic thrombocytopenia and cerebral venous sinus thrombosis post COVID-19 vaccination; a systematic review. J Neurol Sci 2021;428:117607

Wiedmann M, Skattør T, Stray-Pedersen A, et al. Vaccine induced immune thrombotic thrombocytopenia causing a severe form of cerebral venous thrombosis with high fatality rate: a case series. Front Neurol 2021;12:721146.

Aladdin Y, Algahtani H, Shirah B. Vaccine-induced immune thrombotic thrombocytopenia with disseminated Intravascular coagulation and death following the ChAdOx1 nCoV- 19 vaccine. J Stroke Cerebrovasc Dis 2021;30:105938

***Krzywicka K**, Heldner MR, Sánchez van Kammen M, et al. Post-SARS-CoV-2-vaccination cerebral venous sinus thrombosis: an analysis of cases notified to the European Medicines Agency. Eur J Neurol. 2021;28(11):3656 3662. doi: 10.1111/ene.15029.* [DOI] [PMC free article] [PubMed] [Google Scholar]

10 Cases of Immune Thrombocytopenia (ITP): Relapse Versus de novo After COVID-19 Vaccination
https://pubmed.ncbi.nlm.nih.gov/35108113/

Hammami E., Lamarque M., Aujoulat O., Debliquis A., Drénou B., Harzallah I. Acquired thrombotic thrombocytopenic purpura after BNT162b2 COVID-19 vaccine: case report and literature Review. Lab Med. 2022;53(6):e145–e148. - PMC - PubMed

Gresele P, Momi S, Marcucci R, Ramundo F, De Stefano V, Tripodi A. Interactions of adenoviruses with platelets and coagulation and the vaccine-induced immune thrombotic thrombocytopenia syndrome. Haematologica. 2021 Dec 1;106(12):3034-3045. doi: 10.3324/haematol.2021.279289. PMID: 34407607; PMCID: PMC8634187.

Siegler JE, Klein P, Yaghi S, Vigilante N, Abdalkader M, Coutinho JM, Abdul Khalek F, Nguyen TN. Cerebral Vein Thrombosis With Vaccine-Induced Immune Thrombotic Thrombocytopenia. Stroke. 2021 Aug;52(9):3045-3053. doi: 10.1161/STROKEAHA.121.035613. Epub 2021 Jul 26. PMID: 34304601; PMCID: PMC8378439.

McGonagle D, De Marco G, Bridgewood C. Mechanisms of Immunothrombosis in Vaccine-Induced Thrombotic Thrombocytopenia (VITT) Compared to Natural SARS-CoV-2 Infection. J Autoimmun. 2021 Jul;121:102662. doi: 10.1016/j.jaut.2021.102662. Epub 2021 May 19. PMID: 34051613; PMCID: PMC8133385.

A. Hann, H. Hartog, A. Nutu, K. Quist, R. Sanabria-Mateos, G.H.B. Greenhall, *et al.* Liver graft outcomes from donors with vaccine induced thrombosis and thrombocytopenia (VITT): united Kingdom multicenter experience
Am J Transplant, 22 (3) (2022), pp. 996-998
View PDFView articleCrossrefView in ScopusGoogle Scholar13

A. Bourguignon, D.M. Arnold, T.E. Warkentin, J.W. Smith, T. Pannu, J.M. Shrum, *et al.* Adjunct immune globulin for vaccine-induced immune thrombotic thrombocytopenia. N Engl J Med, 385 (8) (2021), pp. 720-728 View at publisher CrossrefView in ScopusGoogle Scholar14

C. Vayne, J. Rollin, Y. Gruel, C. Pouplard, H. Galinat, O. Huet, *et al.*
PF4 immunoassays in vaccine-induced thrombotic thrombocytopenia
N Engl J Med, 385 (4) (2021), pp. 376-378 View at publisher
CrossrefView in ScopusGoogle Scholar

***Elalamy I.**, Gerotziafas G., Alamowitch S., Laroche J.P., Van Dreden P., Ageno W., Beyer-Westendorf J., Cohen A.T., Jimenez D., Brenner B., et al. SARS-CoV-2 Vaccine and Thrombosis: An Expert Consensus on Vaccine-Induced Immune Thrombotic Thrombocytopenia. Thromb. Haemost. 2021;121:982–991. doi: 10.1055/a-1499-0119.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***WHO** Guidance for Clinical Case Management of Thrombosis with Thrombocytopenia Syndome (TTS) Following Vaccination to Prevent Coronavirus Disease (COVID-19) [(accessed on 7 July 2023)]. Available online: https://apps.who.int/iris/bitstream/handle/10665/342999/WHO-2019-nCoV-TTS-2021.1-eng.pdf?sequence=1&isAllowed=y.* [PubMed]

Qasim H, Rahhal A, Husain A, Alammora A, Alsa'ed K, Alsayed AAM, Faiyoumi B, Maen AbuAfifeh L, Abu-Tineh M, Alshurafa A, Yassin MA. Immune Thrombocytopenia Relapse in Patients Who Received mRNA COVID-19 Vaccines. J Blood Med. 2023 Apr 14;14:295-302. PMID: 37082002; PMCID: [PMC10112532](PMC10112532)
DOI: [10.2147/JBM.S396026](10.2147/JBM.S396026)
mRNA COVID-19 vaccines increase the risk of ITP relapse and can lead to a prolonged reduction in platelet count in a proportion of ITP patients, with no statistically significant difference between Comirnaty and Spikevax vaccines.

Kaicker S, Martinko K, Bussel JB. Effects of COVID-19 vaccination on platelet counts and bleeding in children, adolescents, and young adults with immune thrombocytopenia. Pediatr Blood Cancer. 2023 Jan;70(1):e30051. doi: 10.1002/pbc.30051. Epub 2022 Nov 1. PMID: **36317671** PMCID: [PMC9878097](PMC9878097)
DOI: [10.1002/pbc.30051](10.1002/pbc.30051)

Lee EJ, Beltrami-Moreira M, Al-Samkari H, Cuker A, DiRaimo J, Gernsheimer T, Kruse A, Kessler C, Kruse C, Leavitt AD, Lee AI, Liebman HA, Newland AC, Ray AE, Tarantino MD, Thachil J, Kuter DJ, Cines DB, Bussel JB. SARS-CoV-2 vaccination and ITP in patients with de novo or preexisting ITP. Blood. 2022 Mar 10;139(10):1564-1574. PMID: **34587251** PMCID: [PMC8483984](PMC8483984) DOI: 10.1182/blood.2021013411
Comment in

- Vaccinations and ITP: keep on track(ing).

Bakchoul T, Singh A. Blood. 2022 Mar 10;139(10):1437-1438. doi: 10.1182/blood.2021014193. PMID: 35267007 Free PMC article. No abstract available.

Visser C, Swinkels M, van Werkhoven ED, Croles FN, Noordzij-Nooteboom HS, Eefting M, Last-Koopmans SM, Idink C, Westerweel PE, Santbergen B, Jobse PA, Baboe F; RECOVAC-IR Consortium; Te Boekhorst PAW, Leebeek FWG, Levin MD, Kruip MJHA, Jansen AJG. COVID-19 vaccination in patients with immune thrombocytopenia. Blood Adv. 2022 Mar 22;6(6):1637-1644. PMID: **34941989** PMCID: [PMC8709724](PMC8709724) DOI: 10.1182/bloodadvances.2021006379

Choi PY, Hsu D, Tran HA, Tan CW, Enjeti A, Chen VMY, Merriman E, Yong ASM, Simpson J, Gardiner E, Cherbuin N, Curnow J, Pepperell D, Bird R. Immune thrombocytopenia and COVID-19 vaccination: Outcomes and comparisons to prepandemic patients. Res Pract Thromb Haemost. 2023 Jan;7(1):100009. PMC9744687. PMID: **36531670** PMCID: [PMC9744687](PMC9744687)
DOI:10.1016/j.rpth.2022.100009

Leung H.H.L*., Perdomo J., Ahmadi Z., Zhen S.S., Rashi F.N., Enjeti A., Ting S.B., Chong J.J.H., Chong B.H. NETosis and thrombosis in vaccine-induced immune thrombotic thrombocytopenia. Nat. Commun. 2022;13:5206. doi: 10.1038/s41467-022-32946-1.* [[DOI](DOI)] [PMC free article] [PubMed] [Google Scholar]

Greinacher A*., Schönborn L., Siegerist F., Steil L., Palankar R., Handtke S., Reder A., Thiele T., Aurich K., Methling K., et al. Pathogenesis of vaccine-induced immune thrombotic thrombocytopenia (VITT) Seminars Hematol. 2022;59:97–107. doi: 10.1053/j.seminhematol.2022.02.004.* [[DOI](DOI)] [PMC free article] [PubMed] [Google Scholar]

***Talotta R.,** Robertson E.S. Antiphospholipid antibodies and risk of poast-COVID-19 vaccination thrombophilia: The straw that breaks the camels's back? Cytokine Growth Factor Rev. 2021;60:52–60. doi: 10.1016/j.cytogfr.2021.05.001.* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΕΠΙΠΛΟΚΕΣ ΑΠΟ ΤΟ ΕΜΒΟΛΙΟ Vaxzevria Ή ChAdOx1 nCov-19 ΤΗΣ ΕΤΑΙΡΕΙΑΣ AstraZeneca

Greinacher A, Thiele T, Warkentin TE, et al. A prothrombotic thrombocytopenic disorder resembling heparin-induced thrombocytopenia following coronavirus-19 vaccination. Research Square. 29 March 2021. www.researchsquare.com/article/rs-362354/v1.

***Aladdin Y**., Algahtani H., Shirah B. Vaccine-Induced Immune Thrombotic Thrombocytopenia with Disseminated Intravascular Coagulation and Death following the ChAdOx1 nCoV-19 Vaccine. J. Stroke Cerebrovasc. Dis. 2021;30:105938. doi: 10.1016/j.jstrokecerebrovasdis.2021.105938.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Wang Y.C., Chen T.C., Teng C.J., Wu C.H. ChAdOx1 nCov-19 vaccine-induced thrombotic thrombocytopenic purpura successfully treated with plasmapheresis. Ann Hematol. 2022;101(5):1123–1124. - PMC - PubMed

Ramanan S., Singh H., Menon P., Patel P.M., Parmar V., Malik D. Thrombotic thrombocytopenic purpura after Ad6.COV2.S vaccination. Cureus. 2022;14(8) - PMC - PubMed

Pottegard A., Lund L.C., Karlstad O., et al. Arterial events, venous thromboembolism, thrombocytopenia, and bleeding after vaccination with Oxford-AstraZeneca ChAdOx1-S in Denmark and Norway: population based cohort study. BMJ. 2021;373 - PMC - PubMed

European Medicines Agency., Pharmacovigilance Risk Assessment Committee. Signal assessment report on embolic and thrombotic events (SMQ) with COVID-19 Vaccine (ChAdOx1-S [recombinant]) – COVID-19 Vaccine AstraZeneca (Other viral vaccines). 2021 (accessed 13/09/2023).

Göbel CH, Heinze A, Karstedt S, Morscheck M, Tashiro L, Cirkel A, et al. Headache attributed to vaccination against COVID-19 (coronavirus SARS-CoV-2) with the ChAdOx1 nCoV-19
(AZD1222) vaccine: a multicenter observational cohort study.
Pain Ther. 2021;10(2):1309–30. https:// doi. org/ 10. 1007/s40122-021-00296-3.

M. Umbrello, N. Brena, R. Vercelli, R.A. Foa, M. Femia, U. Rossi, *et al.*
Successful treatment of acute spleno-porto-mesenteric vein thrombosis after ChAdOx1 nCoV-19 vaccine. A case report
J Crit Care, 65 (2021), pp. 72-75

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Vaxzevria (AstraZeneca) vaccine and thrombosis with ...

Australian Government Department of Health and Aged Care
https://www.health.gov.au › clinical-guidance › tts

12 Jan 2024 — There was a link between the AstraZeneca *vaccine* and a rare but serious side effect called thrombosis with thrombocytopenia syndrome (TTS

Sharifian-Dorche M, Bahmanyar M, Sharifian- Dorche A, et al.

Possible Risk of Thrombotic Events following Oxford-AstraZeneca COVID-19 Vaccination in Women Receiving Estrogen.

Soltani Hekmat A, Javanmardi K. Biomed Res Int. 2021 Oct 25;2021:7702863. doi: 10.1155/2021/7702863. eCollection 2021. PMID: 34734086 Free PMC article. Review.

Palladino, R.; Ceriotti, D.; De Ambrosi, D.; De Vito, M.; Farsoni, M.; Seminara, G.; Barone-Adesi, F. A Quantitative Benefit–Risk Analysis of ChAdOx1 nCoV-19 Vaccine among People under 60 in Italy. Vaccines 2021, 9, 618. https://doi.org/10.3390/vaccines9060618

Wallace M, Moulia D, Blain AE, et al. The Advisory Committee on Immunization Practices' recommendation for use of Moderna COVID-19 vaccine in adults aged 18 years and considerations for extended intervals for administration of primary series doses of mRNA COVID- 19 vaccines—United States, February 2022. MMWR Morb Mortal Wkly Rep. 2022;71(11):416-421. doi:10.15585/mmwr.mm7111a4

Two Cases of Immune Thrombocytopenia (ITP) Related to Viral Vector Vaccination ChAdOx1-S (AstraZeneca) and a Good Response after Thrombopoietin Receptor Agonist (TPO-RA) Therapy.

Salveridou K, Tzamalis T, Klaiber-Hakimi M, Haase S, Gröpper S, Giagounidis A. Hematol Rep. 2024 Sep 27;16(4):585-592. doi: 10.3390/hematolrep16040057. PMID: 39449300 Free PMC article.

[Uptake, effectiveness and safety of COVID-19 vaccines in individuals at clinical risk due to immunosuppressive drug therapy or transplantation procedures: a population-based cohort study in England.]

Chen DT, Copland E, Hirst JA, Mi E, Dixon S, Coupland C, Hippisley-Cox J. BMC Med. 2024 Jun 10;22(1):237. doi: 10.1186/s12916-024-03457-1. PMID: 38858672 Free PMC article.

[Antibodies against Platelet Glycoproteins in Clinically Suspected VITT Patients.]

Meier RT, Porcelijn L, Hofstede-van Egmond S, Caram-Deelder C, Coutinho JM, Henskens YMC, Kruip MJHA, Stroobants AK, Zwaginga JJ, van der Schoot CE, de Haas M, Kapur R. Antibodies (Basel). 2024 May 1;13(2):35. doi: 10.3390/antib13020035. PMID: 38804303 Free PMC article.

[Challenges in treating primary immune thrombocytopenia patients undergoing COVID-19 vaccination: A retrospective study.]

Xu H, Zhang B, Xie L. Open Med (Wars). 2024 Mar 23;19(1):20240928. doi: 10.1515/med-2024-0928. eCollection 2024. PMID: 38584820 Free PMC article.

[Antibodies against Platelet Glycoproteins in Clinically Suspected VITT Patients.]

Meier RT, Porcelijn L, Hofstede-van Egmond S, Caram-Deelder C, Coutinho JM, Henskens YMC, Kruip MJHA, Stroobants AK, Zwaginga JJ, van der Schoot CE, de Haas M, Kapur R. Antibodies (Basel). 2024 May 1;13(2):35. doi: 10.3390/antib13020035. PMID: 38804303 Free PMC article.

Varona JF*, García-Isidro M, Moeinvaziri M, Ramos-López M, Fernández-Domínguez M. 2021 Primary adrenal insufficiency associated with Oxford-AstraZeneca ChAdOx1 nCoV-19 vaccine-induced immune thrombotic thrombocytopenia (VITT) [published online ahead of print, Jul 10]. Eur J Intern Med. 2021;S0953–6205(21)00236–3. 10.1016/j.ejim.2021.06.025* [DOI] [PMC free article] [PubMed]

Simpson CR, *Shi T, Vasileiou E, et al. First-dose ChAdOx1 and BNT162b2 COVID-19 vaccines and thrombocytopenic, thromboembolic and hemorrhagic events in Scotland. Nat Med. 2021;27(7):1290–1297. doi: 10.1038/s41591-021-01408-4.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Pottegård A*, Lund LC, Karlstad Ø, et al. Arterial events, venous thromboembolism, thrombocytopenia, and bleeding after vaccination with Oxford-AstraZeneca ChAdOx1-S in Denmark and Norway: population based cohort study. BMJ. 2021;373:n1114. doi: 10.1136/bmj.n1114.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Lavin M, *Elder PT, O'Keeffe D, et al. Vaccine-induced immune thrombotic thrombocytopenia (VITT) - a novel clinico-pathological entity with heterogeneous clinical presentations [published online ahead of print, 2021 Jun 22]. Br J Haematol. 2021. 10.1111/bjh.17613.* [DOI] [PMC free article] [PubMed]

Tølbøll Sørensen AL, *Rolland M, Hartmann J, et al. A case of thrombocytopenia and multiple thromboses after vaccination with ChAdOx1 nCoV-19 against SARS-CoV-2. Blood*

Adv. 2021;5(12):2569–2574. doi: 10.1182/bloodadvances.2021004904. [DOI] [PMC free article] [PubMed] [Google Scholar]

Ben Saida I., Maatouk I., Toumi R., Bouslama E., Ben Ismail H., Ben Salem C. Acquired thrombotic thrombocytopenic purpura following inactivated COVID-19 vaccines: two case reports and a short literature review. Vaccines. 2022;10(7) - PMC - PubMed

Saluja P., Gautam N., Yadala S., Venkata A.N. Thrombotic thrombocytopenic purpura (TTP) after COVID-19 vaccination: a systematic review of reported cases. Thromb Res. 2022;214:115–121. - PMC - PubMed

Suresh P, *Petchey W. ChAdOx1 nCOV-19 vaccine-induced immune thrombotic thrombocytopenia and cerebral venous sinus thrombosis (CVST) BMJ Case Rep. 2021;14(6):e243931. doi: 10.1136/bcr-2021-243931.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Dias L*, Soares-Dos-Reis R, Meira J, et al. Cerebral venous thrombosis after BNT162b2 mRNA SARS-CoV-2 vaccine. J Stroke Cerebrovasc Dis. 2021;30(8):105906. doi: 10.1016/j.jstrokecerebrovasdis.2021.105906.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Tiede A, *Sachs UJ, Czwalinna A, et al. Prothrombotic immune thrombocytopenia after COVID-19 vaccine [published online ahead of print, 2021 Apr 28]. Blood. 2021;blood.2021011958. 10.1182/blood.2021011958. 13*

Ikenberg B, *Demleitner AF, Thiele T, et al. Cerebral venous sinus thrombosis after ChAdOx1 nCov-19 vaccination with a misleading first cerebral MRI scan. Stroke Vasc Neurol. 2021;8:svn-2021–001095. doi: 10.1136/svn-2021-001095.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Bonato S, *Artoni A, Lecchi A, et al. 2021 Massive cerebral venous thrombosis due to vaccine-induced immune thrombotic thrombocytopenia [published online ahead of print, 2021 Jul 15]. Haematologica. 10.3324/haematol.2021.279246* [DOI] [PMC free article] [PubMed]

Wang RL*, Chiang WF, Shyu HY, et al. COVID-19 vaccine-associated acute cerebral venous thrombosis and pulmonary artery embolism. QJM. 2021;10:hcab185. doi: 10.1093/qjmed/hcab185.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Taquet M, Husain M, Geddes JR, et al.. Cerebral venous thrombosis and portal vein thrombosis: a retrospective cohort study of 537,913 COVID-19 cases. Eclinicalmedicine 2021; 39: 101061. - PMC - PubMed

Wolf ME, Luz B, Niehaus L, et al.. Thrombocytopenia and intracranial venous sinus thrombosis after 'COVID-19 vaccine AstraZeneca' exposure. J Clin Med 2021; 10: 1599. - PMC - PubMed

Sheikh S. Thrombotic thrombocytopenia and central venous sinus thrombosis post – COVID-19 vaccination and its treatment with heparin alternatives. J Coll Physicians Surg Pak 2021; 31: 149. - PubMed

See I, Su JR, Lale A, et al.. US case reports of cerebral venous sinus thrombosis with thrombocytopenia after Ad26.COV2.S vaccination, March 2 to April 21, 2021. JAMA 2021; 325: 2448. - PMC - PubMed

Sørvoll IH, Horvei KD, Ernstsen SL, et al.. An observational study to identify the prevalence of thrombocytopenia and anti-PF4/polyanion antibodies in Norwegian health care workers after COVID-19 vaccination. J Thromb Haemost 2021; 19: 1813–1818. - PMC - PubMed

Mehta PR, Apap Mangion S, Benger M, et al.. Cerebral venous sinus thrombosis and thrombocytopenia after COVID-19 vaccination – a report of two UK cases. Brain Behav Immun 2021; 95: 514–517. - PMC - PubMed

Fanni D, Saba L, Demontis R, et al.. Vaccine-induced severe thrombotic thrombocytopenia following COVID-19 vaccination: a report of an autoptic case and review of the literature. Eur Rev Med Pharmacol Sci 2021; 25: 5063–5069. - PubMed

Castelli GP, Pognani C, Sozzi C, et al.. Cerebral venous sinus thrombosis associated with thrombocytopenia post-vaccination for COVID-19. Crit Care 2021; 25: 137. - PMC - PubMed

Franchini M, Testa S, Pezzo M, et al.. Cerebral venous thrombosis and thrombocytopenia post-COVID-19 vaccination. Thromb Res 2021; 202: 182–183. - PMC - PubMed

Aladdin Y, Algahtani H, Shirah B. Vaccine-induced immune thrombotic thrombocytopenia with disseminated intravascular coagulation and death following the ChAdOx1 nCoV-19 vaccine. J Stroke Cerebrovasc Dis 2021; 30: 105938. - PMC - PubMed

Scully M, *Singh D, Lown R, Poles A, Solomon T, Levi M, et al. Pathologic antibodies to platelet factor 4 after ChAdOx1 nCoV-19 vaccination. N Engl J Med. 2021;384:2202–2211. doi: 10.1056/NEJMoa2105385.* **[DOI] [PMC free article] [PubMed] [Google Scholar]**

Seyedi S, Navid S, Saadatian Z. Relapse of immune thrombocytopenia after receiving AstraZeneca coronavirus disease-2019 vaccine: A case report. Clin Case Rep. 2023 Sep 4;11(9):e7872. PMID: 37675411 PMCID: PMC10477723 DOI: 10.1002/ccr3.7872

de Mélo Silva ML Jr, *Lopes DP. 2021 Large hemorrhagic stroke after ChAdOx1 nCoV-19 vaccination: a case report [published online ahead of print, 2021 Jul 17]. Acta Neurol Scand. 10.1111/ane.13505.* [DOI] [PMC free article] [PubMed]

Bayas A, *Menacher M, Christ M, Behrens L, Rank A, Naumann M. Bilateral superior ophthalmic vein thrombosis, ischaemic stroke, and immune thrombocytopenia after ChAdOx1* *nCoV-19 vaccination. Lancet. 2021;397(10285):e11. doi: 10.1016/S0140-6736(21)00872-2.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Al-Mayhani T**, Saber S, Stubbs MJ, et al. Ischaemic stroke as a presenting feature of ChAdOx1 nCoV-19 vaccine-induced immune thrombotic thrombocytopenia. J Neurol Neurosurg Psychiatry. 2021;92(11):1247–1248. doi: 10.1136/jnnp-2021-326984.* [DOI] [PubMed] [Google Scholar]

***Blauenfeldt RA,** Kristensen SR, Ernstsen SL, Kristensen CCH, Simonsen CZ, Hvas AM. Thrombocytopenia with acute ischemic stroke and bleeding in a patient newly vaccinated with an adenoviral vector-based COVID-19 vaccine. J Thromb Haemost. 2021;19(7):1771–1775. doi: 10.1111/jth.15347.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Malik B,** Kalantary A, Rikabi K, Kunadi A. Pulmonary embolism, transient ischaemic attack and thrombocytopenia after the Johnson & Johnson COVID-19 vaccine. BMJ Case Rep. 2021;14(7):e243975. doi: 10.1136/bcr-2021-243975.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Walter U**, Fuchs M, Grossmann A, et al. 2021 Adenovirus-vectored COVID-19 vaccine-induced immune thrombosis of carotid artery: a case report [published online ahead of print, 2021 Jul 26]. Neurology. 10.1212/WNL.0000000000012576.* [DOI] [PubMed]

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COVID-19 Vaccines: A Radiological Review of the Good, the Bad, and the Ugly

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COVID-19 mRNA Vaccines: A Retrospective Observational Pharmacovigilance Study.

Ferrara F, Mancaniello C, Varriale A, Sorrentino S, Zovi A, Nava E, Trama U, Boccellino M, Vitiello A. Clin Drug Investig. 2022 Dec;42(12):1065-1074. doi: 10.1007/s40261-022-01216-9. Epub 2022 Oct 23. PMID: 36274082 Free PMC article.

Post-authorization safety surveillance of Ad.26.COV2.S vaccine: Reports to the Vaccine Adverse Event Reporting System and v-safe, February 2021-February 2022.

Woo EJ, Gee J, Marquez P, Baggs J, Abara WE, McNeil MM, Dimova RB, Su JR. Vaccine. 2023 Jul 5;41(30):4422-4430. doi: 10.1016/j.vaccine.2023.06.023. Epub 2023 Jun 14. PMID: 37321898 Free PMC article. Review.

Schulz JB*, Berlit P, Diener HC, Gerloff C, Greinacher A, Klein C. 2021 COVID-19 vaccine-associated cerebral venous thrombosis in Germany. medRxiv.04.30.21256383; doi: 10.1101/2021.04.30.21256383. 14* [DOI] [PMC free article] [PubMed

Schultz N.H*., Sørvoll I.H., Michelsen A.E., Munthe L.A., Lund-Johansen F., Ahlen M.T., Wiedmann M., Aamodt A.-H., Skattør T.H., Tjønnfjord G.E., et al. Thrombosis and Thrombocytopenia after ChAdOx1 nCoV-19 Vaccination. N. Engl. J. Med. 2021;384:2124–2130. doi: 10.1056/NEJMoa2104882.* [DOI] [PMC free article] [PubMed] [Google Scholar]

García-Grimshaw M, Ceballos-Liceaga SE, Hernández-Vanegas LE, Núñez I, Hernández-Valdivia N, Carrillo-García DA, et al. Neurologic adverse events among 704,003 first-dose recipientsof the BNT162b2 mRNA COVID-19 vaccine in Mexico: a nationwide descriptive study. Clin Immunol. 2021;229:108786. https://doi.org/10.1016/j.clim.2021.108786.

The article reports on the incidence of neurological adverse events post-vaccination with the first dose of Pfizer-BioNTech vaccine in a Mexican cohort.

Mishra, Y. K., Elrashdy, F., Tambuwala, M. M., Hassan, S. S., Adadi, P., Seyran, M., Abd El-Aziz, T. M., Rezaei, N., Lal, A., Aljabali, A. A. A., Kandimalla, R., Bazan, N. G., Azad, G. K., Sherchan, S. P., Choudhury, P. P., Serrano-Aroca, Á., **Takayama, K.,** Chauhan, G., Pizzol, D., ... Uversky, V. N. (2021). Autoimmunity roots of the thrombotic events after COVID-19 vaccination. *Autoimmunity Reviews*, *20*(11), Article 102941. https://doi.org/10.1016/j.autrev.2021.102941

Greinacher A*, Thiele T, Warkentin TE, Weisser K, Kyrle PA, Eichinger S. Thrombotic thrombocytopenia after ChAdOx1 nCov-19 vaccination. N Engl J Med. 2021;384:2092–2101. doi: 10.1056/NEJMoa2104840.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Ostrowski SR, Sogaard OS, Tolstrup M, Staerke NB, Lundgren J, Ostergaard L, et al. Inflammation and platelet activation after covid-19 vaccines - possible mechanisms behind vaccine-induced immune thrombocytopenia and thrombosis. Front Immunol. (2021) 12:779453. doi: 10.3389/fimmu.2021. 779453

Muir K-L, Kallam A, Koepsell SA, Gundabolu K. Thrombotic thrombocytopenia after Ad26.Cov2.S vaccination. N Engl J Med. (2021) 384:1964–5. doi: 10.1056/NEJMc2105869

Simpson C.R., Kerr S., Katikireddi S.V., et al. Second-dose ChAdOx1 and BNT162b2 COVID-19 vaccines and thrombocytopenic, thromboembolic and hemorrhagic events in Scotland. Nat Commun. 2022;13(1):4800. - PMC - PubMed

Shateri Amiri B, Radkhah H, Taslimi R, Shahbazi Dastjerdi Z, Khadembashiri MM, Gholizadeh Mesgarha M, Rahimipour Anaraki S. Thrombotic thrombocytopenic purpura following ChAdOx1 nCov-19 vaccination: A case report. IDCases. 2023 May 8;32:e01795. PMID: 37214181 PMCID: PMC10196846 DOI: 10.1016/j.idcr.2023.e01795

ΑΣΘΕΝΕΙΣ ΜΕ ΔΙΑΤΑΡΑΧΕΣ ΥΠΕΡΠΗΚΤΙΚΟΤΗΤΑΣ, ΘΡΟΜΒΟΦΙΛΙΑ

N.A. John, J. John, P. Kamble, A. Singhal, V. Daulatabad, I.S. Vamshidhar
COVID 19 vaccine in patients of hypercoagulable disorders: a clinical perspective
Horm Mol Biol Clin Investig, 43 (1) (2021), pp. 89-96 View in Scopus Google Scholar

Sekulovski M, Mileva N, Vasilev GV, Miteva D, Gulinac M, Peshevska-Sekulovska M, Chervenkov L, Batselova H, Vasilev GH, Tomov L, Lazova S, Vassilev D, Velikova T. Blood Coagulation and Thrombotic Disorders following SARS-CoV-2 Infection and COVID-19 Vaccination. Biomedicines. 2023 Oct 17;11(10):2813. doi: 10.3390/biomedicines11102813. PMID: 37893186; PMCID: PMC10604891.

Velikov T., *Keremidchiev G., Velikova T. How to use Safely COVID-19 Vaccines in Patients on Anticoagulants or Antiaggregants. Int. J. Preven Cardio. 2021;1:32–33.* [Google Scholar]

Duminuco A., *Calagna M., Markovic U., Esposito B., Grasso S., Riccobene C., Di Raimondo F., Giuffrida G. Acquired hemophilia A following COVID-19 vaccination—The importance of prompt diagnosis: A case report. Transfus. Apher. Sci. 2023;62:103577. doi:* ***10.1016/j.transci.2022.103577.*** **[DOI] [PMC free article] [PubMed] [Google Scholar]**

Houghton D.E., *Wysokinski W.E., Padrnos L.J., Shah S., Wysokinska E., Pruthi R., Ghorbanzadeh A., Ashrani A., Sridharan M., McBane R.D., et al. Venous thromboembolism after COVID-19 vaccination in patients with thrombophilia. Am. J. Hematol. 2023;98:566–570. doi: 10.1002/ajh.26848.* [DOI] [PubMed] [Google Scholar]

ΕΠΙΚΤΗΤΗ ΑΙΜΟΡΡΟΦΙΛΙΑ

Duminuco A., *Calagna M., Markovic U., Esposito B., Grasso S., Riccobene C., Di Raimondo F., Giuffrida G. Acquired hemophilia A following COVID-19 vaccination—The importance of prompt diagnosis: A case report. Transfus. Apher. Sci. 2023;62:103577. doi: 10.1016/j.transci.2022.103577.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Al Hennawi H., *Al Masri M.K., Bakir M., Albarazi M., Jazaeri F., Almasri T.N., Shoura S.J., Barakeh A.R.R., Taftafa A., Khan M.K., et al. Acquired Hemophilia A Post-COVID-19 Vaccination: A Case Report and Review. Cureus. 2022;14:e21909. doi: 10.7759/cureus.21909.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Happaerts M., *Vanassche T. Acquired hemophilia following COVID-19 vaccination: Case report and review of literature. Res. Pract. Thromb. Haemost. 2022;6:e12785. doi: 10.1002/rth2.12785.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Emna B., *Kmira Z., Hajer B.I., Nadia S., Yossra D., Amina B., Yosra B.Y., Haifa R., Abderrahim K. Acquired hemophilia A following COVID-19 vaccine: A case report. J. Med. Case Rep. 2023;17:125. doi: 10.1186/s13256-023-03850-z.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Ai Vuen L., *Aun Su-Yin E., Naila Kori A., Shah T.M. Case of acquired haemophilia a in Southeast Asia following COVID-19 vaccine. BMJ Case Rep. CP. 2022;15:e246922. doi: 10.1136/bcr-2021-246922.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Hosoi H., *Tane M., Kosako H., Ibe M., Takeyama M., Murata S., Mushino T., Sonoki T. Acute-type acquired hemophilia A after COVID-19 mRNA vaccine administration: A new disease entity? J. Autoimmun. 2022;133:102915. doi: 10.1016/j.jaut.2022.102915.* [DOI] [PMC free article] PubMed] [Google Scholar]

Radwi M., *Farsi S. A case report of acquired hemophilia following COVID-19 vaccine. J. Thromb. Haemost. 2021;19:1515–1518. doi: 10.1111/jth.15291.* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΜΗΝΟΡΡΑΓΙΕΣ (HEAVY MENSTUAL BLEEDING) , ΜΗΤΡΟΡΡΑΓΙΕΣ

Sue E. Peters†, Jill Newman†, Heather Ray, James A. Thorp, Tiffany Parotto, Brian Hooker, Dan McDyer, Leonard Murphy, Raphael B Stricker, Maureen McDonnell, Paul J. Mills, Warren Gieck, Christiane Northrup, †The two lead authors contributed equally., Menstrual Abnormalities Strongly Associated with Proximity to COVID-19 Vaccinated Individuals , International Journal of Vaccine Theory, Practice, and Research : Vol. 3 No. 2 (2024): Injuries, Causes, and Treatments, Part 2

Blix K, Laake I, Juvet L, Robertson AH, Caspersen IH, Mjaaland S, Skodvin SN, Magnus P, Feiring B, Trogstad L. Unexpected vaginal bleeding and COVID-19 vaccination in nonmenstruating women. Sci Adv. 2023 Sep 22;9(38):eadg1391. doi: 10.1126/sciadv.adg1391. Epub 2023 Sep 22. PMID: 37738335; PMCID: PMC10516485.

Gordillo-Marañón M, Szmigiel A, Yalmanová V, Caplanusi I, Genov G, Olsen DB, et al. COVID-19 vaccines and heavy menstrual bleeding: the impact of media attention on reporting to EudraVigilance. Drug Saf. 2024;47:783–98. - DOI - PubMed - PMC

Alvergne A, Kountourides G, Argentieri MA, Agyen L, Rogers N, Knight D, et al. A retrospective case–control study on menstrual cycle changes following COVID-19 vaccination and disease. iScience [Internet]. 2023;26.

BBC. Covid vaccine: period changes could be a short-term side effect. BBC News 2021.

Campbell H. Experts cool claims about impact of vaccines on menstrual cycles. Euronews 2021.

Haaretz. Some vaccinated Israeli women report irregular menstrual cycles, bleeding. Israel News, Haaretz.com 2021

Sadat Larijani M, Eybpoosh S, Doroud D, Bavand A, Moradi L, Ashrafian F, Tajmehrabi Namini P, Zali M, Ramezani A. Assessment of COVID-19 Vaccine Impact on Women's Menstrual Health within an 18-Month Follow-Up. Obstet Gynecol Int. 2024 Sep 26;2024:7344506. doi: 10.1155/2024/7344506. PMID: 39364209; PMCID: PMC11449560.

Latif R, Aldossary DA, Aljabari NA, Alowaied SS, Aljabari LA, Albash NJ, Alabdulhadi AS, Rafique N, Al-Asoom LI, Salem AM. Prevalence of menstrual irregularities after coronavirus disease 2019 vaccination: A cross-sectional study in the Eastern Province, Saudi

Arabia. J Family Community Med. 2024 Jan-Mar;31(1):71-78. doi: 10.4103/jfcm.jfcm_115_23. Epub 2024 Jan 8. PMID: 38406218; PMCID: PMC10883425.

Khan GA, Althubaiti A, Alshrif A, Alsayed Z, Jifree H. Dysmenorrhea, intermenstrual bleeding, menstrual flow volume changes, and irregularities following COVID-19 vaccination and the association with vaccine skepticism: A retrospective observational study. Womens Health (Lond). 2023 Jan-Dec;19:17455057231210094. doi: 10.1177/17455057231210094. PMID: 37966030; PMCID: PMC10652665.

Fallatah NI, Alrehaili BO, Alsulami SS, Al-Zalabani AH. Menstrual Changes Following COVID-19 Vaccination: A Cross-Sectional Study. Medicina (Kaunas). 2024 Jan 25;60(2):206. doi: 10.3390/medicina60020206. PMID: 38399494; PMCID: PMC10890281.

Baena-García L, Aparicio VA, Molina-López A, Aranda P, Cámara-Roca L, Ocón-Hernández O. Premenstrual and menstrual changes reported after COVID-19 vaccination: The EVA project. Womens Health (Lond). 2022 Jan-Dec;18:17455057221112237. doi: 10.1177/17455057221112237. PMID: 35833668; PMCID: PMC928**9916.**

Comment in

- Comment on: Premenstrual and menstrual changes reported after COVID-19 vaccination: The EVA project.

Marques TA. Womens Health (Lond). 2022 Jan-Dec;18:17455057221129395. doi: 10.1177/17455057221129395. PMID: 36217634 Free PMC article. No abstract available.

- Author response to comment on: Premenstrual and menstrual changes reported after COVID-19 vaccination: The EVA project.

Baena-García L, Aparicio VA. Womens Health (Lond). 2022 Jan-Dec;18:17455057221129411. doi: 10.1177/17455057221129411. PMID: 36217666 Free PMC article. No abstract available.

Farland LV, Khan SM, Shilen A, Heslin KM, Ishimwe P, Allen AM, Herbst-Kralovetz MM, Mahnert ND, Pogreba-Brown K, Ernst KC, Jacobs ET. COVID-19 vaccination and changes in the menstrual cycle among vaccinated persons. Fertil Steril. 2023 Mar;119(3):392-400. doi: 10.1016/j.fertnstert.2022.12.023. Epub 2022 Dec 17. PMID: 36539055; PMCID: PMC9758067.

Al Kadri HM, Al Sudairy AA, Alangari AS, Al Khateeb BF, El-Metwally AA. COVID-19 vaccination and menstrual disorders among women: Findings from a meta-analysis study. J Infect Public Health. 2023 May;16(5):697-704. doi: 10.1016/j.jiph.2023.02.019. Epub 2023 Mar 2. PMID: 36934644; PMCID: PMC9979695.

Rahimi Mansour F, Keyvanfar A, Najafiarab H, Rajaei Firouzabadi S, Sefidgar S, Hooshmand Chayijan S, Tarom M, Fadaei M, Farzaneh F, Karimzadeh Bardeei L, Tehrani S. Menstrual disturbances following COVID-19 vaccination: A probable puzzle about the role of endocrine and immune pathways. J Reprod Immunol. 2023 Aug;158:103952. doi: 10.1016/j.jri.2023.103952. Epub 2023 May 12. PMID: 37201456; PMCID: PMC10174728.

Trogstad L, Laake I, Robertson AH, Mjaaland S, Caspersen IH, Juvet LK, Magnus P, Blix K, Feiring B. Heavy bleeding and other menstrual disturbances in young women after COVID-19 vaccination. Vaccine. 2023 Aug 14;41(36):5271-5282. doi: 10.1016/j.vaccine.2023.06.088. Epub 2023 Jul 3. PMID: 37451876.

Alsalman M, Alhubail F, Bin Obaid F, Algouf I, Alomair B, Albunyan S, AlMudayris L, Alsalman Z, Khan AS. Impact of COVID-19 Vaccinations on Menstrual Bleeding. Cureus. 2023 Oct 20;15(10):e47360. doi: 10.7759/cureus.47360. PMID: 38021843; PMCID: PMC10659569.

Contreras-Rendon A, Garcia Vences EE, Olguin Ortega AA. The Evaluation of Menstrual Alterations in Mexican Women After Vaccination Against COVID-19. Cureus. 2024 Apr 22;16(4):e58783. doi: 10.7759/cureus.58783. PMID: 38654961; PMCID: PMC11035497.

Nazir M, Asghar S, Rathore MA, Shahzad A, Shahid A, Ashraf Khan A, Malik A, Fakhar T, Kausar H, Malik J. Menstrual abnormalities after COVID-19 vaccines: A systematic review. Vacunas. 2022 Sep-Dec;23:S77-S87. doi: 10.1016/j.vacun.2022.07.001. Epub 2022 Jul 19. PMID: 35873308; PMCID: PMC9294036.

Molina-López A, Ocón Hernández O, Baena García L. Asociación de la infección por SARS-CoV-2 y la administración de las vacunas contra la COVID-19 con alteraciones en el ciclo menstrual. Revisión de la literatura [Association of SARS-CoV-2 infection and administration of COVID-19 vaccines with alterations in the menstrual cycle. Literature review]. Clin Invest Ginecol Obstet. 2023 Jan-Mar;50(1):100822. Spanish. doi: 10.1016/j.gine.2022.100822. Epub 2022 Oct 31. PMID: 36337070; PMCID: PMC9618423.

Hospital Español de Pachuca Research Group, Licona-Meníndez RD, Peón AN. Anti-COVID-19 Vaccination Alters the Menstrual Cycle and Dose Accumulation Enhances the Effect. Medicina (Kaunas). 2024 Jun 8;60(6):956. doi: 10.3390/medicina60060956. PMID: 38929574; PMCID: PMC11206152.

Wang S, Mortazavi J, Hart JE, Hankins JA, Katuska LM, Farland LV, Gaskins AJ, Wang YX, Tamimi RM, Terry KL, Rich-Edwards JW, Missmer SA, Chavarro JE. A prospective study of the association between SARS-CoV-2 infection and COVID-19 vaccination with changes in usual menstrual cycle characteristics. Am J Obstet Gynecol. 2022 Nov;227(5):739.e1-739.e11. doi: 10.1016/j.ajog.2022.07.003. Epub 2022 Jul 13. PMID: 35841938; PMCID: PMC9277995.

Payne LA, Wise LA, Wesselink AK, Wang S, Missmer SA, Edelman A. Association between COVID-19 vaccination and menstruation: a state of the science review. BMJ Sex Reprod Health. 2024 Jul 12;50(3):212-225. doi: 10.1136/bmjsrh-2024-202274. PMID: 38857991; PMCID: PMC11246222.

Baena-Garcia, L.; Aparicio, V.A.; Molina-Lopez, A.; Aranda, P.; Camara-Roca, L.; Ocon-Hernandez, O. Premenstrual and menstrual changes reported after COVID-19 vaccination: The EVA project. Womens Health 2022, 18, 17455057221112237. [Google Scholar] [CrossRef]

Alvergne, A.; Woon, E.V.; Male, V. Effect of COVID-19 vaccination on the timing and flow of menstrual periods in two cohorts. Front. Reprod. Health 2022, 4, 952976. [Google Scholar] [CrossRef] [PubMed]

Nazir, M.; Asghar, S.; Rathore, M.A.; Shahzad, A.; Shahid, A.; Ashraf Khan, A.; Malik, A.; Fakhar, T.; Kausar, H.; Malik, J. Menstrual abnormalities after COVID-19 vaccines: A systematic review. Vacunas 2022, 23, S77–S87. [Google Scholar] [CrossRef]

Lebar, V.; Lagana, A.S.; Chiantera, V.; Kunic, T.; Lukanovic, D. The Effect of COVID-19 on the Menstrual Cycle: A Systematic Review. J. Clin. Med. 2022, 11, 3800. [Google Scholar] [CrossRef] [PubMed]

Gibson, E.A.; Li, H.; Fruh, V.; Gabra, M.; Asokan, G.; Jukic, A.M.Z.; Baird, D.D.; Curry, C.L.; Fischer-Colbrie, T.; Onnela, J.P.; et al. COVID-19 vaccination and menstrual cycle length in the Apple Women's Health Study. NPJ Digit. Med. 2022, 5, 165. [Google Scholar] [CrossRef] [PubMed]

ΕΠΙΔΡΑΣΗ ΣΤΗΝ ΑΝΘΡΩΠΙΝΗ ΓΟΝΙΜΟΤΗΤΑ (FERTILITY)

Schaler L, Wingfield M. COVID-19 vaccine - can it affect fertility? Ir J Med Sci. 2022 Oct;191(5):2185-2187. doi: 10.1007/s11845-021-02807-9. Epub 2021 Oct 15. PMID: 34651258; PMCID: PMC8516490.

Chen F, Zhu S, Dai Z, Hao L, Luan C, Guo Q, Meng C, Zhang Y. Effects of COVID-19 and mRNA vaccines on human fertility. Hum Reprod. 2021 Dec 27;37(1):5-13. doi: 10.1093/humrep/deab238. PMID: 34734259; PMCID: PMC8689912.

Zaçe D, La Gatta E, Petrella L, Di Pietro ML. The impact of COVID-19 vaccines on fertility-A systematic review and meta-analysis. Vaccine. 2022 Oct 6;40(42):6023-6034. doi: 10.1016/j.vaccine.2022.09.019. Epub 2022 Sep 12. PMID: 36137903; PMCID: PMC9464596.

Decline in and recovery of fertility rates after COVID-19-related state of emergency in Japan.

Mitoma T, Maki J, Ooba H, Masuyama H. BMJ Open. 2024 Oct 8;14(10):e087657. doi: 10.1136/bmjopen-2024-087657. PMID: 39384228 Free PMC article.

Barda S, Laskov I, Grisaru D, Lehavi O, Kleiman S, Wenkert A, et al. . The impact of COVID-19 vaccine on sperm quality. Int J Gynaecol Obstet. (2022) 158:116–20. doi: 10.1002/ijgo.14135 - DOI - PMC - PubMed

Li G, Zhang R, Song B, Wang C, Shen Q, He X, Cao Y. Effects of SARS-CoV-2 Vaccines on Sperm Quality: Systematic Review. JMIR Public Health Surveill. 2023 Dec 6;9:e48511. doi: 10.2196/48511. PMID: 37976132; PMCID: PMC10702876.

Elhabak DM, Abdelsamie RA, Shams GM. COVID-19 vaccination and male fertility issues: Myth busted. Is taking COVID-19 vaccine the best choice for semen protection and male fertility from risky infection hazards? Andrologia. 2022 Dec;54(11):e14574. doi: 10.1111/and.14574. Epub 2022 Aug 29. PMID: 36038521; PMCID: PMC9539224.

Gonzalez DC, Nassau DE, Khodamoradi K, Ibrahim E, Blachman-Braun R, Ory J, et al. . Sperm parameters before and after COVID-19 mRNA vaccination. Jama. (2021) 326:273–4. doi: 10.1001/jama.2021.9976 - DOI - PMC - PubMed

Karavani G, Chill HH, Meirman C, Gutman-Ido E, Herzberg S, Tzipora T, et al. . Sperm quality is not affected by the BNT162b2 mRNA SARS-CoV-2 vaccine: results of a 6–14 months follow-up. J Assist Reprod Genet. (2022) 39:2249–54. doi: 10.1007/s10815-022-02621-x - DOI - PMC - PubMed

Yin J, Wang Y, Tao L, Chen L, Liu P, Li R. Impact of vaccination against COVID-19 on the outcomes of in vitro fertilization-embryo transfer: a retrospective cohort study. Chin Med J (Engl). (2023) 136:207–12. doi: 10.1097/cm9.0000000000002444 - DOI - PMC - PubMed

Chen H, Zhang X, Lin G, Gong F, Hocher B. Safety of COVID-19 vaccination in women undergoing IVF/ICSI treatment - Clinical study and systematic review. Front Immunol. (2022) 13:1054273. doi: 10.3389/fimmu.2022.1054273 - DOI - PMC - PubMed

Albeitawi S, Al-Alami ZM, Hamadneh J, Alqam H, Qublan H, Al Natsheh M. COVID-19 infection and vaccine have no impact on in-vitro fertilization (IVF) outcome. Sci Rep. (2022) 12:21702. doi: 10.1038/s41598-022-25757-3 - DOI - PMC - PubMed

Bosch A, Albero S, Castillo JC, Ten J, Guerrero J, Ortiz JA, Bernabeu A, Bernabeu R. Does mRNA COVID-19 vaccination in oocyte donors impact ovarian stimulation parameters or IVF outcomes for recipients? Reprod Biomed Online. 2023 Apr;46(4):697-704. doi: 10.1016/j.rbmo.2023.01.002. Epub 2023 Jan 11. PMID: 36803967; PMCID: PMC9831660.

Wang C, Wang M, Li G, Song B, Xing Q, Cao Y. Effects of COVID-19 vaccination on human fertility: a post-pandemic literature review. Ann Med. 2023 Dec;55(2):2261964**. doi: 10.1080/07853890.2023.2261964. Epub 2023 Sep 27. PMID: 37756386; PMCID: PMC10538453.**

Data-driven commentary on SARS-CoV-2 infection, vaccination, and fertility.

Klipstein S, Dionne JA, Feinberg EC, Kawwass JF, Pfeifer SM, Schlegel PN, Racowsky C. Fertil Steril. 2022 Aug;118(2):262-265. doi: 10.1016/j.fertnstert.2022.06.018. Epub 2022 Jun 29. PMID: 35779971 Free PMC article.

Omolaoye TS, Velilla PA, Moncada López JS, du Plessis SS, Cardona Maya WD. SARS-CoV-2 Vaccine Effects on Semen Parameters: A Systematic Review and Meta-Analysis. Arch Esp Urol. 2022 Dec;75(10):831-843. doi: 10.56434/j.arch.esp.urol.20227510.121. PMID: 36651093.

Schaler L, Glover LE, Wingfield M. COVID-19 Vaccine and Fertility: The Male Perspective. Ir Med J. 2022 Feb 17;115(2):543. PMID: 35418174.

Braun AS, Feil K, Reiser E, Weiss G, von Steuben T, Pinggera GM, Köhn FM, Toth B. Corona and Reproduction, or Why the Corona Vaccination Does Not Result in Infertility. Geburtshilfe Frauenheilkd. 2022 May 6;82(5):490-500. doi: 10.1055/a-1750-9284. PMID: 35528190; PMCID: PMC9076211.

Wang C, Wang M, Li G, et al. Effects of COVID-19 vaccination on human fertility: A post-pandemic literature review. Ann Med. 2023; 55(2): 2261964. doi:10.1080/07853890.2023.2261964.

Avraham S, Kedem A, Zur H, Youngster M, Yaakov O, Yerushalmi GM, et al. . Coronavirus disease 2019 vaccination and infertility treatment outcomes. Fertil Steril. (2022) 117:1291–9. doi: 10.1016/j.fertnstert.2022.02.025 - DOI - PMC - PubMed

Aharon D, Lederman M, Ghofranian A, Hernandez-Nieto C, Canon C, Hanley W, et al. . In vitro fertilization and early pregnancy outcomes after coronavirus disease 2019 (COVID-19) vaccination. Obstet Gynecol. (2022) 139:490–7. doi: 10.1097/aog.0000000000004713 - DOI - PubMed

Safrai M, Herzberg S, Imbar T, Reubinoff B, Dior U, Ben-Meir A. The BNT162b2 mRNA Covid-19 vaccine does not impair sperm parameters. Reprod BioMed Online. (2022) 44:685–8. doi: 10.1016/j.rbmo.2022.01.008 - DOI - PMC - PubMed

Morris RS. SARS-CoV-2 spike protein seropositivity from vaccination or infection does not cause sterility. F S Rep. (2021) 2:253–5. doi: 10.1016/j.xfre.2021.05.010 - DOI - PMC - PubMed

Orvieto R, Noach-Hirsh M, Segev-Zahav A, Haas J, Nahum R, Aizer A. Does mRNA SARS-CoV-2 vaccine influence patients' performance during IVF-ET cycle? Reprod Biol Endocrinol. (2021) 19:69. doi: 10.1186/s12958-021-00757-6 - DOI - PMC - PubMed

Odeh-Natour R, Shapira M, Estrada D, Freimann S, Tal Y, Atzmon Y, et al. . Does mRNA SARS-CoV-2 vaccine in the follicular fluid impact follicle and oocyte performance in IVF treatments? Am J Reprod Immunol. (2022) 87:e13530. doi: 10.1111/aji.13530 - DOI - PMC - PubMed

Shi W, Wang M, Xue X, Li N, Chen L, Shi J. Association between time interval from COVID-19 vaccination to in vitro fertilization and pregnancy rate after fresh embryo transfer. JAMA Netw Open. (2022) 5:e2236609. doi: 10.1001/jamanetworkopen.2022.36609 - DOI - PMC - PubMed

Huang J, Liu Y, Zeng H, Tian L, Hu Y, He J, et al. . Effect of inactivated COVID-19 vaccination on pregnancy outcomes following frozen-thawed embryo transfer: A retrospective cohort study. Int Immunopharmacol. (2023) 114:109552. doi: 10.1016/j.intimp.2022.109552 - DOI - PMC - PubMed

Huang J, Xia L, Lin J, Liu B, Zhao Y, Xin C, et al. . No effect of inactivated SARS-coV-2 vaccination on in vitro fertilization outcomes: A propensity score-matched study. J Inflammation Res. (2022) 15:839–49. doi: 10.2147/jir.S347729 - DOI - PMC - PubMed

Dong M, Wu S, Zhang X, Zhao N, Qi J, Zhao D, et al. . Effects of COVID-19 vaccination status, vaccine type, and vaccination interval on IVF pregnancy outcomes in infertile couples. J Assist Reprod Genet. (2022) 39:1849–59. doi: 10.1007/s10815-022-02543-8 - DOI - PMC - PubMed

COVID ΕΜΒΟΛΙΑΣΜΟΣ ΣΤΗΝ ΓΥΝΑΙΚΟΛΟΓΙΑ /ΜΑΙΕΥΤΙΚΗ (VACCINATION IN PREGNANCY)

Kucirka LM, Norton A, Sheffield JS. Severity of COVID-19 in pregnancy: a review of current evidence. Am J Reprod Immunol 2020;84:e13332. doi: 10.1111/aji.13332. - DOI - PubMed

Maternal COVID-19, vaccination safety in pregnancy, and evidence of protective immunity.

Pham A, Aronoff DM, Thompson JL. J Allergy Clin Immunol. 2021 Sep;148(3):728-731. doi: 10.1016/j.jaci.2021.07.013. Epub 2021 Jul 24. PMID: 34314761 Free PMC article. No abstract available.

Coronavirus disease 2019 vaccination in women seeking pregnancy or in early pregnancy: What is there to debate?

Legro RS. Fertil Steril. 2021 Jul;116(1):15. doi: 10.1016/j.fertnstert.2021.05.084. PMID: 34148582 Free PMC article. No abstract available.

Ramasauskaite D, Grinciute D. Review of short-term and long-term adverse effects of covid-19 vaccination during pregnancy. Travel Med Infect Dis. 2023 Nov-Dec;56:102667. doi: 10.1016/j.tmaid.2023.102667. Epub 2023 Nov 10. PMID: 37951411.

Mohr-Sasson A, Haas J, Abuhasira S, Sivan M, Doitch Amdurski H, Dadon T, Blumenfeld S, Derazne E, Hemi R, Orvieto R, Afek A, Rabinovici J. The effect of Covid-19 mRNA vaccine on serum anti-Müllerian hormone levels. Hum Reprod. 2022 Mar 1;37(3):534-541. doi: 10.1093/humrep/deab282. PMID: 34935913.

Blakeway H, Amin-Chowdhury Z, Prasad S, Kalafat E, Ismail M, Abdallah FN, Rezvani A, Amirthalingam G, Brown K, Le Doare K, Heath PT, Ladhani SN, Khalil A. Evaluation of immunogenicity and reactogenicity of COVID-19 vaccines in pregnant women. Ultrasound Obstet Gynecol. 2022 Nov;60(5):673-680. doi: 10.1002/uog.26050. PMID: 36318630; PMCID: PMC9538835.

Butt AA, Chemaitelly H, Al Khal A, Coyle PV, Saleh H, Kaleeckal AH, Latif AN, Bertollini R, Abou-Samra AB, Abu-Raddad LJ. SARS-CoV-2 vaccine effectiveness in preventing confirmed infection in pregnant women. J Clin Invest. 2021 Dec 1;131(23):e153662. doi: 10.1172/JCI153662. PMID: 34618693; PMCID: PMC8631593.

Male V. SARS-CoV-2 infection and COVID-19 vaccination in pregnancy. Nat Rev Immunol. (2022) 22:277–82. doi: 10.1038/s41577-022-00703-6 - DOI - PMC - PubMed

Blakeway H, Prasad S, Kalafat E, Heath PT, Ladhani SN, Le Doare K, et al. . COVID-19 vaccination during pregnancy: coverage and safety. Am J Obstet Gynecol. (2022) 226:236.e1–236.e14. doi: 10.1016/j.ajog.2021.08.007 - DOI - PMC - PubMed

Jacobs E, Van Voorhis BJ. Coronavirus disease 2019 (COVID-19) vaccination in obstetrics and gynecology: addressing concerns while paving a way forward. Obstet Gynecol. (2022) 139:479–80. doi: 10.1097/aog.0000000000004715 - DOI - PubMed

Shanes ED, Otero S, Mithal LB, Mupanomunda CA, Miller ES, Goldstein JA. Severe acute respiratory syndrome coronavirus 2 (SARS-coV-2) vaccination in pregnancy: measures of immunity and placental histopathology. Obstet Gynecol. (2021) 138:281–3. doi: 10.1097/aog.0000000000004457 - DOI - PMC - PubMed

Shimabukuro TT, Kim SY, Myers TR, Moro PL, Oduyebo T, Panagiotakopoulos L, et al. . Preliminary findings of mRNA covid-19 vaccine safety in pregnant persons. N Engl J Med. (2021) 384:2273–82. doi: 10.1056/NEJMoa2104983 - DOI - PMC - PubMed

Gray KJ, Bordt EA, Atyeo C, Deriso E, Akinwunmi B, Young N, et al. . Coronavirus disease 2019 vaccine response in pregnant and lactating women: a cohort study. Am J Obstet Gynecol. (2021) 225(3):303.e1–303.e17. doi: 10.1016/j.ajog.2021.03.023 - DOI - PMC - PubMed

Kadali R, Janagama R, Peruru SR, Racherla S, Tirumala R, Madathala RR, et al. . Adverse effects of COVID-19 messenger RNA vaccines among pregnant women: a cross-sectional study on healthcare workers with detailed self-reported symptoms. Am J Obstet Gynecol. (2021) 225:458–60. doi: 10.1016/j.ajog.2021.06.007 - DOI - PMC - PubMed

Collier AY, Mcmahan K, Yu J, Tostanoski LH, Aguayo R, Ansel J, et al. . Immunogenicity of COVID-19 mRNA vaccines in pregnant and lactating women. Jama. (2021) 325:2370–80. doi: 10.1001/jama.2021.7563 - DOI - PMC - PubMed

Rottenstreich A, Zarbiv G, Oiknine-Djian E, Vorontsov O, Zigron R, Kleinstern G, et al. . Timing of SARS-CoV-2 vaccination during the third trimester of pregnancy and transplacental antibody transfer: a prospective cohort study. Clin Microbiol Infect. (2022) 28:419–25. doi: 10.1016/j.cmi.2021.10.003 - DOI - PMC - PubMed

Yang YJ, Murphy EA, Singh S, Sukhu AC, Wolfe I, Adurty S, et al. . Association of Gestational Age at Coronavirus Disease 2019 (COVID-19) Vaccination, History of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection, and a Vaccine Booster Dose

With Maternal and Umbilical Cord Antibody Levels at Delivery. Obstet Gynecol. (2022) 139:373–80. doi: 10.1097/aog.0000000000004693 - [*DOI*]() *-* [*PubMed*]()

Dalcin D, Halperin SA. SARS-CoV-2 vaccination in pregnancy. Cmaj. (2023) 195:E1274. doi: 10.1503/cmaj.221556 - [*DOI*]() *-* [*PMC*]() *-* [*PubMed*]()

Wang PH, Lee WL, Yang ST, Tsui KH, Chang CC, Lee FK. The impact of COVID-19 in pregnancy: Part II. Vaccination to pregnant women. J Chin Med Assoc. 2021 Oct 1;84(10):903-910. doi: 10.1097/JCMA.0000000000000612. PMID: 34433191. *Review*

Kong X, Shen C, Liu T, Yang A, Liu X, Hou F, Wang W, Yang S, Li Z, Wang J. Effect of SARS-CoV-2 vaccination on the outcomes of assisted reproductive technology: A review. Medicine (Baltimore). 2024 Aug 16;103(33):e39310. doi: 10.1097/MD.0000000000039310. PMID: 39151499; PMCID: PMC11332754.

Badell ML, Dude CM, Rasmussen SA, Jamieson DJ. Covid-19 vaccination in pregnancy. BMJ. 2022 Aug 10;378:e069741. doi: 10.1136/bmj-2021-069741. PMID: 35948352; PMCID: PMC9363819.

Blakeway H, Prasad S, Kalafat E, Heath PT, Ladhani SN, Le Doare K, Magee LA, O'Brien P, Rezvani A, von Dadelszen P, Khalil A. COVID-19 vaccination during pregnancy: coverage and safety. Am J Obstet Gynecol. 2022 Feb;226(2):236.e1-236.e14. doi: 10.1016/j.ajog.2021.08.007. Epub 2021 Aug 10. PMID: 34389291; PMCID: PMC8352848.

Abu-Raya B. Vaccination of Pregnant Women Against COVID-19. Neoreviews. 2021 Sep;22(9):e570-e573. doi: 10.1542/neo.22-9-e570. PMID: 34470758.

Kugelman N, Nahshon C, Shaked-Mishan P, Kleifeld S, Cohen N, Sher ML, Zahran H, Barsha H, Assaf W, Shalabna E, Stein N, Lavie O, Kedar R, Riskin-Mashiah S. Maternal and Neonatal Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Immunoglobulin G Levels After the Pfizer-BioNTech Booster Dose for Coronavirus Disease 2019 (COVID-19) Vaccination During the Second Trimester of Pregnancy. Obstet Gynecol. 2022 Aug 1;140(2):187-193. doi: 10.1097/AOG.0000000000004867. Epub 2022 May 27. PMID: 35852268.

Dick A, Rosenbloom JI, Karavani G, Gutman-Ido E, Lessans N, Chill HH. Safety of third SARS-CoV-2 vaccine (booster dose) during pregnancy. Am J Obstet Gynecol MFM. 2022 Jul;4(4):100637. doi: 10.1016/j.ajogmf.2022.100637. Epub 2022 Apr 7. PMID: 35398583; PMCID: PMC8988438.

Berkowitz HE, Vann JCJ. Strategies to Address COVID-19 Vaccine and Pregnancy Myths. MCN Am J Matern Child Nurs. 2023 Jul-Aug 01;48(4):215-223. doi: 10.1097/NMC.0000000000000926. PMID: 36943837; PMCID: PMC10296984.

[*COVID-19 Vaccination in Pregnancy and Lactation: Current Research and Gaps in Understanding.*]()

Shook LL, Fallah PN, Silberman JN, Edlow AG. Front Cell Infect Microbiol. 2021 Sep 16;11:735394. doi: 10.3389/fcimb.2021.735394. eCollection 2021. PMID: 34604115 Free PMC article. Review.

Obaid AF, Shlash AMJ, Abdulrasol ZA, Lafta MA. The consequences of COVID-19 and its vaccine on pregnant and lactating mothers. Egypt J Immunol. 2022 Oct;29(4):58-74. PMID: 36197154.

Shanes ED, Otero S, Mithal LB, Mupanomunda CA, Miller ES, Goldstein JA. Severe acute respiratory syndrome coronavirus 2 (SARS-coV-2) vaccination in pregnancy: measures of immunity and placental histopathology. Obstet Gynecol. (2021) 138:281–3. doi: 10.1097/aog.0000000000004457 - DOI - PMC - PubMed

Safety of COVID-19 Vaccination in Pregnancy: A Systematic Review.

Gerede A, Daskalakis G, Mikos T, Chatzakis C, Vavoulidis E, Eleftheriades M, Domali E, Nikolettos K, Oikonomou E, Antsaklis P, Theodora M, Psarris A, Margioula-Siarkou C, Petousis S, Stavros S, Potiris A, Athanasiadis A, Dinas K, Tsikouras P, Nikolettos N, Sotiriadis A. Diagnostics (Basel). 2024 Aug 14;14(16):1775. doi: 10.3390/diagnostics14161775. PMID: 39202263 Free PMC article. Review.

ΕΚΒΑΣΗ ΕΓΚΥΜΟΣΥΝΗΣ ΚΑΙ ΠΕΡΙΓΕΝΝΗΤΙΚΗ ΕΚΒΑΣΗ (PREGNANCY AND PERINATAL SAFETY OUTCOMES)

Αυτόματη διακοπή κύησης, προωρότητα, συγγενείς ανωμαλίες, ανήκουν στις αναφερόμενες συνέπειες εμβολιασμού εγκύων σε διάφορες δημοσιεύσεις.

Στην έκβαση εγκυμοσύνης (pregnancy outcomes), περιλαμβάνονται: γέννηση ζώντος εμβρύου (live births), αυτόματη διακοπή κύησης, δηλαδή ενδομήτριος θάνατος ενωρίτερα από την 20ή εβδομάδα κύησης (spontaneous abortion <20 weeks of gestation) και γέννηση νεκρού εμβρύου την 20ή ή πέραν της 20ής εβδομάδας κύησης (stillbirth ≥20 OR 24 weeks of gestation).

Πρόωρος (preterm birth) ονομάζεται ο τοκετός προ της 37ης εβδομάδας κύησης (<37 weeks of gestation).

Το μικρού βάρους γέννησης νεογνό (small for gestational age) και η ανάγκη εισαγωγής νεογνού σε Μονάδα Εντατικής θεραπείας νεογνών (neonatal intensive care unit (NICU), όπως και εμβρυϊκές διαταραχές, συγγενείς ανωμαλίες, και επιπλοκές κατά τον τοκετό (intrapartum complications), αποτελούν επίσης αντικείμενο συσχέτισης με εμβολιασμό της εγκύου.

Είναι σημαντικό ότι αυτόματες διακοπές κύησης ήσαν γνωστές στην εταιρεία Pfizer ήδη από το πρώτο τρίμηνο δοκιμών του mRNA εμβολίου της και παρόλον ότι η FDA είχε ενημερωθεί γι αυτό, όπως και για άλλες ανεπιθύμητες ενέργειες του εμβολίου, έδωσε άδεια κυκλοφορίας και συνέστησε εμβολιασμό των εγκύων *(βλέπε **https://phmpt.org/** **Σε αυτόν τον ιστότοπο της ομάδας** PHMPT (Public Health and Medical Professionals for Transparency), ευρίσκεται πληθώρα εμπιστευτικών εγγράφων της Pfizer που έφερε στο φως η PHMPT και τα οποία δείχνουν ότι έγινε συγκάλυψη θανάτων και διαφόρων ανεπιθύμητων ενεργειών *(μεταξύ των οποίων αυτόματες αποβολές σε εγκύους) γνωστών από τις αρχές του 2021.

Mascolo A, di Mauro G, Fraenza F, Gaio M, Zinzi A, Pentella C, Rossi F, Capuano A, Sportiello L. Maternal, fetal and neonatal outcomes among pregnant women receiving COVID-19 vaccination: The preg-co-vax study. Front Immunol. 2022 Oct 3;13:965171. doi: 10.3389/fimmu.2022.965171. PMID: 36263025; PMCID: PMC9574088.

Arulappen AL, Danial M, Shanmugam G, Cheng JT, Dulasi M, Chow TS. A Multicenter Cohort Study on the Adverse Effects Evaluation After Messenger RNA COVID-19 Vaccination Among Pregnant Healthcare Employees in Penang General Hospitals. Front Public Health. 2022 May 23;10:876966. doi: 10.3389/fpubh.2022.876966. PMID: 35677772; PMCID: PMC9168536.

Lipkind HS, Vazquez-Benitez G, DeSilva M, Vesco KK, Ackerman-Banks C, Zhu J, Boyce TG, Daley MF, Fuller CC, Getahun D, Irving SA, Jackson LA, Williams JTB, Zerbo O, McNeil MM, Olson CK, Weintraub E, Kharbanda EO. Receipt of COVID-19 Vaccine During Pregnancy and Preterm or Small-for-Gestational-Age at Birth - Eight Integrated Health Care Organizations, United States, December 15, 2020-July 22, 2021. MMWR Morb Mortal Wkly Rep. 2022 Jan 7;71(1):26-30. doi: 10.15585/mmwr.mm7101e1. PMID: 34990445; PMCID: PMC8735559.

Safety of COVID-19 Vaccination in Pregnancy: A Systematic Review.

Gerede A, Daskalakis G, Mikos T, Chatzakis C, Vavoulidis E, Eleftheriades M, Domali E, Nikolettos K, Oikonomou E, Antsaklis P, Theodora M, Psarris A, Margioula-Siarkou C, Petousis S, Stavros S, Potiris A, Athanasiadis A, Dinas K, Tsikouras P, Nikolettos N, Sotiriadis A. Diagnostics (Basel). 2024 Aug 14;14(16):1775. doi: 10.3390/diagnostics14161775. PMID: 39202263 Free PMC article. Review.

Fell DB, Dhinsa T, Alton GD, Török E, Dimanlig-Cruz S, Regan AK, et al. . Association of COVID-19 vaccination in pregnancy with adverse peripartum outcomes. JAMA (2022) 327(15):1478–87. doi: 10.1001/jama.2022.4255 - DOI - PMC - PubMed

Kadali RAK, Janagama R, Peruru SR, Racherla S, Tirumala R, Madathala RR, et al. . Adverse effects of COVID-19 messenger RNA vaccines among pregnant women: a cross-sectional study on healthcare workers with detailed self-reported symptoms. Am J Obstet Gynecol (2021) 225(4):458–60. doi: 10.1016/j.ajog.2021.06.007 - DOI - PMC - PubMed

Bookstein Peretz S, Regev N, Novick L, Nachshol M, Goffer E, Ben-David A, et al. . Short-term outcome of pregnant women vaccinated with BNT162b2 mRNA COVID-19 vaccine. Ultrasound Obstet Gynecol. (2021) 58:450–6. doi: 10.1002/uog.23729 - DOI - PMC - PubMed

Kharbanda EO, Haapala J, Desilva M, Vazquez-Benitez G, Vesco KK, Naleway AL, et al. . Spontaneous abortion following COVID-19 vaccination during pregnancy. Jama. (2021) 326:1629–31. doi: 10.1001/jama.2021.15494 - DOI - PMC - PubMed

Magnus MC, Gjessing HK, Eide HN, Wilcox AJ, Fell DB, Håberg SE. Covid-19 vaccination during pregnancy and first-trimester miscarriage. N Engl J Med. (2021) 385:2008–10. doi: 10.1056/NEJMc2114466 - DOI - PMC - PubMed

Prabhu M, Riley LE. Coronavirus disease 2019 (COVID-19) vaccination in pregnancy. Obstet Gynecol. (2023) 141:473–82. doi: 10.1097/aog.0000000000005100 - DOI - PubMed

Kontovazainitis CG, Katsaras GN, Gialamprinou D, Mitsiakos G. Covid-19 vaccination and pregnancy: a systematic review of maternal and neonatal outcomes. J Perinat Med. 2023 Feb 17;51(7):823-839. doi: 10.1515/jpm-2022-0463. PMID: 36800343.

Rottenstreich M, Sela HY, Rotem R, Kadish E, Wiener-Well Y, Grisaru-Granovsky S. Covid-19 vaccination during the third trimester of pregnancy: Rate of vaccination and maternal and neonatal outcomes, a multicentre retrospective cohort study. BJOG (2022) 129(2):248–55. doi: 10.1111/1471-0528.16941 - DOI - PMC - PubMed

Male V. SARS-CoV-2 infection and COVID-19 vaccination in pregnancy. Nat Rev Immunol. (2022) 22:277–82. doi: 10.1038/s41577-022-00703-6 - DOI - PMC - PubMed

Blakeway H, Prasad S, Kalafat E, Heath PT, Ladhani SN, Le Doare K, et al. . COVID-19 vaccination during pregnancy: coverage and safety. Am J Obstet Gynecol. (2022) 226:236.e1–236.e14. doi: 10.1016/j.ajog.2021.08.007 - DOI - PMC - PubMed

Jacobs E, Van Voorhis BJ. Coronavirus disease 2019 (COVID-19) vaccination in obstetrics and gynecology: addressing concerns while paving a way forward. Obstet Gynecol. (2022) 139:479–80. doi: 10.1097/aog.0000000000004715 - DOI - PubMed

Barda S, Laskov I, Grisaru D, Lehavi O, Kleiman S, Wenkert A, et al. . The impact of COVID-19 vaccine on sperm quality. Int J Gynaecol Obstet. (2022) 158:116–20. doi: 10.1002/ijgo.14135 - DOI - PMC - PubMed

Gonzalez DC, Nassau DE, Khodamoradi K, Ibrahim E, Blachman-Braun R, Ory J, et al. . Sperm parameters before and after COVID-19 mRNA vaccination. Jama. (2021) 326:273–4. doi: 10.1001/jama.2021.9976 - DOI - PMC - PubMed

Kadali RAK, Janagama R, Peruru SR, Racherla S, Tirumala R, Madathala RR, et al. . Adverse effects of COVID-19 messenger RNA vaccines among pregnant women: a cross-sectional study on healthcare workers with detailed self-reported symptoms. Am J Obstet Gynecol (2021) 225(4):458–60. doi: 10.1016/j.ajog.2021.06.007 - DOI - PMC - PubMed

Shimabukuro TT, Kim SY, Myers TR, Moro PL, Oduyebo T, Panagiotakopoulos L, et al. . Preliminary findings of mRNA covid-19 vaccine safety in pregnant persons. N Engl J Med (2021) 384(24):2273–82. doi: 10.1056/NEJMoa2104983 - DOI - PMC - PubMed

Fell DB, Dhinsa T, Alton GD, Török E, Dimanlig-Cruz S, Regan AK, et al. . Association of COVID-19 vaccination in pregnancy with adverse peripartum outcomes. JAMA (2022) 327(15):1478–87. doi: 10.1001/jama.2022.4255 - DOI - PMC - PubMed

Rottenstreich M, Sela HY, Rotem R, Kadish E, Wiener-Well Y, Grisaru-Granovsky S. Covid-19 vaccination during the third trimester of pregnancy: Rate of vaccination and maternal and neonatal outcomes, a multicentre retrospective cohort study. BJOG (2022) 129(2):248–55. doi: 10.1111/1471-0528.16941 - DOI - PMC - PubMed

Sadarangani M, Soe P, Shulha HP, Valiquette L, Vanderkooi OG, Kellner JD, et al. . Safety of COVID-19 vaccines in pregnancy: A Canadian national vaccine safety (CANVAS) network cohort study. Lancet Infect Dis (2022) S1473-3099(22):00426–1. doi: 10.1016/S1473-3099(22)00426-1 - DOI - PMC - PubMed

Trostle ME, Limaye MA, Avtushka V, Lighter JL, Penfield CA, Roman AS. COVID-19 vaccination in pregnancy: Early experience from a single institution. Am J Obstet Gynecol MFM (2021) 3(6):100464. doi: 10.1016/j.ajogmf.2021.100464 - DOI - PMC - PubMed

Magnus MC, Gjessing HK, Eide HN, Wilcox AJ, Fell DB, Håberg SE. Covid-19 vaccination during pregnancy and first-trimester miscarriage. N Engl J Med (2021) 385(21):2008–10. doi: 10.1056/NEJMc2114466 - DOI - PMC - PubMed

Zauche LH, Wallace B, Smoots AN, Olson CK, Oduyebo T, Kim SY, et al. . Receipt of mRNA covid-19 vaccines and risk of spontaneous abortion. N Engl J Med (2021) 385(16):1533–35. doi: 10.1056/NEJMc2113891 - DOI - PMC - PubMed

Kharbanda EO, Haapala J, DeSilva M, Vazquez-Benitez G, Vesco KK, Naleway AL, et al. . Spontaneous abortion following COVID-19 vaccination during pregnancy. JAMA (2021) 326(16):1629–31. doi: 10.1001/jama.2021.15494 - DOI - PMC - PubMed

European Medicines Agency (EMA) . COVID-19: latest safety data provide reassurance about use of mRNA vaccines during pregnancy 2020. Available at: https://www.ema.europa.eu/en/news/covid-19-latest-safety-data-provide-re... (Accessed June 8, 2022).

Blakeway H, Prasad S, Kalafat E, Heath PT, Ladhani SN, Le Doare K, et al. . COVID-19 vaccination during pregnancy: Coverage and safety. Am J Obstet Gynecol (2022) 226(2):236.e1–236.e14. doi: 10.1016/j.ajog.2021.08.007 - DOI - PMC - PubMed

Villar J, Ariff S, Gunier RB, Thiruvengadam R, Rauch S, Kholin A, et al. . Maternal and neonatal morbidity and mortality among pregnant women with and without COVID-19 infection: The INTERCOVID multinational cohort study. JAMA Pediatr (2021) 175(8):817–26. doi: 10.1001/jamapediatrics.2021.1050 - DOI - PMC - PubMed

Covid-19 treatments and vaccines must be evaluated in pregnancy. Abbas-Hanif A, Modi N, Smith SK, Majeed A. BMJ. 2021 Oct 14;375:n2377. doi: 10.1136/bmj.n2377. PMID: 34649863 No abstract available.

Association Between BNT162b2 Vaccination and Incidence of SARS-CoV-2 Infection in Pregnant Women.

Goldshtein I, Nevo D, Steinberg DM, Rotem RS, Gorfine M, Chodick G, Segal Y. JAMA. 2021 Aug 24;326(8):728-735. doi: 10.1001/jama.2021.11035. PMID: 34251417 Free PMC article.

Zerbo, O., Ray, G. T., Fireman, B., Layefsky, E., Goddard, K., Ross, P., Greenberg, M., & Klein, N. P. (2023). Individual and neighborhood factors associated with being

unvaccinated against COVID-19 among pregnant persons. *Human vaccines & immunotherapeutics*, *19*(2), 2256042. https://doi.org/10.1080/21645515.2023.2256042

Shen, C. J., Fu, Y. C., Lin, Y. P., Shen, C. F., Sun, D. J., Chen, H. Y., & Cheng, C. M. (2022). Evaluation of Transplacental Antibody Transfer in SARS-CoV-2-Immunized Pregnant Women. *Vaccines*, *10*(1), 101. https://doi.org/10.3390/vaccines10010101
Allotey J, Stallings E, Bonet M, et al. Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: living systematic review and meta-analysis. BMJ 2020;370:m3320. - PMC - PubMed

Taylor CA, Patel K, Pham H, et al. Severity of disease among adults hospitalized with laboratory-confirmed COVID-19 before and during the period of SARS-CoV-2 B.1.617.2 (Delta) predominance - COVID-NET, 14 states, January-August 2021. MMWR Morb Mortal Wkly Rep 2021;70:1513–9. - PMC - PubMed

Mascolo A, di Mauro G, Fraenza F, Gaio M, Zinzi A, Pentella C, Rossi F, Capuano A, Sportiello L. Maternal, fetal and neonatal outcomes among pregnant women receiving COVID-19 vaccination: The preg-co-vax study. Front Immunol. 2022 Oct 3;13:965171. doi: 10.3389/fimmu.2022.965171. PMID: 36263025; PMCID: PMC9574088.

Neonatal and maternal outcomes of mRNA versus Non-mRNA COVID-19 vaccines in pregnant patients: a systematic review and meta-analysis.

Oliveira JA, da Silva EG, Karasu AFG, Silva AMN, Philip CE. Rev Bras Ginecol Obstet. 2024 Sep 18;46:e-rbgo69. doi: 10.61622/rbgo/2024rbgo69. eCollection 2024. PMID: 39380590 Free PMC article.

Blakeway, H., Prasad, S., Kalafat, E., Heath, P. T., Ladhani, S. N., Le Doare, K., Magee, L. A., O'Brien, P., Rezvani, A., von Dadelszen, P., & Khalil, A. (2022). COVID-19 vaccination during pregnancy: coverage and safety. *American journal of obstetrics and gynecology*, *226*(2), 236.e1–236.e14. https://doi.org/10.1016/j.ajog.2021.08.007 [PMC free article] [PubMed] [Google Scholar]

Comment in

- Regarding: COVID-19 vaccination during pregnancy: coverage and safety.

  Nagabhushana P, Sarkar A, Wadhawan I. Am J Obstet Gynecol. 2022 Mar;226(3):448-449. doi: 10.1016/j.ajog.2021.10.027. Epub 2021 Oct 23. PMID: 34699750 Free PMC article. No abstract available.

- COVID-19 vaccination during pregnancy: coverage and safety, a comment.

Davies D, McDougall A, Yoong W. Am J Obstet Gynecol. 2022 Aug;227(2):370. doi: 10.1016/j.ajog.2022.04.027. Epub 2022 Apr 22. PMID: 35469814 Free PMC article. No abstract available.

Hui, L., Marzan, M. B., Rolnik, D. L., Potenza, S., Pritchard, N., Said, J. M., Palmer, K. R., Whitehead, C. L., Sheehan, P. M., Ford, J., Mol, B. W., & Walker, S. P. (2023). Reductions in stillbirths and preterm birth in COVID-19-vaccinated women: a multicenter cohort study of vaccination uptake and perinatal outcomes. *American journal of obstetrics and gynecology*, *228*(5), 585.e1–585.e16. PMID: **36336084** PMCID: PMC9632261 DOI: 10.1016/j.ajog.2022.10.040

Rahmati, M., Yon, D. K., Lee, S. W., Butler, L., Koyanagi, A., Jacob, L., Shin, J. I., & Smith, L. (2023). Effects of COVID-19 vaccination during pregnancy on SARS-CoV-2 infection and maternal and neonatal outcomes: A systematic review and meta-analysis. *Reviews in medical virology*, *33*(3), e2434. PMID: **36896895** DOI: 10.1002/rmv.2434
Πολλές ανακρίβειες. Τουλάχιστον αναφέρουν ότι ο μητρικός εμβολιασμός δεν προστάτευε τα νεογέννητα από COVID…
Comment in

- Comment on COVID-19 vaccination during pregnancy, COVID and maternal and neonatal outcomes.

  Kleebayoon A, Wiwanitkit V. Rev Med Virol. 2023 Sep;33(5):e2448. doi: 10.1002/rmv.2448. Epub 2023 Apr 13. PMID: 37056172 No abstract available.

Reeves, E. L., Neelam, V., Carlson, J. M., Olsen, E. O., Fox, C. J., Woodworth, K. R., Nestoridi, E., Mobley, E., Montero Castro, S., Dzimira, P., Sokale, A., Sizemore, L., Hall, A. J., Ellington, S., Cohn, A., Gilboa, S. M., & Tong, V. T. (2024). Pregnancy and infant outcomes following SARS-CoV-2 infection in pregnancy during delta variant predominance - Surveillance for Emerging Threats to Pregnant People and Infants. *American journal of obstetrics & gynecology MFM*, *6*(2), 101265. PMID: **38135220** PMCID: PMC11264249 DOI: 10.1016/j.ajogmf.2023.101265
Πολύ μπερδεμένα δεδομένα... Δεν υπάρχει πίνακας που να δείχνει συγκριτικά έκβαση σε εμβολιασμένες και μή . Η σύγκριση είναι κυρίως μεταξύ δύο χρονικών περιόδων προ-δέλτα παραλλαγής και μετά-δέλτα....Δεν ήξεραν αν έζησαν ή πέθαναν 17.747 !!!

Strid P, Zapata LB, Tong VT, et al. Coronavirus disease 2019 (COVID-19) severity among women of reproductive age with symptomatic laboratory-confirmed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection by pregnancy status-United States, 1 January 2020–25 December 2021. Clin Infect Dis 2022;75. S317–25. [DOI] [PMC free article] [PubMed] [Google Scholar]

Adhikari EH, SoRelle JA, McIntire DD, Spong CY. Increasing severity of COVID-19 in pregnancy with Delta (B.1.617.2) variant surge. Am J Obstet Gynecol 2022;226:149–51. [DOI] [PMC free article] [PubMed] [Google Scholar]

Ko JY, DeSisto CL, Simeone RM, et al. Adverse pregnancy outcomes, maternal complications, and severe illness among US delivery hospitalizations with and without a coronavirus disease 2019 (COVID-19) diagnosis. Clin Infect Dis 2021;73:S24–31. [DOI] [PMC free article] [PubMed] [Google Scholar]

DeSisto CL, Wallace B, Simeone RM, et al. Risk for stillbirth among women with and without COVID-19 at delivery hospitalization - United States, March 2020-September 2021. MMWR Morb Mortal Wkly Rep 2021;70:1640–5. [DOI] [PMC free article] [PubMed] [Google Scholar]

Neelam V, Reeves EL, Woodworth KR, et al. Pregnancy and infant outcomes by trimester of SARS-CoV-2 infection in pregnancy-SET-NET, 22 jurisdictions, January 25, 2020-December 31, 2020. Birth Defects Res 2023;115:145–59. [DOI] [PMC free article] [PubMed] [Google Scholar]

Dagan N, Barda N, Biron-Shental T, et al. Effectiveness of the BNT162b2 mRNA COVID-19 vaccine in pregnancy. Nat Med 2021;27:1693–5. [DOI] [PubMed] [Google Scholar]

Hagrass AI, Almadhoon HW, Al-Kafarna M, et al. Maternal and neonatal safety outcomes after SAR-CoV-2 vaccination during pregnancy: a systematic review and meta-analysis. BMC Pregnancy Childbirth 2022;22:581. [DOI] [PMC free article] [PubMed] [Google Scholar]

Fleming-Dutra KE, Zauche LH, Roper LE, et al. Safety and effectiveness of maternal COVID-19 vaccines among pregnant people and infants. Obstet Gynecol Clin North Am 2023;50:279–97. [DOI] [PMC free article] [PubMed] [Google Scholar]

Shook LL, Brigida S, Regan J, et al. SARS-CoV-2 placentitis associated with B.1.617.2 (Delta) variant and fetal distress or demise. J Infect Dis 2022;225:754–8. [DOI] [PMC free article] [PubMed] [Google Scholar]

Di Girolamo R, Khalil A, Alameddine S, et al. Placental histopathology after SARS-CoV-2 infection in pregnancy: a systematic review and meta-analysis. Am J Obstet Gynecol MFM 2021;3:100468. [DOI] [PMC free article] [PubMed] [Google Scholar]

Feng Q, Cui Q, Xiao Z, Liu Z, Fan S. Maternal and perinatal outcomes of SARS-CoV-2 and variants in pregnancy. Maternal Fetal Med 2023;5:104–14. [Google Scholar]

Strid P, Zapata LB, Tong VT, et al. Coronavirus disease 2019 (COVID-19) severity among women of reproductive age with symptomatic laboratory-confirmed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection by pregnancy status-United States, 1 January 2020–25 December 2021. Clin Infect Dis 2022;75. S317–25. - PMC - PubMed

Wallace B, Chang D, O'Malley Olsen E, et al. Critical care among newborns with and without a COVID-19 diagnosis, May 2020-February 2022. J Perinatol 2023;43:766–74. [DOI] [PMC free article] [PubMed] [Google Scholar]

Schrag SJ, Verani JR, Dixon BE, et al. Estimation of COVID-19 mRNA vaccine effectiveness against medically attended COVID-19 in pregnancy during periods of Delta and omicron variant predominance in the United States. JAMA Netw Open 2022;5:e2233273. [DOI] [PMC free article] [PubMed] [Google Scholar]

Metz TD, Clifton RG, Hughes BL, et al. Disease severity and perinatal outcomes of pregnant patients with coronavirus disease 2019 (COVID-19). Obstet Gynecol 2021;137:571–80. [DOI] [PMC free article] [PubMed] [Google Scholar]

Smith LH, Dollinger CY, VanderWeele TJ, Wyszynski DF. Hernández-Díaz S. Timing and severity of COVID-19 during pregnancy and risk of preterm birth in the International Registry of coronavirus Exposure in Pregnancy. BMC Pregnancy Childbirth 2022;22:775. [DOI] [PMC free article] [PubMed] [Google Scholar]

Stock, S. J., Moore, E., Calvert, C., Carruthers, J., Denny, C., Donaghy, J., Hillman, S., Hopcroft, L. E. M., Hopkins, L., Goulding, A., Lindsay, L., McLaughlin, T., Taylor, B., Auyeung, B., Katikireddi, S. V., McCowan, C., Ritchie, L. D., Rudan, I., Simpson, C. R., Robertson, C., … Wood, R. (2022). Pregnancy outcomes after SARS-CoV-2 infection in periods dominated by delta and omicron variants in Scotland: a population-based cohort study. *The Lancet. Respiratory medicine*, *10*(12), 1129–1136. PMID: **36216011** PMCID: PMC9708088 DOI: 10.1016/S2213-2600(22)00360-5

Prenatal Maternal Immunization for Infant Protection: A Review of the Vaccines Recommended, Infant Immunity and Future Research Directions.

Quincer EM, Cranmer LM, Kamidani S. Pathogens. 2024 Feb 23;13(3):200. doi: 10.3390/pathogens13030200. PMID: 38535543 Free PMC article. Review.

Efficacy and safety of COVID-19 vaccines.

Graña C, Ghosn L, Evrenoglou T, Jarde A, Minozzi S, Bergman H, Buckley BS, Probyn K, Villanueva G, Henschke N, Bonnet H, Assi R, Menon S, Marti M, Devane D, Mallon P, Lelievre JD, Askie LM, Kredo T, Ferrand G, Davidson M, Riveros C, Tovey D, Meerpohl JJ, Grasselli G, Rada G, Hróbjartsson A, Ravaud P, Chaimani A, Boutron I. Cochrane Database Syst Rev. 2022 Dec 7;12(12):CD015477. doi: 10.1002/14651858.CD015477. PMID: 36473651 Free PMC article. Review.

Maternal vaccination against COVID-19 and neonatal outcomes during Omicron: INTERCOVID-2022 study.

Barros FC, Gunier RB, Rego A, Sentilhes L, Rauch S, Gandino S, Teji JS, Thornton JG, Kachikis AB, Nieto R, Craik R, Cavoretto PI, Winsey A, Roggero P, Rodriguez GB, Savasi V, Kalafat E, Giuliani F, Fabre M, Benski AC, Coronado-Zarco IA, Livio S, Ostrovska A, Maiz N, Castedo Camacho FR, Peterson A, Deruelle P, Giudice C, Casale RA, Salomon LJ, Soto Conti CP, Prefumo F, Mohamed Elbayoumy EZ, Vale M, Hernández V, Chandler K, Risso M, Marler E, Cáceres DM, Crespo GA, Ernawati E, Lipschuetz M, Ariff S, Takahashi K, Vecchiarelli C, Hubka T, Ikenoue S, Tavchioska G, Bako B, Ayede AI, Eskenazi B, Bhutta ZA, Kennedy SH, Papageorghiou AT, Villar J; INTERCOVID-2022 International Consortium. Am J Obstet Gynecol. 2024 Oct;231(4):460.e1-460.e17. doi: 10.1016/j.ajog.2024.02.008. Epub 2024 Feb 16. PMID: 38367758

Maternal and Neonatal Morbidity and Mortality Among Pregnant Women With and Without COVID-19 Infection: The INTERCOVID Multinational Cohort Study.

Villar J, Ariff S, Gunier RB, Thiruvengadam R, Rauch S, Kholin A, Roggero P, Prefumo F, do Vale MS, Cardona-Perez JA, Maiz N, Cetin I, Savasi V, Deruelle P, Easter SR, Sichitiu J, Soto Conti CP, Ernawati E, Mhatre M, Teji JS, Liu B, Capelli C, Oberto M, Salazar L, Gravett MG, Cavoretto PI, Nachinab VB, Galadanci H, Oros D, Ayede AI, Sentilhes L, Bako B, Savorani M, Cena H, García-May PK, Etuk S, Casale R, Abd-Elsalam S, Ikenoue S, Aminu MB, Vecciarelli C, Duro EA, Usman MA, John-Akinola Y, Nieto R, Ferrazi E, Bhutta ZA, Langer A, Kennedy SH, Papageorghiou AT. JAMA Pediatr. 2021 Aug 1;175(8):817-826. doi: 10.1001/jamapediatrics.2021.1050. PMID: 33885740 Free PMC article.

Villar J, Soto Conti CP, Gunier RB, Ariff S, Craik R, Cavoretto PI, Rauch S, Gandino S, Nieto R, Winsey A, Menis C, Rodriguez GB, Savasi V, Tug N, Deantoni S, Fabre M, Martinez de Tejada B, Rodriguez-Sibaja MJ, Livio S, Napolitano R, Maiz N, Sobrero H, Peterson A, Deruelle P, Giudice C, Teji JS, Casale RA, Salomon LJ, Prefumo F, Cheikh Ismail L, Gravett MG, Vale M, Hernández V, Sentilhes L, Easter SR, Capelli C, Marler E, Cáceres DM, Albornoz Crespo G, Ernawati E, Lipschuetz M, Takahashi K, Vecchiarelli C, Hubka T, Ikenoue S, Tavchioska G, Bako B, Ayede AI, Eskenazi B, Thornton JG, Bhutta ZA, Kennedy SH, Papageorghiou AT; INTERCOVID-2022 International Consortium. Pregnancy outcomes and vaccine effectiveness during the period of omicron as the variant of concern, INTERCOVID-2022: a multinational, observational study. Lancet. 2023 Feb 11;401(10375):447-457. doi: 10.1016/S0140-6736(22)02467-9. Epub 2023 Jan 17. PMID: 36669520; PMCID: PMC9910845.
Comment in

- COVID-19 vaccination is effective at preventing severe illness and complications during pregnancy.

Ellington S, Jatlaoui TC. Lancet. 2023 Feb 11;401(10375):412-413. doi: 10.1016/S0140-6736(22)02613-7. Epub 2023 Jan 17. PMID: 36669521 Free PMC article. No abstract available.

COVID-19 diagnosis, vaccination during pregnancy, and adverse pregnancy outcomes of 865,654 women in England and Wales: a population-based cohort study.

Raffetti E, Bolton T, Nolan J, Zuccolo L, Denholm R, Smith G, Akbari A, Harron K, Curry G, Allara E, Lawlor DA, Caputo M, Abbasizanjani H, Chico T, Wood AM; CVD-COVID-UK/COVID-IMPACT Consortium and the Longitudinal Health and Wellbeing COVID-19 National Core Study. Lancet Reg Health Eur. 2024 Aug 22;45:101037. doi: 10.1016/j.lanepe.2024.101037. eCollection 2024 Oct. PMID: 39262452 Free PMC article.

Impact of the COVID-19 pandemic on excess maternal deaths in Brazil: A two-year assessment.

Orellana JDY, Leventhal DGP, Flores-Quispe MDP, Marrero L, Jacques N, Morón-Duarte LS, Boschi-Pinto C. PLoS One. 2024 Apr 2;19(4):e0298822. doi: 10.1371/journal.pone.0298822. eCollection 2024. PMID: 38564620 Free PMC article.

A Case Series on Pregnant Patients with Mild Covid-19 Infection and Signs of Severe Placental Insufficiency.

Ivert A, Lindblad Wollmann C, Pettersson K. Case Rep Obstet Gynecol. 2023 Mar 28;2023:2018551. doi: 10.1155/2023/2018551. eCollection 2023. PMID: 37025388 Free PMC article.

Time to enhance COVID-19 vaccination in women of reproductive age.

Cavoretto PI, Farina A. Lancet Reg Health Eur. 2024 Sep 10;45:101069. doi: 10.1016/j.lanepe.2024.101069. eCollection 2024 Oct. PMID: 39308776 Free PMC article. No abstract available.

Predicting adverse outcomes in pregnant patients positive for SARS-CoV-2: a machine learning approach- a retrospective cohort study.

Young D, Houshmand B, Tan CC, Kirubarajan A, Parbhakar A, Dada J, Whittle W, Sobel ML, Gomez LM, Rüdiger M, Pecks U, Oppelt P, Ray JG, Hobson SR, Snelgrove JW, D'Souza R, Kashef R, Sussman D. BMC Pregnancy Childbirth. 2023 Aug 2;23(1):553. doi: 10.1186/s12884-023-05679-2. PMID: 37532986 Free PMC article.

Commentary: Predicting adverse outcomes in pregnant patients positive for SARS-CoV-2 by a machine learning approach.

Salmeri N, Candiani M, Cavoretto PI. BMC Pregnancy Childbirth. 2023 Aug 2;23(1):554. doi: 10.1186/s12884-023-05864-3. PMID: 37532988 Free PMC article.

Safety and Effectiveness of COVID-19 Vaccines During Pregnancy: A Living Systematic Review and Meta-analysis.

Ciapponi A, Berrueta M, Argento FJ, Ballivian J, Bardach A, Brizuela ME, Castellana N, Comandé D, Gottlieb S, Kampmann B, Mazzoni A, Parker EPK, Sambade JM, Stegelmann K, Xiong X, Stergachis A, Buekens P. Drug Saf. 2024 Oct;47(10):991-1010. doi: 10.1007/s40264-024-01458-w. Epub 2024 Jul 15. PMID: 39009928 Free PMC article.

SARS-CoV-2 vaccination in pregnancy.

Dalcin D, Halperin SA. CMAJ. 2023 Sep 25;195(37):E1274. doi: 10.1503/cmaj.221556. PMID: 37748782 Free PMC article. No abstract available.

Reduced maternal immunity and vertical transfer of immunity against SARS-CoV-2 variants of concern with COVID-19 exposure or initial vaccination in pregnancy.

Boelig RC, Chaudhury S, Gromowski GD, Mayer S, King J, Aghai ZH, Bergmann-Leitner E. Front Immunol. 2023 Sep 11;14:1216410. doi: 10.3389/fimmu.2023.1216410. eCollection 2023. PMID: 37753075 Free PMC article.

Cao J, Huang Z, Zeng J, Liu J, Zuo W, Su Z, Chen Y, Yu W, Ye H. Maternal and neonatal outcomes and clinical laboratory testing of pregnant women with COVID-19 during the BA.5.2/BF.7 surge. Virulence. 2024 Dec;15(1):2360130. doi:

10.1080/21505594.2024.2360130. Epub 2024 Jun 4. PMID: 38803076; PMCID: PMC11152110.

A retrospective observational study on maternal and neonatal outcomes of COVID-19: Does the mild SARS-CoV-2 infection affect the outcome?

Li J, Li X, Ye P, You Y, Wang Y, Zhang J, Zhao W, Yu Z, Yao R, Tang J. PeerJ. 2023 Dec 14;11:e16651. doi: 10.7717/peerj.16651. eCollection 2023. PMID: 38107588 Free PMC article.

Effects of prenatal exposure to maternal COVID-19 and perinatal care on neonatal outcome: results from the INTERCOVID Multinational Cohort Study.

Giuliani F, Oros D, Gunier RB, Deantoni S, Rauch S, Casale R, Nieto R, Bertino E, Rego A, Menis C, Gravett MG, Candiani M, Deruelle P, García-May PK, Mhatre M, Usman MA, Abd-Elsalam S, Etuk S, Napolitano R, Liu B, Prefumo F, Savasi V, Do Vale MS, Baafi E, Ariff S, Maiz N, Aminu MB, Cardona-Perez JA, Craik R, Tavchioska G, Bako B, Benski C, Hassan-Hanga F, Savorani M, Sentilhes L, Carola Capelli M, Takahashi K, Vecchiarelli C, Ikenoue S, Thiruvengadam R, Soto Conti CP, Cetin I, Nachinab VB, Ernawati E, Duro EA, Kholin A, Teji JS, Easter SR, Salomon LJ, Ayede AI, Cerbo RM, Agyeman-Duah J, Roggero P, Eskenazi B, Langer A, Bhutta ZA, Kennedy SH, Papageorghiou AT, Villar J. Am J Obstet Gynecol. 2022 Sep;227(3):488.e1-488.e17. doi: 10.1016/j.ajog.2022.04.019. Epub 2022 Apr 19. PMID: 35452653 Free PMC article.

A systematic review of pregnant women with COVID-19 and their neonates.

Mirbeyk M, Saghazadeh A, Rezaei N. Arch Gynecol Obstet. 2021 Jul;304(1):5-38. doi: 10.1007/s00404-021-06049-z. Epub 2021 Apr 2. PMID: 33797605 Free PMC article. Review.

An Analysis of 38 Pregnant Women With COVID-19, Their Newborn Infants, and Maternal-Fetal Transmission of SARS-CoV-2: Maternal Coronavirus Infections and Pregnancy Outcomes.

Schwartz DA. Arch Pathol Lab Med. 2020 Jul 1;144(7):799-805. doi: 10.5858/arpa.2020-0901-SA. PMID: 32180426 Review.

Association of Maternal SARS-CoV-2 Infection in Pregnancy With Neonatal Outcomes.

Norman M, Navér L, Söderling J, Ahlberg M, Hervius Askling H, Aronsson B, Byström E, Jonsson J, Sengpiel V, Ludvigsson JF, Håkansson S, Stephansson O. JAMA. 2021 May 25;325(20):2076-2086. doi: 10.1001/jama.2021.5775. PMID: 33914014 Free PMC article.

Poor maternal-neonatal outcomes in pregnant patients with confirmed SARS-Cov-2 infection: analysis of 145 cases.

Di Guardo F, Di Grazia FM, Di Gregorio LM, Zambrotta E, Carrara G, Gulino FA, Tuscano A, Palumbo M. Arch Gynecol Obstet. 2021 Jun;303(6):1483-1488. doi: 10.1007/s00404-020-05909-4. Epub 2021 Jan 3. PMID: 33389111 Free PMC article.

Comparison of Perinatal Outcome of Delta and Omicron Variant of COVID-19 Infection-A Retrospective Observational Study.

Karadzov Orlic N, Mandic-Markovic V, Jankovic S, Lukic R, Milovanovic Z, Maglic D, Popov D, Stankovic M, Drobnjak S, Preradovic D, Mikovic Z. Medicina (Kaunas). 2024 Jun 3;60(6):935. doi: 10.3390/medicina60060935. PMID: 38929551 Free PMC article.

A systematic review of pregnant women with COVID-19 and their neonates.

Mirbeyk M, Saghazadeh A, Rezaei N. Arch Gynecol Obstet. 2021 Jul;304(1):5-38. doi: 10.1007/s00404-021-06049-z. Epub 2021 Apr 2. PMID: 33797605 Free PMC article. Review.

Pregnancy and neonatal outcomes of COVID-19: coreporting of common outcomes from PAN-COVID and AAP-SONPM registries.

Mullins E, Hudak ML, Banerjee J, Getzlaff T, Townson J, Barnette K, Playle R, Perry A, Bourne T, Lees CC; PAN-COVID investigators and the National Perinatal COVID-19 Registry Study Group. Ultrasound Obstet Gynecol. 2021 Apr;57(4):573-581. doi: 10.1002/uog.23619. PMID: 33620113 Free PMC article.

SARS-CoV-2 infection in pregnancy during the first wave of COVID-19 in the Netherlands: a prospective nationwide population-based cohort study (NethOSS).

Overtoom EM, Rosman AN, Zwart JJ, Vogelvang TE, Schaap TP, van den Akker T, Bloemenkamp K. BJOG. 2022 Jan;129(1):91-100. doi: 10.1111/1471-0528.16903. Epub 2021 Sep 26. PMID: 34494694 Free PMC article.

Clinical course of severe and critical coronavirus disease 2019 in hospitalized pregnancies: a United States cohort study.

Pierce-Williams RAM, Burd J, Felder L, Khoury R, Bernstein PS, Avila K, Penfield CA, Roman AS, DeBolt CA, Stone JL, Bianco A, Kern-Goldberger AR, Hirshberg A, Srinivas SK, Jayakumaran JS, Brandt JS, Anastasio H, Birsner M, O'Brien DS, Sedev HM, Dolin CD, Schnettler WT, Suhag A, Ahluwalia S, Navathe RS, Khalifeh A, Anderson K, Berghella V. Am J Obstet Gynecol MFM. 2020 Aug;2(3):100134. doi: 10.1016/j.ajogmf.2020.100134. Epub 2020 May 8. PMID: 32391519 Free PMC article.

[Retrospective Analysis of Clinical Characteristics and Neonatal Outcomes of Pregnant Women with SARS-COV-2 Infection.]

Chen Y, Pang XL, Ding WP, Peng XC, Yang J, Zhou Y. Curr Med Sci. 2021 Apr;41(2):306-311. doi: 10.1007/s11596-021-2347-9. Epub 2021 Apr 20. PMID: 33877546 Free PMC article.

[Impact of SARS-CoV-2 infection in pregnant women and their babies: clinical and epidemiological features.]

Vidal MJ, Martínez-Solanas È, Mendoza S, Sala N, Jané M, Mendioroz J, Ciruela P. Gac Sanit. 2023 Nov 25;37:102332. doi: 10.1016/j.gaceta.2023.102332. eCollection 2023. PMID: 38007961 Free article.

[Effects of COVID-19 vaccination during pregnancy on SARS-CoV-2 infection and maternal and neonatal outcomes: A systematic review and meta-analysis.]

Rahmati M, Yon DK, Lee SW, Butler L, Koyanagi A, Jacob L, Shin JI, Smith L. Rev Med Virol. 2023 May;33(3):e2434. doi: 10.1002/rmv.2434. Epub 2023 Mar 10. PMID: 36896895 Review.

[Association of Maternal Perinatal SARS-CoV-2 Infection With Neonatal Outcomes During the COVID-19 Pandemic in Massachusetts.]

Angelidou A, Sullivan K, Melvin PR, Shui JE, Goldfarb IT, Bartolome R, Chaudhary N, Vaidya R, Culic I, Singh R, Yanni D, Patrizi S, Hudak ML, Parker MG, Belfort MB. JAMA Netw Open. 2021 Apr 1;4(4):e217523. doi: 10.1001/jamanetworkopen.2021.7523. PMID: 33890989 Free PMC article.

[SARS-CoV-2 in pregnancy: maternal and perinatal outcome data of 34 pregnant women hospitalised between May and October 2020.]

Hall M, Endress D, Hölbfer S, Maier B. J Perinat Med. 2020 Nov 27;49(2):138-140. doi: 10.1515/jpm-2020-0499. Print 2021 Feb 23. PMID: 33544532

[Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: living systematic review and meta-analysis.]

Allotey J, Stallings E, Bonet M, Yap M, Chatterjee S, Kew T, Debenham L, Llavall AC, Dixit A, Zhou D, Balaji R, Lee SI, Qiu X, Yuan M, Coomar D, Sheikh J, Lawson H, Ansari K, van Wely M, van Leeuwen E, Kostova E, Kunst H, Khalil A, Tiberi S, Brizuela V, Broutet N, Kara E, Kim CR, Thorson A, Oladapo OT, Mofenson L, Zamora J, Thangaratinam S; for PregCOV-19 Living Systematic Review Consortium. BMJ.

2020 Sep 1;370:m3320. doi: 10.1136/bmj.m3320. Update in: BMJ. 2022 May 30;377:o1205. doi: 10.1136/bmj.o1205 PMID: 32873575 Free PMC article.

Clinical characteristics, maternal and neonatal outcomes of pregnant women with SARS-CoV-2 infection in Turkey.

Ozsurmeli M, Terzi H, Hocaoglu M, Bilir RA, Gunay T, Unsal D, Turgut A, Karateke A. Bratisl Lek Listy. 2021;122(2):152-157. doi: 10.4149/BLL_2021_023. PMID: 33502885

Anxiety and depression symptoms in the same pregnant women before and during the COVID-19 pandemic.

Ayaz R, Hocaoğlu M, Günay T, Yardımcı OD, Turgut A, Karateke A. J Perinat Med. 2020 Nov 26;48(9):965-970. doi: 10.1515/jpm-2020-0380. PMID: 32887191 Free article.

Anxiety and Post-Traumatic Stress Disorder Symptoms in Pregnant Women during the COVID-19 Pandemic's Delay Phase.

Hocaoglu M, Ayaz R, Gunay T, Akin E, Turgut A, Karateke A. Psychiatr Danub. 2020 Autumn-Winter;32(3-4):521-526. doi: 10.24869/psyd.2020.521. PMID: 33370762 Free article.

SARS-CoV-2 infection in pregnancy in Denmark-characteristics and outcomes after confirmed infection in pregnancy: A nationwide, prospective, population-based cohort study.

Aabakke AJM, Krebs L, Petersen TG, Kjeldsen FS, Corn G, Wøjdemann K, Ibsen MH, Jonsdottir F, Rønneberg E, Andersen CS, Sundtoft I, Clausen T, Milbak J, Burmester L, Lindved B, Thorsen-Meyer A, Khalil MR, Henriksen B, Jønsson L, Andersen LLT, Karlsen KK, Pedersen ML, Klemmensen Å, Vestgaard M, Thisted D, Tatla MK, Andersen LS, Brülle AL, Gulbech A, Andersson CB, Farlie R, Hansen L, Hvidman L, Sørensen AN, Rathcke SL, Rubin KH, Petersen LK, Jørgensen JS, Stokholm L, Bliddal M. Acta Obstet Gynecol Scand. 2021 Nov;100(11):2097-2110. doi: 10.1111/aogs.14252. Epub 2021 Aug 31. PMID: 34467518 Free PMC article.

COVID-19 in pregnant women: A systematic review and meta-analysis.

Capobianco G, Saderi L, Aliberti S, Mondoni M, Piana A, Dessole F, Dessole M, Cherchi PL, Dessole S, Sotgiu G. Eur J Obstet Gynecol Reprod Biol. 2020 Sep;252:543-558. doi: 10.1016/j.ejogrb.2020.07.006. Epub 2020 Jul 16. PMID: 32713730 Free PMC article.

A multicenter study on epidemiological and clinical characteristics of 125 newborns born to women infected with COVID-19 by Turkish Neonatal Society.

Oncel MY, Akın IM, Kanburoglu MK, Tayman C, Coskun S, Narter F, Er I, Oncan TG, Memisoglu A, Cetinkaya M, Oguz D, Erdeve O, Koc E; Neo-Covid Study Group. Eur J

Pediatr. 2021 Mar;180(3):733-742. doi: 10.1007/s00431-020-03767-5. Epub 2020 Aug 10. PMID: 32776309 Free PMC article. Clinical Trial.

One year into the SARS-CoV-2 pandemic: perinatal outcome and data on the transmission of 116 pregnant women.

Hall M, Hölbfer S, Endress D, Aicher G, Drechsel-Burkhard G, Maier B. J Perinat Med. 2022 Feb 1;50(4):404-406. doi: 10.1515/jpm-2021-0271. Print 2022 May 25. PMID: 35107227 Free article.

SARS-CoV-2 infection among hospitalised pregnant women and impact of different viral strains on COVID-19 severity in Italy: a national prospective population-based cohort study.

Donati S, Corsi E, Maraschini A, Salvatore MA; ItOSS-COVID-19 Working Group. BJOG. 2022 Jan;129(2):221-231. doi: 10.1111/1471-0528.16980. Epub 2021 Nov 20. PMID: 34687585 Free PMC article.

Impact of SARS-CoV-2 on pregnancy and neonatal outcomes: An open prospective study of pregnant women in Brazil.

Gomez UT, Francisco RPV, Baptista FS, Gibelli MABC, Ibidi SM, Carvalho WB, Paganoti CF, Sabino EC, Silva LCOD, Jaenisch T, Mayaud P, Brizot ML; HC-FMUSP-Obstetric COVID-19 Study Group. Clinics (Sao Paulo). 2022 Jun 27;77:100073. doi: 10.1016/j.clinsp.2022.100073. eCollection 2022. PMID: 35797767 Free PMC article.

Neonatal outcome in 29 pregnant women with COVID-19: A retrospective study in Wuhan, China.

Wu YT, Liu J, Xu JJ, Chen YF, Yang W, Chen Y, Li C, Wang Y, Liu H, Zhang C, Jiang L, Qian ZX, Kawai A, Mol BW, Dennis CL, Xiong GP, Cheng BH, Yang J, Huang HF. PLoS Med. 2020 Jul 28;17(7):e1003195. doi: 10.1371/journal.pmed.1003195. eCollection 2020 Jul. PMID: 32722722 Free PMC article.

Severe acute respiratory syndrome coronavirus 2(SARS-CoV-2) infection during late pregnancy: a report of 18 patients from Wuhan, China.

Zhang L, Dong L, Ming L, Wei M, Li J, Hu R, Yang J. BMC Pregnancy Childbirth. 2020 Jul 8;20(1):394. doi: 10.1186/s12884-020-03026-3. PMID: 32641013 Free PMC article.

[Maternal and neonatal outcomes of COVID-19 in a high-risk pregnant cohort with and without HIV.]

De Waard L, Langenegger E, Erasmus K, Van der Merwe T, Olivier SE, Du Toit N, Paulsen C, Nkangana N, Van Niekerk M, Moodley A, Schell S, Taljaard J, Botha MH, Dramowski A, Cluver CA, Bekker A. S Afr Med J. 2021 Dec 2;111(12):1174-1180. doi: 10.7196/SAMJ.2021.v111i12.15683. PMID: 34949304

[Comparison of early postnatal clinical outcomes of newborns born to pregnant women with COVID-19: a case-control study.]

Akyıldız D, Çamur Z. J Matern Fetal Neonatal Med. 2022 Dec;35(25):8673-8680. doi: 10.1080/14767058.2021.1998440. Epub 2021 Nov 3. PMID: 34732087

[Maternal and perinatal outcomes of pregnant women with SARS-CoV-2 infection at the time of birth in England: national cohort study.]

Gurol-Urganci I, Jardine JE, Carroll F, Draycott T, Dunn G, Fremeaux A, Harris T, Hawdon J, Morris E, Muller P, Waite L, Webster K, van der Meulen J, Khalil A. Am J Obstet Gynecol. 2021 Nov;225(5):522.e1-522.e11. doi: 10.1016/j.ajog.2021.05.016. Epub 2021 May 20. PMID: 34023315 Free PMC article.

[Vaginal delivery in SARS-CoV-2-infected pregnant women in Israel: a multicenter prospective analysis.]

Rottenstreich A, Tsur A, Braverman N, Kabiri D, Porat S, Benenson S, Oster Y, Kam HA, Walfisch A, Bart Y, Meyer R, Lifshitz SJ, Amikam U, Biron-Shental T, Cohen G, Sciaky-Tamir Y, Shachar IB, Yinon Y, Reubinoff B. Arch Gynecol Obstet. 2021 Jun;303(6):1401-1405. doi: 10.1007/s00404-020-05854-2. Epub 2020 Oct 29. PMID: 33123808 Free PMC article.

[Comparing pregnancy outcomes between symptomatic and asymptomatic COVID-19 positive unvaccinated women: Multicenter study in Saudi Arabia.]

Shams T, Alhashemi H, Madkhali A, Noorelahi A, Allarakia S, Faden Y, Alhasani A, Alzahrani K, Alrefai A, Ghilan NA, Al-Sum H, Kurdi S, Al-Ansari Y, Alotaibi M. J Infect Public Health. 2022 Aug;15(8):845-852. doi: 10.1016/j.jiph.2022.06.002. Epub 2022 Jun 24. PMID: 35779468 Free PMC article.

[Gestational diabetes mellitus and COVID-19: results from the COVID-19-Related Obstetric and Neonatal Outcome Study (CRONOS).]

Kleinwechter HJ, Weber KS, Mingers N, Ramsauer B, Schaefer-Graf UM, Groten T, Kuschel B, Backes C, Banz-Jansen C, Berghaeuser MA, Brotsack IA, Dressler-

Steinbach I, Engelbrecht C, Engler-Hauschild S, Gruber TM, Hepp V, Hollatz-Galuschki E, Iannaccone A, Jebens A, von Kaisenberg CS, Kaup L, Keil C, Kladt C, Kolben T, Kraft K, Kunze M, Lastinger J, Luedemann K, Manz J, Morfeld CA, Parchmann O, Pfaff L, Reinhardt K, Runkel A, Schmidt M, Sourouni M, Stelbrink J, Stubert J, Stumpfe FM, Treptow A, Rüdiger M, Pecks U; COVID-19-Related Obstetric and Neonatal Outcome Study (CRONOS) Network. Am J Obstet Gynecol. 2022 Oct;227(4):631.e1-631.e19. doi: 10.1016/j.ajog.2022.05.027. Epub 2022 May 14. PMID: 35580632 Free PMC article.

Relationship between coronavirus disease 2019 in pregnancy and maternal and fetal outcomes: Retrospective analytical cohort study.

Alipour Z, Samadi P, Eskandari N, Ghaedrahmati M, Vahedian M, Khalajinia Z, Mastanijahroodi A. Midwifery. 2021 Nov;102:103128. doi: 10.1016/j.midw.2021.103128. Epub 2021 Aug 25. PMID: 34474247 Free PMC article.

Maternal and perinatal outcomes of pregnant women with SARS-CoV-2 infection.

WAPM (World Association of Perinatal Medicine) Working Group on COVID-19. Ultrasound Obstet Gynecol. 2021 Feb;57(2):232-241. doi: 10.1002/uog.23107. Epub 2021 Jan 21. PMID: 32926494 Free article.

Vertical Transmission of SARS-CoV-2: A Systematic Review of Systematic Reviews.

Musa SS, Bello UM, Zhao S, Abdullahi ZU, Lawan MA, He D. Viruses. 2021 Sep 20;13(9):1877. doi: 10.3390/v13091877. PMID: 34578458 Free PMC article.

Reduced maternal immunity and vertical transfer of immunity against SARS-CoV-2 variants of concern with COVID-19 exposure or initial vaccination in pregnancy.

Boelig RC, Chaudhury S, Gromowski GD, Mayer S, King J, Aghai ZH, Bergmann-Leitner E. Front Immunol. 2023 Sep 11;14:1216410. doi: 10.3389/fimmu.2023.1216410. eCollection 2023. PMID: 37753075 Free PMC article.

Maternal, fetal and neonatal outcomes of large series of SARS-CoV-2 positive pregnancies in peripartum period: A single-center prospective comparative study.

Hcini N, Maamri F, Picone O, Carod JF, Lambert V, Mathieu M, Carles G, Pomar L. Eur J Obstet Gynecol Reprod Biol. 2021 Feb;257:11-18. doi: 10.1016/j.ejogrb.2020.11.068. Epub 2020 Dec 1. PMID: 33310656 Free PMC article.

Deng H, Jin Y, Sheng M, Liu M, Shen J, Qian W, Zou G, Liao Y, Liu T, Ling Y, Fan X. Safety and efficacy of COVID-19 vaccine immunization during pregnancy in 1024

pregnant women infected with the SARS-CoV-2 Omicron virus in Shanghai, China. Front Immunol. 2024 Jan 16;14:1303058. doi: 10.3389/fimmu.2023.1303058. PMID: 38292486; PMCID: PMC10826606.

- Maternal and Cord Anti-SARS-CoV-2-Spike IgG following COVID-19 Vaccination versus Infection during Pregnancy: A Prospective Study, Israel October 2021-March 2022.

Abu Shqara R, Frank Wolf M, Mikhail Mustafa S, Sgayer I, Assulyn T, Abu Zraki A, Askhar Majadla N, Rechnitzer H, Shehadeh M, Fleisher Sheffer V, Bordeynik-Cohen M, Yakir O, Lowenstein L, Sela E, Edelstein M, Dror AA. Am J Perinatol. 2024 May;41(S 01):e1935-e1943. doi: 10.1055/a-2090-5402. Epub 2023 May 10. PMID: 37164317

- A randomized, double-blind, placebo-controlled phase III clinical trial to evaluate the efficacy and safety of SARS-CoV-2 vaccine (inactivated, Vero cell): a structured summary of a study protocol for a randomised controlled trial.

Akova M, Unal S. Trials. 2021 Apr 13;22(1):276. doi: 10.1186/s13063-021-05180-1. PMID: 33849629 Free PMC article.

- Maternal vaccination against COVID-19 and neonatal outcomes during Omicron: INTERCOVID-2022 study.

Barros FC, Gunier RB, Rego A, Sentilhes L, Rauch S, Gandino S, Teji JS, Thornton JG, Kachikis AB, Nieto R, Craik R, Cavoretto PI, Winsey A, Roggero P, Rodriguez GB, Savasi V, Kalafat E, Giuliani F, Fabre M, Benski AC, Coronado-Zarco IA, Livio S, Ostrovska A, Maiz N, Castedo Camacho FR, Peterson A, Deruelle P, Giudice C, Casale RA, Salomon LJ, Soto Conti CP, Prefumo F, Mohamed Elbayoumy EZ, Vale M, Hernández V, Chandler K, Risso M, Marler E, Cáceres DM, Crespo GA, Ernawati E, Lipschuetz M, Ariff S, Takahashi K, Vecchiarelli C, Hubka T, Ikenoue S, Tavchioska G, Bako B, Ayede AI, Eskenazi B, Bhutta ZA, Kennedy SH, Papageorghiou AT, Villar J; INTERCOVID-2022 International Consortium. Am J Obstet Gynecol. 2024 Oct;231(4):460.e1-460.e17. doi: 10.1016/j.ajog.2024.02.008. Epub 2024 Feb 16. PMID: 38367758

- COVID-19: the possibility, ways, mechanisms, and interruptions of mother-to-child transmission.

Wang J, Dong W. Arch Gynecol Obstet. 2023 Jun;307(6):1687-1696. doi: 10.1007/s00404-022-06639-5. Epub 2022 Jun 4. PMID: 35665849 Free PMC article. Review.

- Vaccination options for pregnant women during the Omicron period.

He J, Wei Z, Leng T, Bao J, Gao X, Chen F. J Reprod Immunol. 2023 Mar;156:103798. doi: 10.1016/j.jri.2023.103798. Epub 2023 Jan 6. PMID: 36640675 Free PMC article. Review.

Cardona-Pérez JA, Villegas-Mota I, Helguera-Repetto AC, Acevedo-Gallegos S, Rodríguez-Bosch M, Aguinaga-Ríos M, Coronado-Zarco I, León-Juárez M, Aguilar-

Ayala D, Valdespino-Vázquez MY, Moreno-Verduzco ER, Rivera MA, Valencia-Contreras C, Gómez-Sousa ML, Solis-Paredes M, Frías-Madrid B, Velasco-Téllez C, Rodriguez-Aldama JC, Avila-Sosa V, Galván-Contreras R, Figueroa-Damian R, Cortés-Bonilla M, Estrada-Gutierrez G, Espino-Y-Sosa S, Irles C. Prevalence, clinical features, and outcomes of SARS-CoV-2 infection in pregnant women with or without mild/moderate symptoms: Results from universal screening in a tertiary care center in Mexico City, Mexico. PLoS One. 2021 Apr 22;16(4):e0249584. doi: 10.1371/journal.pone.0249584. PMID: 33886590; PMCID: PMC8062012.

[A systematic review of pregnant women with COVID-19 and their neonates.]()

Mirbeyk M, Saghazadeh A, Rezaei N. Arch Gynecol Obstet. 2021 Jul;304(1):5-38. doi: 10.1007/s00404-021-06049-z. Epub 2021 Apr 2. PMID: 33797605 Free PMC article. Review.

[SARS CoV-2 infection as a risk factor of preeclampsia and pre-term birth. An interplay between viral infection, pregnancy-specific immune shift and endothelial dysfunction may lead to negative pregnancy outcomes.]()

Celewicz A, Celewicz M, Michalczyk M, Woźniakowska-Gondek P, Krejczy K, Misiek M, Rzepka R. Ann Med. 2023 Dec;55(1):2197289. doi: 10.1080/07853890.2023.2197289. PMID: 37074264 Free PMC article. Review.

[Trimester and severity of SARS-CoV-2 infection during pregnancy and risk of hypertensive disorders in pregnancy.]()

Parker SE, Annapragada B, Chestnut IA, Fuchs J, Lee A, Sabharwal V, Wachman EM, Yarrington CD. Hypertens Pregnancy. 2024 Dec;43(1):2308922. doi: 10.1080/10641955.2024.2308922. Epub 2024 Jan 27. PMID: 38279906 Free article.

[COVID-19 in pregnant women: a systematic review and meta-analysis on the risk and prevalence of pregnancy loss.]()

van Baar JAC, Kostova EB, Allotey J, Thangaratinam S, Zamora JR, Bonet M, Kim CR, Mofenson LM, Kunst H, Khalil A, van Leeuwen E, Keijzer J, Strikwerda M, Clark B, Verschuuren M, Coomarasamy A, Goddijn M, van Wely M; PregCOV-19 Living Systematic Review Consortium. Hum Reprod Update. 2024 Mar 1;30(2):133-152. doi: 10.1093/humupd/dmad030. PMID: 38016805 Free PMC article.

[Demographics, clinical characteristics, and outcomes in hospitalized patients during six waves of COVID-19 in Northern Iran: a large cohort study.]()

Shirafkan H, Sadeghi F, Halaji M, Rahmani R, Yahyapour Y. Sci Rep. 2023 Dec 18;13(1):22527. doi: 10.1038/s41598-023-50139-8. PMID: 38110656 Free PMC article.

 Association of SARS-CoV-2 Vaccination During Pregnancy With Pregnancy Outcomes.

Magnus MC, Örtqvist AK, Dahlqwist E, Ljung R, Skår F, Oakley L, Macsali F, Pasternak B, Gjessing HK, Håberg SE, Stephansson O. JAMA. 2022 Apr 19;327(15):1469-1477. doi: 10.1001/jama.2022.3271. PMID: 35323851 Free PMC article.

 A population-based matched cohort study of early pregnancy outcomes following COVID-19 vaccination and SARS-CoV-2 infection.

Calvert C, Carruthers J, Denny C, Donaghy J, Hillman S, Hopcroft LEM, Hopkins L, Goulding A, Lindsay L, McLaughlin T, Moore E, Pan J, Taylor B, Almaghrabi F, Auyeung B, Bhaskaran K, Gibbons CL, Katikireddi SV, McCowan C, Murray J, O'Leary M, Ritchie LD, Shah SA, Simpson CR, Robertson C, Sheikh A, Stock SJ, Wood R. Nat Commun. 2022 Oct 17;13(1):6124. doi: 10.1038/s41467-022-33937-y. PMID: 36253471 Free PMC article.

 Protection from previous natural infection compared with mRNA vaccination against SARS-CoV-2 infection and severe COVID-19 in Qatar: a retrospective cohort study.

Chemaitelly H, Ayoub HH, AlMukdad S, Coyle P, Tang P, Yassine HM, Al-Khatib HA, Smatti MK, Hasan MR, Al-Kanaani Z, Al-Kuwari E, Jeremijenko A, Kaleeckal AH, Latif AN, Shaik RM, Abdul-Rahim HF, Nasrallah GK, Al-Kuwari MG, Butt AA, Al-Romaihi HE, Al-Thani MH, Al-Khal A, Bertollini R, Abu-Raddad LJ. Lancet Microbe. 2022 Dec;3(12):e944-e955. doi: 10.1016/S2666-5247(22)00287-7. Epub 2022 Nov 11. PMID: 36375482 Free PMC article.

 The Multi-faceted Effects of COVID-19 on Female Reproductive Health: An Updated Narrative Review.

Al-Bdairi AA, Makki HA, Shawki O, Alkhudair SH, Al-Hilli NM, Alkhalidi BA, Alkadhim HK, Shweliyya AA. Cureus. 2024 Apr 9;16(4):e57944. doi: 10.7759/cureus.57944. eCollection 2024 Apr. PMID: 38738039 Free PMC article. Review.

 Neonatal and maternal outcomes of mRNA versus Non-mRNA COVID-19 vaccines in pregnant patients: a systematic review and meta-analysis.

Oliveira JA, da Silva EG, Karasu AFG, Silva AMN, Philip CE. Rev Bras Ginecol Obstet. 2024 Sep 18;46:e-rbgo69. doi: 10.61622/rbgo/2024rbgo69. eCollection 2024. PMID: 39380590 Free PMC article.

Assessment of Adverse Reactions, Antibody Patterns, and 12-month Outcomes in the Mother-Infant Dyad After COVID-19 mRNA Vaccination in Pregnancy.

Cassidy AG, Li L, Golan Y, Gay C, Lin CY, Jigmeddagva U, Chidboy MA, Ilala M, Buarpung S, Gonzalez VJ, Basilio E, Duck M, Murtha AP, Wu AHB, Lynch KL, Asiodu IV, Prahl MK, Gaw SL. JAMA Netw Open. 2023 Jul 3;6(7):e2323405. doi: 10.1001/jamanetworkopen.2023.23405. PMID: 37450302 Free PMC article.

Butt, A. A. et al. SARS-CoV-2 vaccine effectiveness in preventing confirmed infection in pregnant women. *J. Clin. Invest.* **131** https://doi.org/10.1172/jci153662 (2021).

McLaurin-Jiang, S. · Garner, C.D. · Krutsch, K. · et al.

Maternal and child symptoms following COVID-19 vaccination among breastfeeding mothers *Breastfeed Med.* 2021; **16**:702-709 Crossref Scopus (38) PubMed Google Scholar

Bertrand, K. · Honerkamp-Smith, G. · Chambers, C.D. **Maternal and child outcomes reported by breastfeeding women following messenger RNA COVID-19 vaccination**

Breastfeed Med. 2021; **16**:697-701 Crossref Scopus (31) PubMed Google Scholar

ΑΠΟΒΟΛΕΣ ΣΕ ΕΜΒΟΛΙΑΣΜΕΝΕΣ ΕΓΚΥΟΥΣ / ΠΡΟΩΡΟΤΗΤΑ/ ΣΥΓΓΕΝΕΙΣ ΑΝΩΜΑΛΙΕΣ

Η διαταραχή της CD4+ T λεμφοκυτταρικής ανοσιακής απάντησης, κατά τη διάρκεια της εγκυμοσύνης, σχετίζεται με ανεπιθύμητα περιγεννητικά συμβάματα, συμπεριλαμβανομένης της απώλειας του κυήματος και του πρόωρου τοκετού. Επιπλέον, μπορεί να προκαλέσει απώτερες διαταραχές στα νεογνά. Κατά συνέπεια, οι έγκυες γυναίκες και οι γυναικολόγοι τους καλούνται να συνυπολογίσουν τα διαθέσιμα δεδομένα για να σταθμίσουν τα πλεονεκτήματα και τους δυνητικούς κινδύνους από τα εμβόλια κατά της COVID-19 λοίμωξης.

Calvert C, Carruthers J, Denny C, Donaghy J, Hopcroft LEM, Hopkins L, Goulding A, Lindsay L, McLaughlin T, Moore E, Taylor B, Loane M, Dolk H, Morris J, Auyeung B, Bhaskaran K, Gibbons CL, Katikireddi SV, O'Leary M, McAllister D, Shi T, Simpson CR, Robertson C, Sheikh A, Stock SJ, Wood R. A population-based matched cohort study of major congenital anomalies following COVID-19 vaccination and SARS-CoV-2 infection. Nat Commun. 2023 Jan 6;14(1):107. doi: 10.1038/s41467-022-35771-8. PMID: 36609574; PMCID: PMC9821346.

COVID-19 in pregnancy-what study designs can we use to assess the risk of congenital anomalies in relation to COVID-19 disease, treatment and vaccination?

Dolk H, Damase-Michel C, Morris JK, Loane M. Paediatr Perinat Epidemiol. 2022 Jul;36(4):493-507. doi: 10.1111/ppe.12840. Epub 2022 Mar 2. PMID: 35234297 Free PMC article. Review.

In need of robust evidence of non-association of pregestational and early pregnancy SARS-CoV-2 infections with congenital anomalies.

Samara A, Souter V, Coutinho CM, Khalil A. EClinicalMedicine. 2024 Jul 13;74:102729. doi: 10.1016/j.eclinm.2024.102729. eCollection 2024 Aug. PMID: 39109188 Free PMC article. Review.

Congenital anomalies during Covid-19: artifact of surveillance or a real TORCH?

Auger N, Arbour L, Lewin A, Brousseau É, Healy-Profitós J, Luu TM. Eur J Epidemiol. 2024 Jun;39(6):613-621. doi: 10.1007/s10654-024-01122-8. Epub 2024 Apr 9. PMID: 38589643

Congenital anomalies during Covid-19: artifact of surveillance or a real TORCH?

Auger N, Arbour L, Lewin A, Brousseau É, Healy-Profitós J, Luu TM. Eur J Epidemiol. 2024 Jun;39(6):613-621. doi: 10.1007/s10654-024-01122-8. Epub 2024 Apr 9. PMID: 38589643

Maternal cardiovascular health in early pregnancy and the risk of congenital heart defects in offspring.

Zhang DW, Zhu YB, Zhou SJ, Chen XH, Li HB, Liu WJ, Wu ZQ, Chen Q, Cao H. BMC Pregnancy Childbirth. 2024 Apr 26;24(1):325. doi: 10.1186/s12884-024-06529-5. PMID: 38671408 Free PMC article.

In need of robust evidence of non-association of pregestational and early pregnancy SARS-CoV-2 infections with congenital anomalies.

Samara A, Souter V, Coutinho CM, Khalil A. EClinicalMedicine. 2024 Jul 13;74:102729. doi: 10.1016/j.eclinm.2024.102729. eCollection 2024 Aug. PMID: 39109188 Free PMC article. Review.

Oliveira JA, da Silva EG, Karasu AFG, Silva AMN, Philip CE. Neonatal and maternal outcomes of mRNA versus Non-mRNA COVID-19 vaccines in pregnant patients: a systematic review and meta-analysis. Rev Bras Ginecol Obstet. 2024 Sep 18;46:e-rbgo69. doi: 10.61622/rbgo/2024rbgo69. PMID: 39380590; PMCID: PMC11460421.

Santos J, Miller M, Branda ME, Mehta RA, Theiler RN. Maternal COVID-19 vaccination status and association with neonatal congenital anomalies. Front Pediatr. 2024 Apr 19;12:1355502. doi: 10.3389/fped.2024.1355502. PMID: 38706924; PMCID: PMC11066299.

ΔΙΑΦΟΡΕΣ ΑΛΛΕΣ ΓΥΝΑΙΚΟΛΟΓΙΚΕΣ ΕΠΙΠΛΟΚΕΣ

Post COVID-19 Vaccination Vulvar Aphthous Ulcers: An Unpopular Case Series
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8929996/

ΑΙΜΑΤΟΛΟΓΙΚΕΣ ΑΝΕΠΙΘΥΜΗΤΕΣ ΕΝΕΡΓΕΙΕΣ (HEMATOLOGIC ADVERSE EVENTS)

Fattizzo B, Pasquale R, Croci GA, Pettine L, Cassanello G, Barcellini W. Blood Transfus. 2024 May;22(3):266-272. doi: 10.2450/BloodTransfus.500. Epub 2023 Sep 4. PMID: 37677091 Free PMC article. Review. No abstract available.

Kuter DJ. Exacerbation of immune thrombocytopenia following COVID-19 vaccination. Br J Haematol. 2021 Nov;195(3):365-370. doi: 10.1111/bjh.17645. Epub 2021 Jun 24. PMID: 34075578; PMCID: PMC8239625.

Visser C, Swinkels M, van Werkhoven ED, Croles FN, Noordzij-Nooteboom HS, Eefting M, Last-Koopmans SM, Idink C, Westerweel PE, Santbergen B, Jobse PA, Baboe F; RECOVAC-IR Consortium; Te Boekhorst PAW, Leebeek FWG, Levin MD, Kruip MJHA, Jansen AJG. Blood Adv. 2022 Mar 22;6(6):1637-1644. doi: 10.1182/bloodadvances.2021006379. PMID: 34941989 Free PMC article.

Effects of COVID-19 vaccination on platelet counts and bleeding in children, adolescents, and young adults with immune thrombocytopenia.

Kaicker S, Martinko K, Bussel JB. Pediatr Blood Cancer. 2023 Jan;70(1):e30051. doi: 10.1002/pbc.30051. Epub 2022 Nov 1. PMID: 36317671 Free PMC article.

Thrombocytopenia following Pfizer and Moderna SARS-CoV-2 vaccination.

Lee EJ, Cines DB, Gernsheimer T, Kessler C, Michel M, Tarantino MD, Semple JW, Arnold DM, Godeau B, Lambert MP, Bussel JB. Am J Hematol. 2021 May 1;96(5):534-537. doi: 10.1002/ajh.26132. Epub 2021 Mar 9. PMID: 33606296 Free PMC article. No abstract available.

Crickx E, Moulis G, Ebbo M, Terriou L, Briantais A, Languille L, Limal N, Guillet S, Michel M, Mahevas M, Godeau B (2021) Safety of anti-SARS-CoV-2 vaccination for patients with immune thrombocytopenia. Br J Haematol 195:703–705. https://doi.org/10.1111/bjh.17813
https://doi.org/10.1111/bjh.17813

Jacobs JW, Booth GS, Adkins BD. Analysis of hematologic adverse events reported to a national surveillance system following COVID-19 bivalent booster vaccination. Ann Hematol. 2023 Apr;102(4):955-959. doi: 10.1007/s00277-023-05136-2. Epub 2023 Feb 16. PMID: 36795118; PMCID: PMC9933824.

Jacobs JW, Adkins BD, Walker SC, Booth GS, Wheeler AP. Coagulation factor inhibitors in COVID-19: from SARS-CoV-2 vaccination to infection. Res Pract Thromb Haemost. 2022;6(3):e12700. doi: 10.1002/rth2.12700. - DOI - PMC - PubMed

Thilagar B, Beidoun M, Rhoades R. Kaatz S (2021) COVID-19 and thrombosis: searching for evidence [published correction appears in Hematology Am Soc Hematol

Educ Program. 2022 Dec 9;2022(1):725] Hematol Am Soc Hematol Educ Program. 2021;1:621–627. doi: 10.1182/hematology.2021000298. - DOI - PMC - PubMed

Bhattacharjee S, Banerjee M. Immune thrombocytopenia secondary to COVID-19: a systematic review. SN Compr Clin Med. 2020;2(11):2048–2058. doi: 10.1007/s42399-020-00521-8. - DOI - PMC - PubMed

Cines DB, Bussel JB. SARS-CoV-2 Vaccine-induced immune thrombotic thrombocytopenia [published correction appears in N Engl J Med. 2021 Jun 10;384(23):e92] N Engl J Med. 2021;384(23):2254–2256. doi: 10.1056/NEJMe2106315. - DOI - PMC - PubMed

Lee EJ, Cines DB, Gernsheimer T, Kessler C, Michel M, Tarantino MD, Semple JW, Arnold DM, Godeau B, Lambert MP, Bussel JB. Thrombocytopenia following Pfizer and Moderna SARS-CoV-2 vaccination. Am J Hematol. 2021;96(5):534–537. doi: 10.1002/ajh.26132. - DOI - PMC - PubMed

Warm autoimmune hemolytic anemia and IgM-monoclonal gammopathy following BNT162b2 COVID-19 vaccine in a patient with splenic marginal zone lymphoma] https://pubmed.ncbi.nlm.nih.gov/36351643/

A case of acquired haemophilia A in a 70-year-old post COVID-19 vaccine https://pubmed.ncbi.nlm.nih.gov/34708898/

Saluja P, Gautam N, Yadala S, Venkata AN. Thrombotic thrombocytopenic purpura (TTP) after COVID-19 vaccination: a systematic review of reported cases. Thromb Res. 2022;214:115–121. doi: 10.1016/j.thromres.2022.04.020. - DOI - PMC - PubMed

Lafaurie M, Lapeyre-Mestre M, Sailler L, Sommet A, Moulis G. Risk of immune thrombocytopenia after influenza vaccine. JAMA Intern Med. 2022;182(4):444–445. doi: 10.1001/jamainternmed.2021.8523. - DOI - PMC - PubMed

Thrombocytopenia including immune thrombocytopenia after receipt of mRNA COVID-19 vaccines reported to the Vaccine Adverse Event Reporting System (VAERS).

Welsh KJ, Baumblatt J, Chege W, Goud R, Nair N. Vaccine. 2021 Jun 8;39(25):3329-3332. doi: 10.1016/j.vaccine.2021.04.054. Epub 2021 Apr 30. PMID: 34006408 Free PMC article.

Simpson CR, Shi T, Vasileiou E, et al. First dose ChAdOx1 and BNT162b2 COVID-19 vaccines and thrombocytopenic, thromboembolic and hemorrhagic events in Scotland. Nat Med. 2021;27(July):1290-1297.

ΑΙΜΑΤΟΛΟΓΙΚΕΣ ΚΑΚΟΗΘΕΙΕΣ

A Case of Chronic Myelomonocytic Leukemia Unmasked After Receiving J&J COVID-19 Vaccine https://pubmed.ncbi.nlm.nih.gov/35865440/

Ang SY, Huang YF, Chang CT. Ph-Positive B-Cell Acute Lymphoblastic Leukemia Occurring after Receipt of Bivalent SARS-CoV-2 mRNA Vaccine Booster: A Case Report. Medicina (Kaunas). 2023 Mar 21;59(3):627. doi: 10.3390/medicina59030627. PMID: 36984629; PMCID: PMC10054610.

Yazdani AN, DeMarco N, Patel P, Abdi A, Velpuri P, Agrawal DK, Rai V. Adverse Hematological Effects of COVID-19 Vaccination and Pathomechanisms of Low Acquired Immunity in Patients with Hematological Malignancies. Vaccines (Basel). 2023 Mar 15;11(3):662. PMID: 36992246; PMCID: PMC10058097 PMID: 36992246 doi: 10.3390/vaccines11030662

Zamfir, M.-A., Moraru, L., Dobrea, C., Scheau, A.-E., Iacob, S., Moldovan, C., Scheau, C., Caruntu, C., & Caruntu, A. (2022). Hematologic Malignancies Diagnosed in the Context of the mRNA COVID-19 Vaccination Campaign: A Report of Two Cases. *Medicina*, *58*(7), 874. https://doi.org/10.3390/medicina58070874 PubMed Abstract | Crossref Full Text | Google Scholar

Revenga-Porcel, L, Peñate, Y, and Granados-Pacheco, F. Anaplastic large cell lymphoma at the SARS-CoV2 vaccine injection site. *J Eur Acad Dermatol Venereol*. (2023) 37:e32–4. doi: 10.1111/jdv.18615 PubMed Abstract | Crossref Full Text | Google Scholar

Panou, E.; Nikolaou, V.; Marinos, L.; Kallambou, S.; Sidiropoulou, P.; Gerochristou, M.; Stratigos, A. Recurrence of cutaneous T-cell lymphoma post viral vector COVID-19 vaccination. J. Eur. Acad. Dermatol. Venereol. 2021, 36, e91–e93. [Google Scholar] [CrossRef]

Panou, E, Nikolaou, V, Marinos, L, Kallambou, S, Sidiropoulou, P, Gerochristou, M, et al. Recurrence of cutaneous T-cell lymphoma post viral vector COVID-19 vaccination. *J Eur Acad Dermatol Venereol*. (2022) 36:e91–3. doi: 10.1111/jdv.17736 PubMed Abstract | Crossref Full Text | Google Scholar

https://pubmed.ncbi.nlm.nih.gov/34628691

Goldman, S.; Bron, D.; Tousseyn, T.; Vierasu, I.; Dewispelaere, L.; Heimann, P.; Cogan, E.; Goldman, M. Rapid progression of angioimmunoblastic T Cell lymphoma following BNT162b2 mRNA vaccine booster shot: A case report. Front. Med. 2021, 8, 2409. [Google Scholar] [CrossRef]

Olszewska B, Zaryczańska A, Nowicki RJ, Sokołowska-Wojdyło M. Rare COVID-19 vaccine side effects got lost in the shuffle. Primary cutaneous lymphomas following COVID-19 vaccination: a systematic review. Front Med (Lausanne). 2024 Apr 10;11:1325478. PMID: 38660418; PMCID: [PMC11041019](PMC11041019) DOI: 10.3389/fmed.2024.1325478

De la Torre-Gomar FJ, Llamas-Molina JM, Pegalajar-García MD, Pérez-Valencia C, Carrero-Castaño A, Ruiz-Villaverde R. Primary Cutaneous CD4 Small/Medium T-Cell Lymphoproliferative Disorder Following COVID-19 Vaccination-What Do We Know about Lymphoproliferative Disorders and Cutaneous Lymphomas after COVID-19 Vaccination? A Report of an Atypical Case and a Review of the Literature. Life (Basel). 2024 Mar 14;14(3):386. PMID: 38541710 PMCID: [PMC10971988](PMC10971988) DOI:10.3390/life14030386

Gordon ER, Kwinta BD, Schreidah CM, Fahmy LM, Adeuyan O, Queen D, Trager MH, Magro CM, Geskin LJ. Cutaneous lymphoproliferative disorders after COVID-19 vaccination: clinical presentation, histopathology, and outcomes. Leuk Lymphoma. 2024 Jan;65(1):48-54. doi: 10.1080/10428194.2023.2270766. Epub 2024 Jan 10. PMID: 37861685 DOI: [10.1080/10428194.2023.2270766](10.1080/10428194.2023.2270766)

Gordon ER, Adeuyan O, Kwinta BD, Schreidah CM, Fahmy LM, Queen D, Trager MH, Magro CM, Geskin LJ. Exploring cutaneous lymphoproliferative disorders in the wake of COVID-19 vaccination. Skin Health Dis. 2024 Mar 25;4(3):e367. PMID: 38846690 PMCID: [PMC11150739](PMC11150739) DOI: [10.1002/ski2.367](10.1002/ski2.367)

Panou, E.; Nikolaou, V.; Kaliampou, S.; Sidiropoulou, P.; Stratigos, A. Cutaneous T-cell lymphoma (CTCL) exacerbation after viral vector COVID-19 vaccination. Eur. J. Cancer 2021, 156, S68. [Google Scholar] [CrossRef]

Tang, W.R.; Hsu, C.W.; Lee, C.C.; Huang, W.L.; Lin, C.Y.; Hsu, Y.T.; Chang, C.; Tsai, M.T.; Hu, Y.N.; Hsu, C.H.; et al. A Case Report of Posttransplant Lymphoproliferative Disorder after AstraZeneca Coronavirus Disease 2019 Vaccine in a Heart Transplant Recipient. Transplant. Proc. 2021. [Google Scholar] [CrossRef]

Brumfiel, CM, Patel, MH, DiCaudo, DJ, Rosenthal, AC, Pittelkow, MR, and Mangold, AR. Recurrence of primary cutaneous CD30-positive lymphoproliferative disorder following COVID-19 vaccination. *Leuk Lymphoma*. (2021) 62:2554–5. doi: 10.1080/10428194.2021.1924371 PubMed Abstract | Crossref Full Text | Google Scholar

Koumaki, D, Marinos, L, Nikolaou, V, Papadakis, M, Zografaki, K, Lagoudaki, E, et al. Lymphomatoid papulosis (LyP) after AZD1222 and BNT162b2 COVID-19 vaccines. *Int*

J Dermatol (2022) 61: 900–902. doi: 10.1111/ijd.16296 PubMed Abstract | Crossref Full Text | Google Scholar

Li, HO, and Lipson, J. New mycosis fungoides-like lymphomatoid reaction following COVID-19 vaccination: a case report. *SAGE Open Med Case Rep*. (2022) 10:2050313X221131859. doi: 10.1177/2050313X221131859 PubMed Abstract | Crossref Full Text | Google Scholar

Kreher, MA, Ahn, J, Werbel, T, and Motaparthi, K. Subcutaneous panniculitis-like T-cell lymphoma after COVID-19 vaccination. *JAAD Case Rep*. (2022) 28:18–20. doi: 10.1016/j.jdcr.2022.08.006 PubMed Abstract | Crossref Full Text | Google Scholar

Hobayan, CG, and Chung, CG. Indolent cutaneous lymphoma with gamma/delta expression after COVID-19 vaccination. *JAAD Case Rep*. (2023) 32:74–6. doi: 10.1016/j.jdcr.2022.12.001 PubMed Abstract | Crossref Full Text | Google Scholar

Bresler, SC, Menge, TD, Tejasvi, T, Carty, SA, and Hristov, AC. Two cases of challenging cutaneous lymphoid infiltrates presenting in the context of COVID-19 vaccination: a reactive lymphomatoid papulosis-like eruption and a bona fide lymphoma. *J Cutan Pathol*. (2023) 50:213–9. doi: 10.1111/cup.14371 PubMed Abstract | Crossref Full Text | Google Scholar

Hooper, MJ, Veon, FL, LeWitt, TM, Chung, C, Choi, J, Zhou, XA, et al. Cutaneous T-cell–rich lymphoid infiltrates after SARS-CoV-2 vaccination. *JAMA Dermatol*. (2022) 158:1073–6. doi: 10.1001/jamadermatol.2022.2383 PubMed Abstract | Crossref Full Text | Google Scholar

Montoya, VHG, Cardona, LG, Morales, S, Ospina, JA, and Rueda, X. SARSCOV-2 vaccine associated with primary cutaneous peripheral T cell lymphoma. *Eur J Cancer*. (2022) 173:32–3. doi: 10.1016/S0959-8049(22)00617-7Crossref Full Text | Google Scholar

Avallone, G, Maronese, CA, Conforti, C, Fava, P, Gargiulo, L, Marzano, AV, et al. Real-world data on primary cutaneous lymphoproliferative disorders following SARS-CoV-2 vaccination: a multicentre experience from tertiary referral hospitals. *J Eur Acad Dermatol Venereol*. (2023) 37:451–5. doi: 10.1111/jdv.18806 Crossref Full Text | Google Scholar

Avallone, G, Quaglino, P, Cavallo, F, Roccuzzo, G, Ribero, S, Zalaudek, I, et al. SARS-CoV-2 vaccine-related cutaneous manifestations: a systematic review. *Int J Dermatol*. (2022) 61:1187–204. doi: 10.1111/ijd.16063 PubMed Abstract | Crossref Full Text | Google Scholar

Avallone, G, Cavallo, F, Astrua, C, Caldarola, G, Conforti, C, De Simone, C, et al. Cutaneous adverse reactions following SARS-CoV-2 vaccine booster dose: a real-life multicentre experience. *J Eur Acad Dermatol Venereol*. (2022) 36:e876–9. doi: 10.1111/jdv.18386 PubMed Abstract | Crossref Full Text | Google Scholar

Martora, F, Villani, A, Battista, T, Fabbrocini, G, and Potestio, L. COVID-19 vaccination and inflammatory skin diseases. *J Cosmet Dermatol*. (2023) 22:32–3. doi: 10.1111/jocd.15414 PubMed Abstract | Crossref Full Text | Google Scholar

Martora, F, Villani, A, Marasca, C, Fabbrocini, G, and Potestio, L. Skin reaction after SARS-CoV-2 vaccines reply to 'cutaneous adverse reactions following SARS-CoV-2 vaccine booster dose: a real-life multicentre experience'. *J Eur Acad Dermatol Venereol*. (2023) 37:e43–4. doi: 10.1111/jdv.18531 PubMed Abstract | Crossref Full Text | Google Scholar

Gambichler, T, Boms, S, Susok, L, Dickel, H, Finis, C, Abu Rached, N, et al. Cutaneous findings following COVID-19 vaccination: review of world literature and own experience. *J Eur Acad Dermatol Venereol*. (2022) 36:172–80. doi: 10.1111/jdv.17744 PubMed Abstract | Crossref Full Text | Google Scholar

Washrawirul, C, Triwatcharikorn, J, Phannajit, J, Ullman, M, Susantitaphong, P, and Rerknimitr, P. Global prevalence and clinical manifestations of cutaneous adverse reactions following COVID-19 vaccination: a systematic review and meta-analysis. *J Eur Acad Dermatol Venereol*. (2022) 36:1947–68. doi: 10.1111/jdv.18294 PubMed Abstract | Crossref Full Text | Google Scholar

Benitez Fuentes, JD, Mohamed Mohamed, K, de Luna Aguilar, A, Jiménez García, C, Guevara-Hoyer, K, Fernandez-Arquero, M, et al. Evidence of exhausted lymphocytes after the third anti-SARS-CoV-2 vaccine dose in cancer patients. *Front Oncol*. (2022) 12:975980. doi: 10.3389/fonc.2022.975980 PubMed Abstract | Crossref Full Text | Google Scholar

Hirsiger, JR, Tzankov, A, Alborelli, I, Recher, M, Daikeler, T, Parmentier, S, et al. Case report: mRNA vaccination-mediated STAT3 overactivation with agranulocytosis and clonal T-LGL expansion. *Front Immunol*. (2023) 14:1087502. doi: 10.3389/fimmu.2023.1087502 Crossref Full Text | Google Scholar

Aouali, S, Benkaraache, M, Almheirat, Y, Zizi, N, and Dikhaye, S. Complete remission of primary cutaneous follicle Centre cell lymphoma associated with COVID-19 vaccine. *J Eur Acad Dermatol Venereol*. (2022) 36:e676–8. doi: 10.1111/jdv.18246 Crossref Full Text | Google Scholar

McMahon DE, Amerson E, Rosenbach M, Lipoff JB, Moustafa D, Tyagi A, et al. Cutaneous reactions reported after Moderna and Pfizer COVID-19 vaccination: a registry-based study of 414 cases. J Am Acad Dermatol. 2021;85(1):46–55. 10.1016/j.jaad.2021.03.092 - DOI - PMC - PubMed

LeWitt T, Chung C, Manton J, Sergeyenko A, Tan T, Sigal A, et al. Rare lymphomatoid reactions following SARS-CoV-2 vaccination. JAAD Case Rep. 2022;20:26–30. 10.1016/j.jdcr.2021.11.021 - DOI - PMC - PubMed

Koumaki D, Marinos L, Nikolaou V, Papadakis M, Zografaki K, Lagoudaki E, et al. Lymphomatoid papulosis (LyP) after AZD1222 and BNT162b2 COVID -19 vaccines. Int J Dermatol. 2022;61(7):900–902. 10.1111/ijd.16296 - DOI - PMC - PubMed

Comment on

- **[Recurrence of cutaneous T-cell lymphoma post viral vector COVID-19 vaccination.]**

Panou E, Nikolaou V, Marinos L, Kallambou S, Sidiropoulou P, Gerochristou M, Stratigos A. J Eur Acad Dermatol Venereol. 2022 Feb;36(2):e91-e93. doi: 10.1111/jdv.17736. Epub 2021 Oct 31. PMID: 34628691 Free PMC article. No abstract available.

ΑΥΤΟΑΝΟΣΗ ΑΙΜΟΛΥΤΙΚΗ ΑΝΑΙΜΙΑ

Montagnani S, Tuccori M, Lombardo G, et al. Autoimmune hemolytic anemia following MF59-adjuvanted influenza vaccine administration: a report of two cases. Ann Pharmacother. 2011;45(1):e8. doi: 10.1345/aph.1P480. - DOI - PubMed

Jacobs JW. Autoimmune hemolytic anemia and COVID-19 vaccination. Hematol Transfus Cell Ther. 2022 doi: 10.1016/j.htct.2022.08.007.10.1016/j.htct.2022.08.007. - DOI - PMC - PubMed

Jacobs JW, Booth GS. COVID-19 and immune-mediated RBC destruction. Am J Clin Pathol. 2022;157(6):844–851. doi: 10.1093/ajcp/aqab210. - DOI - PMC - PubMed

Jafarzadeh A, Jafarzadeh S, Pardehshenas M, Nemati M, Mortazavi SMJ. Development and exacerbation of autoimmune hemolytic anemia following COVID-19 vaccination: A systematic review. Int J Lab Hematol. 2022 doi: 10.1111/ijlh.13978.10.1111/ijlh.13978. - DOI - PMC - PubMed

A case of severe autoimmune hemolytic anemia after a receipt of a first dose of SARS-CoV-2 vaccine
https://pubmed.ncbi.nlm.nih.gov/34258873/

Flordeluna Z. Mesina. Severe Relapsed Autoimmune Hemolytic Anemia after Booster with mRNA-1273 COVID-19 vaccine.Hematology, Transfusion and Cell Therapy, Volume 46, Issue 4, 2024, Pages 485-488, ISSN 2531-1379, https://doi.org/10.1016/j.htct.2022.05.001. (https://www.sciencedirect.com/science/article/pii/S2531137922000827)

Brito S, Ferreira N, Mateus S, Bernardo M, Pinto B, Lourenço A, Grenho F. A Case of Autoimmune Hemolytic Anemia Following COVID-19 Messenger Ribonucleic Acid Vaccination. Cureus. 2021 May 15;13(5):e15035. doi: 10.7759/cureus.15035. PMID: 34150386; PMCID: PMC8200779. doi: 10.7759/cureus.15035

ΑΠΛΑΣΤΙΚΗ ΑΝΑΙΜΙΑ

Aplastic anemia after SARS-CoV-2 infection or vaccines: case series and literature review.

Aplastic Anemia Following COVID-19 Vaccination: A Systematic Review of Case Reports and Case Series.

Int J Hematol Oncol Stem Cell Res. 2024.

A case of severe aplastic anaemia after SARS-CoV-2 vaccination
https://pubmed.ncbi.nlm.nih.gov/34783367/

Tabata S, Hosoi H, Murata S, Takeda S, Mushino T, Sonoki T. Severe aplastic anemia after COVID-19 mRNA vaccination: Causality or coincidence? J Autoimmun. 2022 Jan;126:102782. Epub 2021 Dec 14. PMID: 34920343; PMCID: PMC8668346. doi: 10.1016/j.jaut.2021.102782

Yamamoto M., Keino D., Sumii S., Yokosuka T., Goto H., Inui A., Sogo T., Kawakami M., Tanaka M., Yanagimachi M. Severe Hepatitis-associated Aplastic Anemia Following COVID-19 mRNA Vaccination. Intern. Med. 2023;62:1813–1816. doi: 10.2169/internalmedicine.1308-22. **[DOI] [PMC free article] [PubMed] [Google Scholar]**

Chatzikalil E, Kattamis A, Diamantopoulos P, Solomou EE. New-onset aplastic anemia after SARS-CoV-2 vaccination. Int J Hematol. 2023 Dec;118(6):667-681. Epub 2023 Sep 28. PMID: 37768509. PMID: 37768509 DOI: 10.1007/s12185-023-03666-z

Chen CY, Chen TT, Hsieh CY, Lien MY, Yeh SP, Chen CC. Case reports of management of aplastic anemia after COVID-19 vaccination: a single institute experience in Taiwan. Int J Hematol. 2023 Jan;117(1):149-152. Epub 2022 Sep 4. PMID: 36057889 PMCID: PMC9440996 DOI: 10.1007/s12185-022-03445-2

ΠΑΡΟΞΥΝΤΙΚΗ ΝΥΚΤΕΡΙΝΗ ΑΙΜΟΣΦΑΙΡΙΝΟΥΡΙΑ

Paraoxysmal nocturnal hemoglobinuria patients with hemolytic crisis following Pfizer
https://pubmed.ncbi.nlm.nih.gov/33945618/

Fattizzo B, Giannotta JA, Cecchi N, Barcellini W. SARS-CoV-2 vaccination induces breakthrough hemolysis in paroxysmal nocturnal hemoglobinuria on complement inhibitor. Am J Hematol. 2021 Sep 1;96(9):E344-E346. Epub 2021 Jun 18. PMCID: PMC8212106 PMID: 34057236 doi: 10.1002/ajh.26262

Kamura Y, Sakamoto T, Yokoyama Y, Nishikii H, Sakata-Yanagimoto M, Chiba S, Obara N. Hemolysis induced by SARS-CoV-2 mRNA vaccination in patients with paroxysmal nocturnal hemoglobinuria. Int J Hematol. 2022 Jul;116(1):55-59. Epub 2022 Jun 6. PMID: 35668275 PMCID: PMC9169953 DOI: 10.1007/s12185-022-03387-9

Gerber GF, Yuan X, Yu J, et al. COVID-19 vaccines induce severe hemolysis in paroxysmal nocturnal hemoglobinuria. Blood. 2021. 10.1182/blood.2021011548. [Epub ahead of print]. **[DOI] [PMC free article] [PubMed] [Google Scholar]**

ΘΡΟΜΒΟΠΕΝΙΑ

Alkhelaiwy L, Fatani JA, Alhamoud I, Chaballout A. Immune Thrombocytopenia After COVID-19 Vaccine Requiring Splenectomy: A Case Report and Review of the Literature. Cureus. 2024 Feb 10;16(2):e53955. PMCID: PMC10926895 PMID: [38469016](38469016) doi: 10.7759/cureus.53955

Li Y, Kong D, Ding Y, Wang J. The potential impact of COVID-19 vaccination on patients with immune thrombocytopenic purpura: A protocol for systematic review and meta-analysis. PLoS One. 2024 Nov 11;19(11):e0308546. PMID: 39527538 PMCID: [PMC11554223](PMC11554223) DOI: 10.1371/journal.pone.0308546

Lee EJ, Beltrami-Moreira M, Al-Samkari H, Cuker A, DiRaimo J, Gernsheimer T, Kruse A, Kessler C, Kruse C, Leavitt AD, Lee AI, Liebman HA, Newland AC, Ray AE, Tarantino MD, Thachil J, Kuter DJ, Cines DB, Bussel JB. SARS-CoV-2 vaccination and ITP in patients with de novo or preexisting ITP. Blood. 2022 Mar 10;139(10):1564-1574. PMID: 34587251 PMCID: [PMC8483984](PMC8483984) DOI: 10.1182/blood.2021013411

Lee EJ, Cines DB, Gernsheimer T, et al.: [Thrombocytopenia following Pfizer and Moderna SARS-CoV-2 vaccination](). Am J Hematol. 2021, 96:534-7. [10.1002/ajh.26132](10.1002/ajh.26132)

Nakamura T, Morodomi Y, Kanaji S, Okamura T, Nagafuji K, Kanaji T. Detection of anti-GPIbα autoantibodies in a case of immune thrombocytopenia following COVID-19 vaccination. *Thromb Res*. 2022;209:80-83. PMID: 34894532 PMCID: [PMC8648379](PMC8648379) DOI: 10.1016/j.thromres.2021.11.030

Saluja P, Amisha F, Gautam N, Goraya H: [A systematic review of reported cases of immune thrombocytopenia after COVID-19 vaccination](). Vaccines (Basel). 2022, 10:1444. 10.3390/vaccines10091444

King ER, Towner E. A case of immune thrombocytopenia after BNT162b2 mRNA COVID-19 vaccination. Am J Case Rep 2021;22:e931478. [Cited Here]() | [PubMed]() | [Google Scholar]()

Bidari A, Asgarian S, Pour Mohammad A, Naderi D, Anaraki SR, Gholizadeh Mesgarha M, Naderkhani M: [Immune thrombocytopenic purpura secondary to COVID-19 vaccination: a systematic review](). Eur J Haematol. 2023, 110:335-53. [10.1111/ejh.13917](10.1111/ejh.13917)

ΑΙΜΟΦΑΓΟΚΥΤΤΑΡΙΚΉ ΛΕΜΦΟΪΣΤΙΟΚΥΤΤΑΡΩΣΗ (Hemophagocytic lymphohistiocytosis)

Hemophagocytic lymphohistiocytosis following mRNA-1273 COVID-19 vaccination]
https://pubmed.ncbi.nlm.nih.gov/36476790/

A case of hemophagocytic lymphohistiocytosis after BNT162b2 COVID-19 (Comirnaty®) vaccination
https://pubmed.ncbi.nlm.nih.gov/36316859/

[Haemophagocytic lymphohistiocytosis post-ChAdOx1 nCoV-19 vaccine: A rare case.]() Natl Med J India. 2024.

Hemophagocytic lymphohistiocytosis following ChAdOx1 nCov-19 vaccination.

Ai S, Awford A, Roncolato F. J Med Virol. 2022 Jan;94(1):14-16. doi: 10.1002/jmv.27279. Epub 2021 Aug 23. PMID: 34406660 Free PMC article. No abstract available.

Lessons of the month 3: Haemophagocytic lymphohistiocytosis following COVID-19 vaccination (ChAdOx1 nCoV-19).

Cory P, Lawrence H, Abdulrahim H, Mahmood-Rao H, Hussein A, Gane J. Clin Med (Lond). 2021 Nov;21(6):e677-e679. doi: 10.7861/clinmed.2021-0564. PMID: 34862234 Free PMC article.

Haemophagocytic lymphohistiocytosis after ChAdOx1 nCoV-19 vaccination.

Attwell L, Zaw T, McCormick J, Marks J, McCarthy H. J Clin Pathol. 2022 Apr;75(4):282-284. doi: 10.1136/jclinpath-2021-207760. Epub 2021 Jul 22. PMID: 34301797 No abstract available.

ΕΠΙΚΤΗΤΗ ΑΙΜΟΡΡΟΦΙΛΙΑ

Acquired hemophilia A after vaccination against SARS-CoV-2 with the mRNA-1273 (Moderna) vaccine
https://pubmed.ncbi.nlm.nih.gov/35991728

Acquired Hemophilia A following Pfizer-BioNTech SARS CoV-2 mRNA vaccine, successfully treated with prednisolone and rituximab
https://pubmed.ncbi.nlm.nih.gov/35088622

Acquired Hemophilia A Post-COVID-19 Vaccination: A Case Report and Review
https://pubmed.ncbi.nlm.nih.gov/35265430/

Acquired hemophilia following COVID-19 vaccination: Case report and review of literature
https://pubmed.ncbi.nlm.nih.gov/36176309/

ΓΑΣΤΡΕΝΤΕΡΟΛΟΓΙΚΕΣ ΕΠΙΠΛΟΚΕΣ (GASTROINTESTINAL COMPLICATIONS) ΤΩΝ COVID-19 ΕΜΒΟΛΙΩΝ

Ajmera K, Bansal R, Wilkinson H, et al. (April 12, 2022) Gastrointestinal Complications of COVID-19 Vaccines. Cureus 14(4): e24070. doi:10.7759/cureus.24070

ΟΞΕΙΑ ΚΟΙΛΙΑ

Acute abdomen following COVID-19 vaccination: a systematic review. Cahuapaza-Gutierrez NL, Pajuelo-Vasquez R, Quiroz-Narvaez C, Rioja-Torres F, Quispe-Andahua M, Runzer-Colmenares FM. Clin Exp Vaccine Res. 2024;13:42–53. - PMC - PubMed

10.7774/cevr.2024.13.1.42

ΑΡΤΗΡΙΑΚΗ ΙΣΧΑΙΜΙΑ ΜΕΣΕΝΤΕΡΙΟΥ (EMBOLIC MESENTERIC ARTERIAL ISCHEMIA)

Sean Christopher Gaudio, Frank Eugene Gaudio. (2021). A Case Report of Mesenteric Ischemia After COVID-19 Vaccination. *Journal of Surgery*, *9*(4), 216-219. https://doi.org/10.11648/j.js.20210904.23

ΟΞΕΙΑ ΕΚΚΟΛΠΩΜΑΤΙΤΙΣ ΚΑΙ ΜΙΚΡΟΔΙΑΤΡΗΣΕΙΣ ΤΟΥ ΠΑΧΕΩΣ ΕΝΤΕΡΟΥ (ACUTE DIVERTICULITIS AND COLON MICRO-PERFORATION)

Ajmera K, Bansal R, Wilkinson H, Goyal L. Gastrointestinal Complications of COVID-19 Vaccines. Cureus. 2022 Apr 12;14(4):e24070. doi: 10.7759/cureus.24070. PMID: 35573556; PMCID: PMC9097558.

Hawkins AT, Wise PE, Chan T, et al.: Diverticulitis: an update from the age old paradigm. Curr Probl Surg. 2020, 57:100862. 10.1016/j.cpsurg.2020.100862

ΣΚΩΛΗΚΟΕΙΔΙΤΙΣ (APPENDICITIS)

Υπάρχουν αναφορές που δείχνουν υψηλό κίνδυνο σκωληκοειδίτιδος και άλλες όχι.

US Food and Drug Administration . Vaccines and related biological products advisory committee December 10, 2020. meeting announcement. December 10, 2020. Accessed December 14, 2021. https://www.fda.gov/advisory-committees/advisory-committee-calendar/vaccines-and-related-biological-products-advisory-committee-december-10-2020-meeting-announcement

Mitchell J., Yue Q.Y. Appendicitis as a possible safety signal for the COVID-19 vaccines. Vaccine X. 2021;9 : 100122 [DOI] [PMC free article] [PubMed] [Google Scholar]

Kleif J, Thygesen LC, Gögenur I. Validity of the diagnosis of appendicitis in the Danish National Patient Register. Scand J Public Health. 2020;48(1):38-42. doi: 10.1177/1403494818761765 [DOI] [PubMed] [Google Scholar]

Risk of appendicitis after SARS-CoV-2 infection and SARS-CoV-2 vaccination.

Ljung R, Pihlström N, Sundström A. Br J Surg. 2022 Jul 15;109(8):775-776. doi: **10.1093/bjs/znac127. PMID: 35524731 Free PMC article. No abstract available.**

Kildegaard, H., Ladebo, L., Andersen, J. H., Jensen, P. B., Rasmussen, L., Damkier, P., & Pottegård, A. (2022). Risk of Appendicitis After mRNA COVID-19

Vaccination in a Danish Population. *JAMA Internal Medicine*, *182*(6), 684-686. https://doi.org/10.1001/jamainternmed.2022.1222

Among 4 048 883 individuals immunized with mRNA COVID-19 vaccines, 330 episodes of appendicitis occurred within 21 days of the first dose, corresponding with 8.1 episodes per 100 000 individuals vaccinated
The rate after the second dose was 8.6 per 100 000 individuals (340 cases among 3 944 408 individuals).
Compared with the unvaccinated reference group, we found no increased risk of appendicitis after mRNA COVID-19 vaccination, with an adjusted risk ratio of 0.93 (95% CI, 0.79-1.11) after the first dose and 0.99 (95% CI, 0.84-1.18) after the second dose. This null association was stable across age groups, sexes, and vaccine types

Acute Appendicitis After COVID-19 Vaccines in Italy: A Self-Controlled Case Series Study.

Morciano C, Massari M, Cutillo M, Belleudi V, Trifirò G, Mores N, Sapigni E, Puccini A, Zanoni G, Zorzi M, Monaco G, Leoni O, Del Zotto S, Samez S, Mayer F, Marano G, Menniti Ippolito F, Da Cas R, Traversa G, Spila Alegiani S. Drug Saf. 2024 Nov;47(11):1157-1169. doi: 10.1007/s40264-024-01462-0. Epub 2024 Jul 27. PMID: 39068268 Free PMC article.

Nationwide safety surveillance of COVID-19 mRNA vaccines following primary series and first booster vaccination in Singapore Vaccine X 2023

Understanding the variability of pharmaco-epidemiological studies assessing the risk of appendicitis with mRNA COVID-19 vaccines

Pharmacoepidemiol Drug Saf 2023

- Acute Appendicitis After COVID-19 Vaccines in Italy: A Self-Controlled Case Series Study

  Drug Saf 2024

- Safety outcomes following COVID-19 vaccination and infection in 5.1 million children in England

  Nat Commun 2024

- Uncommon Side Effects of COVID-19 Vaccination in the Pediatric Population

  Cureus 2022

Jambon-Barbara, C., Bernardeau, C., Cracowski, J. L., & Khouri, C. (2023). Understanding the variability of pharmaco-epidemiological studies assessing the risk of appendicitis with mRNA COVID-19 vaccines. *Pharmacoepidemiology and drug safety*, *32*(1), 87–90. https://doi.org/10.1002/pds.5560

Mitchell J, Yue Q-Y. Appendicitis as a possible safety signal for the COVID-19 vaccines. Vaccine X. 2021;9:100122. doi: 10.1016/j.jvacx.2021.100122. [DOI] [PMC free article] [PubMed] [Google Scholar]

Acute appendicitis following the COVID-19 vaccine
https://pubmed.ncbi.nlm.nih.gov/35755010

Acute appendicitis in a patient immunised with COVID-19 vaccine: A case report with morphological analysis
https://pubmed.ncbi.nlm.nih.gov/35633085/

ΠΕΡΙΤΟΝΙΤΙΣ (PERITONITIS)

Pfizer COVID-19 vaccine-induced peritonitis
Clinical Medicine, Volume 22, Issue 4, Supplement, 2022, p. 53
Amani Elimam, Sarah Al-Dhahir
View PDF

Elimam, Amani & Al-Dhahir, Sarah. (2022). Pfizer COVID-19 vaccine-induced peritonitis. Clinical medicine (London, England). 22. 53. 10.7861/clinmed.22-4-s53.

Elimam A, Al-Dhahir S. Pfizer COVID-19 vaccine-induced peritonitis. *Clin Med (Lond)*. 2022;22(Suppl 4):53. doi:10.7861/clinmed.22-4-s53
https://doi.org/10.7861/clinmed.22-4-s53

ΠΡΟΣΒΟΛΗ ΗΠΑΤΟΣ

A Case of Hepatotoxicity After Receiving a COVID-19 Vaccine
https://pubmed.ncbi.nlm.nih.gov/35070524

Efe C, Kulkarni AV, Terziroli Beretta-Piccoli B, Magro B, Stättermayer A, Cengiz M, Clayton-Chubb D, Lammert C, Bernsmeier C, Gül Ö, la Tijera FH, Anders M, Lytvyak E, Akın M, Purnak T, Liberal R, Peralta M, Ebik B, Duman S, Demir N, Balaban Y, Urzua Á, Contreras F, Venturelli MG, Bilgiç Y, Medina A, Girala M, Günşar F, Londoño MC, Androutsakos T, Kisch A, Yurci A, Güzelbulut F, Çağın YF, Avcı E, Akyıldız M, Dindar-Demiray EK, Harputluoğlu M, Kumar R, Satapathy SK, Mendizabal M, Silva M, Fagiuoli S, Roberts SK, Soylu NK, Idilman R, Yoshida EM, Montano-Loza AJ, Dalekos GN, Ridruejo E, Schiano TD, Wahlin S. Liver injury after SARS-CoV-2 vaccination: Features of immune-mediated hepatitis, role of corticosteroid therapy and outcome. Hepatology. 2022 Dec;76(6):1576-1586. doi: 10.1002/hep.32572. Epub 2022 Jun 23. PMID: 35567545; PMCID: PMC9348326. doi: 10.1002/hep.32572
Shin H, Lee HS, Noh JY, et al. COVID-19 Vaccination Alters NK Cell Dynamics and Transiently Reduces HBsAg Titers Among Patients With Chronic Hepatitis B. *Immune Netw*. 2023;23(5):e39. Published 2023 Oct 17. PMID: **37970236** PMCID: PMC10643334 DOI: 10.4110/in.2023.23.e39

Schinas G, Polyzou E, Mitropetrou F, Pazionis A, Gogos C, Triantos C, Akinosoglou K. COVID-19 Vaccination in Patients with Chronic Liver Disease. Viruses. 2022 Dec 13;14(12):2778. PMID: **36560782** PMCID: PMC9785164 DOI: 10.3390/v14122778

Karthikeyan Elumalai, Sivaneswari Srinivasan, Anandakumar Shanmugam. Impact of COVID-19 vaccines on liver function: A state of the art and challenges for healthcare providers. Gastroenterology & Endoscopy, Volume 2, Issue 1, 2024, Pages 42-51, ISSN

2949-7523, https://doi.org/10.1016/j.gande.2024.01.003.
(https://www.sciencedirect.com/science/article/pii/S2949752324000037)

Ozaka S, Kobayashi T, Mizukami K, Murakami K. COVID-19 vaccination and liver disease. World J Gastroenterol. 2022 Dec 28;28(48):6791-6810.
PMCID: PMC9827578 PMID: 36632314 doi: 10.3748/wjg.v28.i48.6791doi: 10.3748/wjg.v28.i48.6791

Alhumaid S, Al Mutair A, Rabaan AA, ALShakhs FM, Choudhary OP, Yong SJ, Nainu F, Khan A, Muhammad J, Alhelal F, Al Khamees MH, Alsouaib HA, Al Majhad AS, Al-Tarfi HR, ALyasin AH, Alatiyyah YY, Alsultan AA, Alessa ME, Alessa ME, Alissa MA, Alsayegh EH, Alshakhs HN, Al Samaeel HA, AlShayeb RA, Alnami DA, Alhassan HA, Alabdullah AA, Alhmed AH, AlDera FH, Hajissa K, Al-Tawfiq JA, Al-Omari A. New-onset and relapsed liver diseases following COVID-19 vaccination: a systematic review. BMC Gastroenterol. 2022 Oct 13;22(1):433 PMID: **36229799** PMCID: PMC9559550 DOI: 10.1186/s12876-022-02507-3

Efe C, Kulkarni AV, Terziroli Beretta-Piccoli B, et al. Liver injury after SARS-CoV-2 vaccination: Features of immune-mediated hepatitis, role of corticosteroid therapy and outcome. Hepatology. 2022;76(6):1576–86. [DOI] [PMC free article] [PubMed] [Google Scholar]

Shroff, Hersh et al. **Liver injury following SARS-CoV-2 vaccination: A multicenter case series**. Journal of Hepatology, Volume 76, Issue 1, 211 - 214

Karthikeyan Elumalai, Sivaneswari Srinivasan, Anandakumar Shanmugam. Impact of COVID-19 vaccines on liver function: A state of the art and challenges for healthcare providers. Gastroenterology & Endoscopy, Volume 2, Issue 1, 2024, Pages 42-51, ISSN 2949-7523, https://doi.org/10.1016/j.gande.2024.01.003.
(https://www.sciencedirect.com/science/article/pii/S2949752324000037)

Hoo, Chai-Zhen MD1; Tan, Kar-Choon MD1; Abdullah, Salmi MD2; Sim, Benedict Lim-Heng MD3; Omar, Haniza MD1; Tan, Soek-Siam MD1. Severe Hepatocellular Liver Injury After COVID-19 Vaccination Without Autoimmune Hepatitis Features: A Case Series. ACG Case Reports Journal 9(4):p e00760, April 2022. | DOI: 10.14309/crj.0000000000000760

Patel AH, Amin R, Lalos AT. Acute liver injury and IgG4-related autoimmune pancreatitis following mRNA-based COVID-19 vaccination. Hepatology Forum 2022; 3(3):97–99.

ΑΥΤΟΑΝΟΣΗ ΗΠΑΤΙΤΙΣ

Shroff H, Satapathy SK, Crawford JM, Todd NJ, VanWagner LB. Liver injury following SARS-CoV-2 vaccination: a multicenter case series. J Hepatol. 2022;76:211–214. doi: 10.1016/j.jhep.2021.07.024. [DOI] [PMC free article] [PubMed] [Google Scholar]

Tan CK, Wong YJ, Wang LM, Ang TL, Kumar R.

Autoimmune hepatitis following COVID-19 Vaccination: true causality or mere association? J Hepatol 2021. doi:10.1016/j.jhep.2021.06.009. Google Scholar WorldCat

Garrido I et al (2021) Autoimmune hepatitis after COVID-19 vaccine - more than a coincidence. J Autoimmun 125:102741 - DOI - PubMed - PMC
Dumortier J. Liver injury after mRNA-based SARS-CoV-2 vaccination in a liver transplant recipient. Clin Res Hepatol Gastroenterol 2021: 101743. doi:10.1016/j.clinre.2021.101743. Google Scholar WorldCat

McShane C, Kiat C, Rigby J, Crosbie O. The mRNA COVID-19 vaccine-a rare trigger of autoimmune hepatitis. J Hepatol 2021;75(5):1252–4.Cited Here | PubMed | CrossRef | Google Scholar

Bril F, Al Diffalha S, Dean M, Fettig DM. Autoimmune hepatitis developing after coronavirus disease 2019 (COVID-19) vaccine: Causality or casualty? J Hepatol 2021;75(1):222–4.Cited Here | PubMed | CrossRef | Google Scholar
Rocco A, Sgamato C, Compare D, Nardone G. Autoimmune hepatitis following SARS-CoV-2 vaccine: May not be a casuality. J Hepatol 2021;75(3):728–9.Cited Here | PubMed | CrossRef | Google Scholar

Acute hepatitis with autoimmune features after COVID-19 vaccine: coincidence or vaccine-induced phenomenon?
https://pubmed.ncbi.nlm.nih.gov/35498817/

A typical autoimmune hepatitis (AIH) case following Covid-19 mRNA vaccination. More than a coincidence?
https://pubmed.ncbi.nlm.nih.gov/34724315/

C. McShane, C. Kiat, J. Rigby, O. Crosbie
The mRNA COVID-19 vaccine - A rare trigger of autoimmune hepatitis?
J Hepatol, 75 (5) (2021), pp. 1252-1254
View PDFView articleView in ScopusGoogle Scholar

Autoimmune hepatitis with history of HCV treatment triggered by COVID-19 vaccination: case report and literature review.
Hasegawa N, Matsuoka R, Ishikawa N, Endo M, Terasaki M, Seo E, Tsuchiya K. Clin J Gastroenterol. 2022 Aug;15(4):791-795. doi: 10.1007/s12328-022-01654-0. Epub 2022 Jun 18. PMID: 35716255 Free PMC article. Review.

M. Ghielmetti, H.D. Schaufelberger, G. Mieli-Vergani, A. Cerny, E. Dayer, D. Vergani, *et al.*
Acute autoimmune-like hepatitis with atypical anti-mitochondrial antibody after mRNA COVID-19 vaccination: a novel clinical entity?
J Autoimmun, 123 (2021), Article 102706
View PDFView articleView in ScopusGoogle Scholar[10]

É. Vuille-Lessard, M. Montani, J. Bosch, N. Semmo. Autoimmune hepatitis triggered by SARS-CoV-2 vaccination. J Autoimmun, 123 (2021), Article 102710

View PDFView articleView in ScopusGoogle Scholar PMID: **36229799** PMCID: PMC9559550 DOI: 10.1186/s12876-022-02507-3

- Trontzas IP, Kyriakoulis KG, Vathiotis IA, Syrigos A, Kounadis G, Siasiakou S, Poulakou G. Vaccine-Related Autoimmune Hepatitis: Emerging Association with SARS-CoV-2 Vaccination or Coincidence? Vaccines (Basel). 2022 Dec 4;10(12):2073. PMID: **36560483** PMCID: PMC9783100 PMID: **36560483**
- PMCID: PMC9783100
- DOI: 10.3390/vaccines10122073

DOI: 10.3390/vaccines10122073

ΠΡΟΣΒΟΛΗ ΧΟΛΗΦΟΡΩΝ

Chang A, Jeng YM, Ho CM, Lee PH. Recovery from antibody-mediated biliary ductopenia and multiorgan inflammation after COVID-19 vaccination. NPJ Vaccines. 2024 Apr 8;9(1):75. PMID: **38589436** PMCID: PMC11001909 DOI: 10.1038/s41541-024-00861-9

Faruqui S, Okoli FC, Olsen SK, Feldman DM, Kalia HS, Park JS, Stanca CM, Figueroa Diaz V, Yuan S, Dagher NN, Sarkar SA, Theise ND, Kim S, Shanbhogue K, Jacobson IM. Cholangiopathy After Severe COVID-19: Clinical Features and Prognostic Implications. Am J Gastroenterol. 2021 Jul 1;116(7):1414-1425. PMID: **33993134**

Taj S, Sanekommu H, Johal A, Ravilla J, Imburgio S, Dandu S, Vedire A, Miller B, Hossain M. A Rare Case of COVID-19 Vaccination-Induced Cholangiopathic Liver Injury. ACG Case Rep J. 2023 Jun 14;10(6):e01079. doi: 10.14309/crj.0000000000001079. PMID: 37324828; PMCID: PMC10266518. DOI: 10.14309/ajg.0000000000001264

Zafar M, Gordon K, Macken L, et al. COVID-19 vaccination-induced cholangiopathy and autoimmune hepatitis: A series of two cases. Cureus. 2022;14(10):e30304. [DOI] [PMC free article] [PubMed] [Google Scholar]

Taj, Sobaan MD1; Sanekommu, Harshavardhan MD1; Johal, Anmol MD1; Ravilla, Jayasree MD2; Imburgio, Steven MD1; Dandu, Sowmya MD1; Vedire, Apurva MD1; Miller, Brett MD1; Hossain, Mohammad MD, FACP, PMC, M-MBA1. A Rare Case of COVID-19 Vaccination-Induced Cholangiopathic Liver Injury. ACG Case Reports Journal 10(6):p e01079, June 2023. | DOI: 10.14309/crj.0000000000001079

Yadlapati, Sujani; Jarrett, Simone A.; Baik, Daniel; and Chaaya, Adib, "COVID-19 related biliary injury: A review of recent literature" (2023). *COVID-19 Papers, Posters, and Presentations.* Paper 6. https://jdc.jefferson.edu/covid-19/6

ΟΞΥ BUDD-CHIARI ΣΎΝΔΡΟΜΟ

Sung PS, Oh JS, Choi JI. Acute Budd-Chiari syndrome with thrombotic thrombocytopenia after BNT162b2 mRNA vaccination. Liver Int. 2022 Jun;42(6):1447-1448. Epub 2022 Mar 21. PMCID: PMC9115202 PMID: 35289465 doi: 10.1111/liv.15242

Valeria Perez-Campuzano, Pierre-Emmanuel Rautou, Thomas Marjot, Michael Praktiknjo, Edilmar Alvarado-Tapias, Laura Turco, Luis Ibáñez-Samaniego, Carlos González-Alayón, Ángela Puente, Elba Llop, Macarena Simón-Talero, Carmen Álvarez-Navascués, Thomas Reiberger, Xavier Verhelst, Luis Tellez, Johanna Birte Bergmann, Lara Orts, Giuseppe Grassi, Anna Baiges, Payance Audrey, Jonel Trebicka, Candid Villanueva, Maria Cristina Morelli, Sam Murray, Georgina Meacham, Marc Luetgehetmann, Julian Schulze zur Wiesch, Juan-Carlos García-Pagán, Eleanor Barnes, Aurélie Plessier, Virginia Hernández-Gea, Impact of SARS-CoV-2 vaccination in patients with vascular liver diseases: Observations from a VALDIG multicenter study,
JHEP Reports, Volume 6, Issue 12, 2024, 101191, ISSN 2589-5559,
https://doi.org/10.1016/j.jhepr.2024.101191.
(https://www.sciencedirect.com/science/article/pii/S2589555924001952)

ΕΠΙΠΛΟΚΕΣ ΑΠΟ ΤΟ ΠΑΓΚΡΕΑΣ

Cieślewicz A, Dudek M, Krela-Kaźmierczak I, Jabłecka A, Lesiak M, Korzeniowska K. Pancreatic injury after COVID-19 vaccine: a case report. Vaccines (Basel) 2021;9:576. doi: 10.3390/vaccines9060576. [DOI] [PMC free article] [PubMed] [Google Scholar]

Acute Mild Pancreatitis Following COVID-19 mRNA Vaccine in an Adolescent
https://pubmed.ncbi.nlm.nih.gov/35053654/

An unusual occurrence of autoimmune pancreatitis after gam-Covid-Vac (Sputnik V): A case report and literature review
2023, British Journal of Clinical Pharmacology

Zhang J, Luo D, Kang M, Li B, Su S. Clinical characteristics and short-term outcomes of acute pancreatitis among patients with COVID-19. *Eur J Med Res*. 2023;28(1):283. Published 2023 Aug 16. PMID: **37582798** PMCID: PMC10428649
DOI: 10.1186/s40001-023-01252-x

Kabaoglu, C., Ozisik, H., Kocabas, G.U. *et al.* Acute pancreatitis occurring after COVID-19 vaccine: a case report and literature review. *Egypt J Intern Med* **36**, 96 (2024). https://doi.org/10.1186/s43162-024-00362-0 Open access

Hussain A, Augustine SW, Pyakurel S, et al. Acute Pancreatitis Induced by COVID-19 Vaccine: A Systematic Review. *Cureus*. 2024;16(3):e55426. Published 2024 Mar 3. PMID: **38571842** PMCID: PMC10990070 DOI: 10.7759/cureus.55426

Brittain, Connor BS1; Christian, Victoria MS2; Mahaseth, Harishchandra MD3; Vadlamudi, Raja MD, MPH4. S1674 Recurrent Acute Pancreatitis Following COVID-19 Vaccine – A Case Study. The American Journal of Gastroenterology 116():p S748, October 2021. | DOI: 10.14309/01.ajg.0000780228.89609.37

Becker, Erica C. MD, MPH1; Siddique, Osama MD2; Kapur, Dinesh MD3; Patel, Krishna MD4; Mehendiratta, Vaibhav MD2. Type 1 Autoimmune Pancreatitis Unmasked by COVID-19 Vaccine. ACG Case Reports Journal 10(1):p e00950, January 2023. | DOI: 10.14309/crj.0000000000000950

Garrido I, Lopes S, Simoes MS, et al. Autoimmune hepatitis after COVID-19 vaccine - more than a coincidence. J Autoimmun 2021;125:102741.Cited Here | PubMed | CrossRef | Google Scholar

Brittain, Connor BS1; Christian, Victoria MS2; Mahaseth, Harishchandra MD3; Vadlamudi, Raja MD, MPH4. S1674 Recurrent Acute Pancreatitis Following COVID-19 Vaccine – A Case Study. The American Journal of Gastroenterology 116():p S748, October 2021. | DOI: 10.14309/01.ajg.0000780228.89609.37

Cieślewicz Artur, Dudek Magdalena, Krela-Kaźmierczak Iwona, et al. Pancreatic Injury after COVID-19 Vaccine—A Case Report. Vaccines 2021, 9(6), 576. Cited Here | PubMed | Google Scholar

Baydogan, S. et al. **Transient CA19-9 Elevation Post-COVID-19 Vaccine and Infection: A Case Series.** Gastro Hep Advances, Volume 2, Issue 7, 946 - 947

ΚΟΛΙΤΙΣ

A New Onset of Ulcerative Colitis Post-COVID-19: A Case Report https://pubmed.ncbi.nlm.nih.gov/37069864/

Acute entire colitis and vein thrombosis after COVID-19 mRNA-1273 vaccination https://pubmed.ncbi.nlm.nih.gov/35313019/

Acute Severe Ulcerative Colitis After mRNA Coronavirus Disease 2019 Vaccination: Can mRNA Vaccines Unmask Inflammatory Bowel Diseases? https://pubmed.ncbi.nlm.nih.gov/35784512

Kuo HL, Lin TY, Leong PY. Case report of new-onset ulcerative colitis after MVC-COVI1901 vaccine injection for SARS-CoV-2. Int J Rheum Dis. 2023;26(8):1594–8.Article CAS PubMed Google Scholar

Card TR, Nakafero G, Grainge MJ, et al. Is Vaccination Against COVID-19 Associated With Inflammatory Bowel Disease Flare? Self-Controlled Case Series Analysis Using the UK CPRD. Am J Gastroenterol. 2023;118(8):1388–94. Article CAS PubMed Google Scholar

Shimodaira Y, Watanabe K, Takahashi S, et al. Inflammatory Bowel Disease Triggered by BNT162b2 mRNA Vaccination for SARS-CoV-2. Inflamm Bowel Dis. 2022;28(6): e75. Article PubMed Google Scholar

ΡΗΞΗ ΣΠΛΗΝΟΣ

A unique case of splenic rupture secondary to vaccine-induced immune thrombocytopenia managed with splenic embolization
https://pubmed.ncbi.nlm.nih.gov/34874098/

A unique case of splenic rupture secondary to vaccine ...

RG

ResearchGate
https://www.researchgate.net › ...

· Μετάφραση αυτής της σελίδας
9 Δεκ 2024 — A pathogenic PF4-dependent syndrome, unrelated to the use of heparin therapy, can occur *after* the administration of the ChAdOx1 nCoV-19 *vaccine*.

Anderson A, Seddon M, Shahzad K, Lunevicius R. Post-COVID-19 vaccination occurrence of splenic infarction due to arterial thrombosis. *BMJ Case Rep*. 2021;14(12):e243846. Published 2021 Dec 7. PMID: **34876440** PMCID: PMC8655567 DOI: 10.1136/bcr-2021-243846

ΟΦΘΑΛΜΟΛΟΓΙΚΕΣ ΔΙΑΤΑΡΑΧΕΣ

Eleiwa TK, Gaier ED, Haseeb A, et al. Adverse ocular events following COVID-19 vaccination.

Inflamm Res. 2021; 70(10-12): 1005–1009. doi:10.1007/s00011-021-01506-6.

A Sudden Rise of Patients with Acute Macular Neuroretinopathy during the COVID-19 Pandemic
https://pubmed.ncbi.nlm.nih.gov/35350236/

Shi J, Danesh-Meyer HV. A review of neuro-ophthalmic sequelae following COVID-19 infection and vaccination. Front Cell Infect Microbiol. 2024; 14: 1345683. doi:10.3389/fcimb.2024.1345683.

Ng XL, Betzler BK, Testi I, et al. Ocular adverse events after COVID-19 vaccination. Ocul Immunol Inflamm. 2021; 29(6): 1216–1224. doi:10.1080/09273948.2021.1976221.

Hurissi EA, Abuallut II, Dibaji MQ, et al. Ocular complications after COVID-19 vaccination: A systematic review. Medicina (Kaunas). 2024; 60(2): 249. doi: 10.3390/medicina60020249.

Bilateral Sequential Acute Macular Neuroretinopathy in an Asian Indian Female with β Thalassemia Trait following (Corona Virus Disease) COVID-19 Vaccination and Probable Recent COVID Infection- Multimodal Imaging Study.
https://pubmed.ncbi.nlm.nih.gov/35050826/

Marginal keratitis following COVID 19 vaccination
https://pubmed.ncbi.nlm.nih.gov/35756698/

"Vitreous Hemorrhage and Long-Lasting Priapism After COVID-19 m-RNA Based Vaccine: A Case Report"
https://pubmed.ncbi.nlm.nih.gov/35505605/

Retinal Vascular Events after mRNA and Adenoviral-Vectored COVID-19 Vaccines-A Case Series
https://pubmed.ncbi.nlm.nih.gov/34835280/

A Case of Recurrent Acute Anterior Uveitis After the Administration of COVID-19 Vaccine
https://pubmed.ncbi.nlm.nih.gov/35399463/

A rare case of cortical blindness following vaccination against SARS-CoV-2
https://pubmed.ncbi.nlm.nih.gov/36190083/

A Rare Case of Superior Ophthalmic Vein Thrombosis and Thrombocytopenia Following ChAdOx1 nCoV-19 Vaccine Against SARS-CoV-2
https://pubmed.ncbi.nlm.nih.gov/34276917/

Acute bilateral central serous chorioretinopathy in a young male after the first dose of Oxford/AstraZeneca AZD1222 (Covishield) vaccine
https://pubmed.ncbi.nlm.nih.gov/36727385/

Acute Bilateral Descemet Membrane Endothelial Keratoplasty Graft Rejection After the BNT162b2 mRNA COVID-19 Vaccine
https://pubmed.ncbi.nlm.nih.gov/35444474/

Acute bilateral optic/chiasm neuritis with longitudinal extensive transverse myelitis in longstanding stable multiple sclerosis following vector-based vaccination against the SARS-CoV-2
https://pubmed.ncbi.nlm.nih.gov/34131771/

Acute Bilateral Orbital Myositis Following Covid 19 Vaccination
https://pubmed.ncbi.nlm.nih.gov/35297720/

Acute corneal endothelial graft rejection following COVID-19 vaccination
https://pubmed.ncbi.nlm.nih.gov/34281760/

Acute Corneal Endothelial Graft Rejection With Coinciding COVID-19 Infection
https://pubmed.ncbi.nlm.nih.gov/32889957/

Acute Corneal Epithelial Rejection of LR-CLAL After SARS-CoV-2 Vaccination
https://pubmed.ncbi.nlm.nih.gov/34743101/

Acute Corneal Transplant Rejection After COVID-19 Vaccination
https://pubmed.ncbi.nlm.nih.gov/34620770/

Acute Corneal Transplant Rejection After Severe Acute Respiratory Syndrome Coronavirus 2 mRNA-1273 Vaccination
https://pubmed.ncbi.nlm.nih.gov/34690266/

Acute Retinal Necrosis from Reactivation of Varicella Zoster Virus following BNT162b2 mRNA COVID-19 Vaccination
https://pubmed.ncbi.nlm.nih.gov/34851795/

Acute Retinal Pigment Epitheliitis following Vaccination
https://pubmed.ncbi.nlm.nih.gov/36601646/

Singh RB, Parmar UPS, Kahale F, Agarwal A, Tsui E. Vaccine-Associated Uveitis after COVID-19 Vaccination: Vaccine Adverse Event Reporting System Database Analysis. Ophthalmology. 2023 Feb;130(2):179-186. doi: 10.1016/j.ophtha.2022.08.027. Epub 2022 Aug 31. PMID: 36055601; PMCID: PMC9428109.

Herpetic Eye Disease After SARS-CoV-2 Vaccination: A CDC-VAERS Database Analysis.

Singh RB, Parmar UPS, Ichhpujani P, Jeng BH, Jhanji V. Cornea. 2023 Jun 1;42(6):731-738. doi: 10.1097/ICO.0000000000003246. Epub 2023 Jan 25. PMID: 36706232

COVID-19 Vaccine-Associated Uveitis in Patients With a History of Uveitis.

Kim J, Kwon HY, Ahn SJ. JAMA Ophthalmol. 2024 Jun 1;142(6):522-528. doi: 10.1001/jamaophthalmol.2024.0973. PMID: 38662361

Tetsumoto R, Matsumiya W, Sotani R, Kusuhara S, Nakamura M. Acute Noninfectious Anterior Ocular Inflammation Following Ranibizumab Biosimilar Intravitreal Injection in a Patient With Recent COVID-19 Vaccination. Cureus. 2024 May 15;16(5):e60356. doi: 10.7759/cureus.60356. PMID: 38883010; PMCID: PMC11177256.

Association between vaccination with the BNT162b2 mRNA coronavirus disease 2019 vaccine and noninfectious uveitis: a population-based study. Tomkins-Netzer O, Sar S, Barnett-Griness O, Friedman B, Shyriaieva H, Saliba W. Ophthalmology. 2022;129:1087–1095. - PMC - PubMed

Habot-Wilner Z, Neri P, Okada AA, Agrawal R, Xin Le N, Cohen S, Fischer N, Kilmartin F, Coman A, Kilmartin D. COVID Vaccine-Associated Uveitis. Ocul Immunol Inflamm. 2023 Aug;31(6):1198-1205. doi: 10.1080/09273948.2023.2200858. Epub 2023 May 5. PMID: 37145198.

***Santovito LS**, Pinna G. Acute reduction of visual acuity and visual field after Pfizer-BioNTech COVID-19 vaccine 2nd dose: a case report. Inflamm Res. 2021;70(9):931–933. doi: 10.1007/s00011-021-01476-9.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Li J.X., Wang Y.H., Bair H., Hsu S.B., Chen C., Wei J.C., Lin C.J. Risk assessment of retinal vascular occlusion after COVID-19 vaccination. NPJ Vaccines. 2023;8:64. doi: 10.1038/s41541-023-00661-7. [DOI] [PMC free article] [PubMed] [Google Scholar]

Gargouri MA, Yousfi N, Toutain J, Farès S, Lejoyeux R, Gabison E, Cochereau I, Titah C, Azar G. Multiple Evanescent White Dot Syndrome Following COVID-19 mRNA Vaccination. Ocul Immunol Inflamm. 2023 Aug;31(6):1240-1244. doi: 10.1080/09273948.2022.2127782. Epub 2022 Oct 13. PMID: 36228041.

Kashyap H, Manoharan A, Mahendradas P, Agarwal A, Majumder PD. A COVID-19 perspective of multiple evanescent white dot syndrome (MEWDS). Indian J Ophthalmol. 2024 May 1;72(5):620-625. Epub 2024 Jan 8. PMID: **38189327** PMCID: PMC11168566 DOI: 10.4103/IJO.IJO_2029_23

ΣΤΟΜΑΤΟΛΟΓΙΚΕΣ ΔΙΑΤΑΡΑΧΕΣ

Επώδυνη γλωσσίτις, ξηροστομία, οίδημα χειλέων, οίδημα γλώσσας, έλκη υπερώας, διαταραχές γεύσης, παραισθησίες,υπαισθησία, αγευσία, δυσγευσία, επιχείλιος έρπης.

Khazeei Tabari MA, Najary S, Khadivi G, Yousefi MJ, Samieefar N, Abdollahimajd F. Oral lesions after COVID-19 vaccination: Immune mechanisms and clinical approach. Infect Med (Beijing). 2022 Sep;1(3):171-179. doi: 10.1016/j.imj.2022.06.004. Epub 2022 Jun 19. PMID: 38014364; PMCID: PMC9212505.

Tan E, Salman S. Unusual Case of Painful Glossitis and Xerostomia Following Vaccination with Pfizer-BioNTech SARS-CoV-2 (BNT162b2). Am J Case Rep. 2022 Aug 20;23:e937212. doi: 10.12659/AJCR.937212. PMID: 35986502; PMCID: PMC9396696.

Najary S, Vatankhah M, Khadivi G, Salehi SN, Tabari MAK, Samieefar N, Behnaz M. A comprehensive review of oral microenvironment changes and orofacial adverse reactions after COVID-19 vaccination: The good, the bad, and the ugly. Health Sci Rep. 2024 Mar 13;7(3):e1967. doi: 10.1002/hsr2.1967. PMID: 38482134; PMCID: PMC10935892.

Mazur, M.; Duś-Ilnicka, I.; Jedliński, M.; Ndokaj, A.; Janiszewska-Olszowska, J.; Ardan, R.; Radwan-Oczko, M.; Guerra, F.; Luzzi, V.; Vozza, I.; et al. Facial and oral manifestations following covid-19 vaccination: A survey-based study and a first perspective. Int. J Environ. Res. Public Health **2021**, 18, 4965. [Google Scholar] [CrossRef] [PubMed]

Manfredi, M.; Ghidini, G.; Ridolo, E.; Pizzi, S. Oral lesions postinjection of the first administration of Pfizer-BioNTech SARS-CoV-2 (BNT162b2) vaccine. Oral Dis. **2021**. [Google Scholar] [CrossRef]

Maeda, K.; Yamashita, D.; Takenobu, T. Ulcers on the bilateral palate mucosa following mRNA-based vaccination for coronavirus disease 2019 (COVID-19): A case report. J. Stomatol. Oral Maxillofac. Surg. **2022**, 123, 283–286. [Google Scholar] [CrossRef]

Onoda T, Tanaka H, Matsuo H, Takigawa M, Satoh M, Ishii T. Analysis of COVID-19 mRNA Vaccine-induced Mouth Ulcers Using the Japanese Adverse Drug Event Report Database. Pharmazie. 2023 May 1;78(5):63-66. doi: 10.1691/ph.2023.3521. PMID: 37189267.

Sharma P, Malik S, Wadhwan V, Sharma R. Pathophysiology of oral lesions subsequent to SARS-CoV-2 vaccination: A systematic review. J Oral Maxillofac Pathol. 2024 Jul-Sep;28(3):443-454. doi: 10.4103/jomfp.jomfp_511_23. Epub 2024 Oct 15. PMID: 39670118; PMCID: PMC11633932.

ΑΓΕΥΣΙΑ, ΠΑΡΑΓΕΥΣΙΑ

Cirillo N. Reported orofacial adverse effects of COVID-19 vaccines: the knowns and the unknowns. J Oral Pathol Med. 2021;50(4): 424–7. https://doi.org/10.1111/jop.13165

Lechien JR, Diallo AO, Dachy B, Le Bon SD, Maniaci A, Vaira LA, et al. COVID-19: post-vaccine smell and taste disorders: report of 6 cases. Ear Nose Throat J. 2024;103(2):N P 1 0 4 –7 . h t t p s : / / d o i . o r g / 1 0 . 1 1 7 7 /01455613211033125

Tan E, Salman S. Unusual case of painful glossitis and xerostomia following vaccination with Pfizer-BioNTech SARS-CoV-2 (BNT162b2). Am J Case Rep.2022;23:e937212. https://doi.org/10.12659/AJCR.937212

Characteristics of Oral Adverse Effects following COVID-19 ...

Karger Publishers

https://karger.com › mpp › article-pdf › doi

Arabzadeh Bahri R, Esmaeilpur Abianeh F, Peisepar M, Hadi R, Basti FA, Maleki S, et al. Anosmia or ageusia following COVID-19 vaccination: a systematic review. Ear Nose Throat J. 2024;103(1_Suppl l):164S–70S. https://doi.org/10.1177/01455613241233098

Riad A, Põld A, Kateeb E, Attia S. Oral adverse events following COVID-19 vaccination: analysis of VAERS reports. Front Public Health. 2022;10:952781. https://doi.org/10.3389/fpubh.2022.952781

Riad A, Schulz-Weidner N, Dziedzic A, Howaldt HP, Attia S. Oral side effects of COVID-19 vaccines in 32 European countries: analysis of EudraVigilance reports. J Med Virol. 2023;95(5):e28771. https://doi.org/10.1002/jmv.28771

Riad A, Issa J, Attia S, Dušek L, Klugar M. Oral adverse events following COVID-19 and influenza vaccination in Australia. Hum Vaccin Immunother. 2023;19(2):2253589. https://doi.org/10.1080/21645515.2023.2253589

Mazur M, Duś-Ilnicka I, Jedliński M, Ndokaj A, Janiszewska-Olszowska J, Ardan R, et al. Facial and oral manifestations following COVID-19 vaccination: a survey-based study and a first perspective. Int J Environ Res Public Health. 2021; 18(9):4965. https://doi.org/10.3390/ijerph18094965

***Konstantinidis I**, Tsakiropoulou E, Hähner A, de With K, Poulas K, Hummel T. 2021 Olfactory dysfunction after coronavirus disease 2019 (COVID-19) vaccination [published online ahead of print, 2021 May 28]. Int Forum Allergy Rhinol. 10.1002/alr.22809.* [DOI] [PMC free article] [PubMed]

***Keir G, Maria NI,** Kirsch CFE. Unique imaging findings of neurologic phantosmia following Pfizer-BioNtech COVID-19 vaccination: a case report. Top Magn Reson Imaging. 2021;30(3):133–137. doi: 10.1097/RMR.0000000000000287.* [DOI] [PubMed] [Google Scholar]

ΩΤΟΡΙΝΟΛΑΡΥΓΓΟΛΟΓΙΚΕΣ ΔΙΑΤΑΡΑΧΕΣ

Colizza A, Ralli M, Turchetta R, Minni A, Greco A, de Vincentiis M. Otolaryngology adverse events following COVID-19 vaccines. Eur Rev Med Pharmacol Sci. 2022 Jun;26(11):4113-4116. doi: 10.26355/eurrev_202206_28981. PMID: 35731083.

Ahsanuddin S, Jin R, Dhanda AK, et al. Otolaryngologic side effects after COVID-19 vaccination. Laryngoscope. 2024; 134(3): 1163–1168. doi: 10.1002/lary.30923.

Otorhinolaryngologic complications after COVID-19 vaccination, vaccine adverse event reporting system (VAERS).

Shin J, Shim SR, Lee J, Ryu HS, Kim JY. Front Public Health. 2024 Jan 10;11:1338862. doi: 10.3389/fpubh.2023.1338862. eCollection 2023. PMID: 38269374 Free PMC article.

Acute Unilateral Peripheral Vestibulopathy After COVID-19 Vaccination: Initial Experience in a Tertiary Neurotology Center
https://pubmed.ncbi.nlm.nih.gov/35847228/

Acute Vestibular Neuritis After Pfizer Booster in a Healthcare Worker
https://pubmed.ncbi.nlm.nih.gov/35509717/

Acute vestibular neuritis: A rare complication after the adenoviral vector-based COVID-19 vaccine
https://pubmed.ncbi.nlm.nih.gov/35877063/

Ahsanuddin S, Jin R, Dhanda AK, Georges K, Baredes S, Eloy JA, Fang CH. Otolaryngologic Side Effects After COVID-19 Vaccination. Laryngoscope. 2024 Mar;134(3):1163-1168. doi: 10.1002/lary.30923. Epub 2023 Aug 4. PMID: 37539984.

ΔΙΑΤΑΡΑΧΕΣ ΟΣΦΡΗΣΗΣ (OLFACTORY DYSFUNCTION) ΑΝΟΣΜΙΑ, ΥΠΟΣΜΙΑ, ΠΑΡΟΣΜΙΑ, ΑΙΣΘΗΣΗ ΑΝΥΠΑΡΚΤΗΣ ΟΣΜΗΣ (PHANTOSMIA)

A singular case of hyposmia and transient audiovestibular post-vaccine disorders: case report and literature review https://pubmed.ncbi.nlm.nih.gov/36304095/

Gallagher TJ, Parikh M, Herrera K, Lin ME, Hur K. Association of COVID-19 Vaccination With Changes in Smell and Taste. Otolaryngol Head Neck Surg. 2024 Oct;171(4):1240-1244. Epub 2024 Jun 1. PMID: 38822762. DOI: 10.1002/ohn.833

Lechien JR, Diallo AO, Dachy B, et al. COVID-19: post-vaccine smell and taste disorders: report of 6 cases. Ear Nose Throat J. 2021;103:NP104-NP107. doi:10.1177/01455613211033125

Fantin F, Frosolini A, Tundo I, et al. A singular case of hyposmia and transient audiovestibular post-vaccine disorders: case report and literature review. Transl Neurosci. 2022;13(1):349-353. doi:10.1515/tnsci-2022-0250

Ahsanuddin S, Jin R, Dhanda AK, et al. Otolaryngologic side effects after COVID-19 vaccination. Laryngoscope. 2024;134:1163-1168. doi:10.1002/lary.30923

ΑΚΟΥΟΛΟΓΙΚΕΣ ΔΙΑΤΑΡΑΧΕΣ

Wichova H., Miller M. E., Derebery M. J. (2021). Otologic manifestations after COVID-19 vaccination: the house ear clinic experience. Otol. Neurotol. 42 (9), e1213–e1218. 10.1097/MAO.0000000000003275 [DOI] [PMC free article] [PubMed] [Google Scholar]

Woodcock R. A., Bartels L. J. (2022). Preliminary evidence of a link between COVID-19 vaccines and otologic symptoms. Available at: https://www.medrxiv.org/content/10.1101/2022.02.23.22271144v1#:~:text=COV2.,hearing%20loss%2C%20and%20Bell's%20palsy.

***Wichova H**, Miller ME, Derebery MJ. Otologic manifestations after COVID-19 vaccination: the house ear clinic experience. Otol Neurotol. 2021;42(9):e1213–e1218. doi: 10.1097/MAO.0000000000003275.* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΕΜΒΟΕΣ ΩΤΩΝ Tinnitus

Tinnitus after COVID-19 vaccination: Findings from the vaccine adverse event reporting system and the vaccine safety datalink.

Yih WK, Duffy J, Su JR, Bazel S, Fireman B, Hurley L, Maro JC, Marquez P, Moro P, Nair N, Nelson J, Smith N, Sundaram M, Vasquez-Benitez G, Weintraub E, Xu S, Shimabukuro T. Am J Otolaryngol. 2024 Nov-Dec;45(6):104448. doi: 10.1016/j.amjoto.2024.104448. Epub 2024 Jul 30. PMID: 39096568

Yellamsetty A. (2023). COVID-19 vaccination effects on tinnitus and hyperacusis: longitudinal case study. Int. Tinnitus J. 27 (2), 253–258. 10.5935/0946-5448.20230039 [DOI] [PubMed] [Google Scholar]

Yellamsetty A., Gonzalez V. (2023). A report on emerging evidence and implications of COVID-19 related tinnitus: preliminary survey results. Otolaryngology Open Access J. 8 (2), 000271. 10.23880/ooaj-16000271 [DOI] [Google Scholar]

Yih WK, Duffy J, Su JR, Bazel S, Fireman B, Hurley L, Maro JC, Marquez P, Moro P, Nair N, Nelson J, Smith N, Sundaram M, Vasquez-Benitez G, Weintraub E, Xu S, Shimabukuro T. Tinnitus after COVID-19 vaccination: Findings from the vaccine adverse event reporting system and the vaccine safety datalink. Am J Otolaryngol. 2024 Nov-Dec;45(6):104448. doi:

10.1016/j.amjoto.2024.104448. Epub 2024 Jul 30. PMID: 39096568; PMCID: PMC11634645.

he numbers of VAERS tinnitus reports per million doses administered were **23.7 for Pfizer, 27.0 for Moderna and 69.7 for Janssen**. Since the Pfizer and Moderna vaccines require two doses, the number of tinnitus reports per million full vaccination is 47.4 and 54.0, respectively.22 Μαΐ 2024

Wang W, Yellamsetty A, Edmonds RM, Barcavage SR, Bao S. COVID-19 vaccination-related tinnitus is associated with pre-vaccination metabolic disorders. Front Pharmacol. 2024 May 22;15:1374320. doi: 10.3389/fphar.2024.1374320. PMID: 38841369; PMCID: PMC11150672.

Canales Medina M., Ramirez Gomez M. (2022). Tinnitus, sudden sensorineural hearing loss, and vestibular neuritis as complications of the astra zeneca COVID-19 vaccine. Cureus 14 (1), e20906. 10.7759/cureus.20906 [DOI] [PMC free article] [PubMed] [Google Scholar]

Chen J. J., Zeng B. Y., Lui C. C., Chen T. Y., Chen Y. W., Tseng P. T. (2022). Pfizer-BioNTech COVID-19 vaccine associated tinnitus and treatment with transcranial magnetic stimulation. QJM 115, 623–624. 10.1093/qjmed/hcac124 [DOI] [PMC free article] [PubMed] [Google Scholar]

Parrino D., Frosolini A., Gallo C., De Siati R. D., Spinato G., de Filippis C. (2021). Tinnitus following COVID-19 vaccination: report of three cases. Int. J. Audiol. 61, 526–529. 10.1080/14992027.2021.1931969 [DOI] [PubMed] [Google Scholar]

Tseng P. T., Chen T. Y., Sun Y. S., Chen Y. W., Chen J. J. (2021). The reversible tinnitus and cochleopathy followed first-dose AstraZeneca COVID-19 vaccination. QJM 114 (9), 663–664. 10.1093/qjmed/hcab210 [DOI] [PMC free article] [PubMed] [Google Scholar]

***Parrino D,** Frosolini A, Gallo C, De Siati RD, Spinato G, de Filippis C. Tinnitus following COVID-19 vaccination: report of three cases. Int J Audiol. 2021;13:1–4. doi: 10.1080/14992027.2021.1931969.* [DOI] [PubMed] [Google Scholar]

ΑΝΑΣΤΡΕΨΙΜΕΣ ΕΜΒΟΕΣ ΩΤΩΝ ΚΑΙ ΒΛΑΒΗ ΚΟΧΛΙΑ (REVERSIBLE TINNITUS AND COCHLEOPATHY)

***Tseng PT**, Chen TY, Sun YS, Chen YW, Chen JJ. 2021 The reversible tinnitus and cochleopathy followed first-dose AstraZeneca COVID-19 vaccination [published online ahead of print, 2021 Jul 23]. QJM hcab210. doi:10.1093/qjmed/hcab210* [DOI] [PMC free article] [PubMed]

ΕΚΠΤΩΣΗ ΑΚΟΗΣ

Rausch C., Yue Q.-Y. (2022). Covid-19 vaccines and hearing loss and tinnitus. WHO Pharm. Newsl. 1, 18–30. [Google Scholar]

A Case Report of Sudden Sensorineural Hearing Loss (SSNHL) After Administration of the COVID-19 Vaccine
https://pubmed.ncbi.nlm.nih.gov/36537083/

Nieminen TA, Kivekäs I, Artama M, Nohynek H, Kujansivu J, Hovi P. Sudden Hearing Loss Following Vaccination Against COVID-19. JAMA Otolaryngol Head Neck Surg. 2023 Feb 1;149(2):133-140. doi: 10.1001/jamaoto.2022.4154. PMID: 36520464; PMCID: PMC9857204.

Thai-Van H, Valnet-Rabier MB, Anciaux M, Lambert A, Maurier A, Cottin J, Pietri T, Destère A, Damin-Pernik M, Perrouin F, Bagheri H. Safety Signal Generation for Sudden Sensorineural Hearing Loss Following Messenger RNA COVID-19 Vaccination: Postmarketing Surveillance Using the French Pharmacovigilance Spontaneous Reporting Database. JMIR Public Health Surveill. 2023 Jul 14;9:e45263. PMID: **37071555** PMCID: PMC10365611 DOI: 10.2196/45263

Boulefaa D, Bagheri H, Salvo F, Rabier MB, Geniaux H, Lepelley M, Rocher F, Mahe J, Grandvillemuin A, Thai-Van H. Early Detection of Hearing Impairment Signals Post-mRNA COVID-19 Vaccination: A Disproportionality Analysis Study on French Pharmacovigilance Database. Drug Saf. 2024 Dec 5. doi: 10.1007/s40264-024-01495-5. Epub ahead of print. PMID: 39638989.

Jeong J, Choi HS. Sudden sensorineural hearing loss after COVID-19 vaccination. Int J Infect Dis [Internet]. 2021;113:341–3. - DOI - PubMed

Ekobena P, Rothuizen LE, Bedussi F, Guilcher P, Meylan S, Ceschi A, et al. Four cases of audio-vestibular disorders related to immunisation with SARS-CoV-2 mRNA vaccines. Int J Audiol [Internet]. 2023;62:587–91. https://doi.org/10.1080/14992027.2022.2056721 . - DOI - PubMed

Thai-Van H, Valnet-Rabier M-B, Anciaux M, Lambert A, Maurier A, Cottin J, et al. Is there a safety signal generation for sudden sensorineural hearing loss following mRNA COVID-19 vaccination: nationwide post-marketing surveillance using the French pharmacovigilance spontaneous reporting database. JMIR Public Health Surveill. 2023;

Yanir Y, Doweck I, Shibli R, Najjar-Debbiny R, Saliba W. Association between the BNT162b2 messenger RNA COVID-19 vaccine and the risk of sudden sensorineural hearing loss. JAMA Otolaryngol Head Neck Surg. 2022;148:299–306. - DOI - PubMed - PMC

Damkier P, Cleary B, Hallas J, Schmidt JH, Ladebo L, Jensen PB, et al. Sudden sensorineural hearing loss following immunization with BNT162b2 or mRNA-1273: a Danish population-based cohort study. Otolaryngol Head Neck Surg. 2023;169:1472–80. - DOI - PubMed

Shetty AN, Morgan HJ, Phuong LK, Mallard J, Vlasenko D, Pearce C, et al. Audiovestibular adverse events following COVID-19 vaccinations. Vaccine. 2024;42:2011–7. - DOI - PubMed

ΔΙΑΤΑΡΑΧΕΣ ΑΠΟ ΤΟ ΟΥΡΟΠΟΙΗΤΙΚΟ ΣΥΣΤΗΜΑ

Windpessl M Bruchfeld A Anders HJ, et al. . COVID-19 vaccines and kidney disease. Nat Rev Nephrol. 2021;17(5):291–293. doi:10.1038/s41581-021-00406-6 - DOI - PMC - PubMed

Foschi N, Santoro PE, Borrelli I, et al. Urological safety and COVID-19 vaccinations. Vaccines(Basel). 2022; 10(11): 1887. doi: 10.3390/vaccines10111887.

Plasse R, Nee R, Gao S, Olson S. Acute kidney injury with gross hematuria and IgA nephropathy after COVID-19 vaccination. Kidney Int. 2021;100:944–945. doi: 10.1016/j.kint.2021.07.020. [DOI] [PMC free article] [PubMed] [Google Scholar]

A case of gross hematuria and IgA nephropathy flare-up following SARS-CoV-2 vaccination https://pubmed.ncbi.nlm.nih.gov/33932458/

A Case of Membranous Nephropathy Hypothesized to be Associated With COVID-19 Vaccine
https://pubmed.ncbi.nlm.nih.gov/35602849/

A young adult with nephrotic syndrome following COVID-19 vaccination https://pubmed.ncbi.nlm.nih.gov/34981422/

Abrupt worsening of occult IgA nephropathy after the first dose of SARS-CoV-2 vaccination https://pubmed.ncbi.nlm.nih.gov/34988883/

Acute T cell-mediated rejection after administration of the BNT162b2 mRNA COVID-19 vaccine in a kidney transplant recipient: a case report
https://pubmed.ncbi.nlm.nih.gov/35769849/

Acute tubulointerstitial nephritis after COVID-19 m-RNA BNT162b2 vaccine https://pubmed.ncbi.nlm.nih.gov/34730195/

Russo D, Accarino R, Varricchio S, Franca RA, Potestio L, Patruno C, Napolitano M, Mascolo M. Granuloma annulare after SARS-CoV-2 vaccination: A case report and a literature review. Pathol Res Pract. 2023 Feb;242:154300. doi: 10.1016/j.prp.2022.154300. Epub 2022 Dec 31. PMID: 36638589; PMCID: PMC9804962.

Liew SK, Nair B, So B, Ponnusamy A, Bow A, Woywodt A. Acute interstitial nephritis following SARS-CoV-2 virus vaccination. Clin Nephrol. 2022 Apr;97(4):242-245. doi: 10.5414/CN110753. PMID: 35113012.

Liew SK, Nair B, So B, Ponnusamy A, Bow A, Woywodt A. Acute interstitial nephritis following SARS-CoV-2 virus vaccination. Clin Nephrol. 2022 Apr;97(4):242-245. doi: 10.5414/CN110753. PMID: 35113012.

Yoshida Y, Torigoe K, Sakamoto R, Abe S, Muta K, Mukae H, Nishino T. A Case of Combination of IgA Nephropathy and Interstitial Nephritis After COVID-19 Vaccination. Cureus. 2024 Jan 26;16(1):e52981. doi: 10.7759/cureus.52981. PMID: 38406008; PMCID: PMC10894454.

Ma Y, Xu G. New-onset IgA nephropathy following COVID-19 vaccination. QJM. 2023 Feb 14;116(1):26-39. doi: 10.1093/qjmed/hcac185. Erratum in: QJM. 2023 Feb 14;116(1):93. doi: 10.1093/qjmed/hcac239. PMID: 35920797; PMCID: PMC9450102.

Bronz G, Faré PB, Lava SAG, Bianchetti MG, Simonetti GD, Scoglio M, Beretta-Piccoli BT, Agostoni C, Milani GP. Coronavirus disease 2019, vaccination against coronavirus and immunoglobulin A-mediated diseases: systematic literature review. J Autoimmun. 2022 Oct;132:102899. doi: 10.1016/j.jaut.2022.102899. Epub 2022 Aug 22. PMID: 36108473; PMCID: PMC9393156.

Aoki R, Nihei Y, Matsuzaki K, et al. Gross Hematuria after the COVID-19 mRNA Vaccination: Nationwide Multicenter Prospective Cohort Study in Japan. *Kidney360*. 2024;5(9):1322-1332. PMID: **38976886** PMCID: PMC11441798 DOI: 10.34067/KID.0000000000000498

ΡΑΒΔΟΜΥΟΛΥΣΗ

Mack M, *Nichols L, Guerrero DM. Rhabdomyolysis secondary to COVID-19 vaccination. Cureus. 2021;13(5):e15004. doi: 10.7759/cureus.15004.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Nassar M*, Chung H, Dhayaparan Y, et al. COVID-19 vaccine induced rhabdomyolysis: Case report with literature review. Diabetes Metab Syndr. 2021;15(4):102170. doi: 10.1016/j.dsx.2021.06.007.* [DOI] [PMC free article] [PubMed] [Google Scholar]

A Possible Case of COVID-19 Booster Vaccine-Associated Rhabdomyolysis and Acute Kidney Injury
https://pubmed.ncbi.nlm.nih.gov/35832563/

A severe case of rhabdomyolysis after Moderna mRNA anti-COVID-19 vaccine with a literature review
https://pubmed.ncbi.nlm.nih.gov/37207086

ΜΥΟΣΙΤΙΔΑ, ΜΥΟΠΑΘΕΙΑ

*.**Theodorou DJ**, Theodorou SJ, Axiotis A, Gianniki M, Tsifetaki N. COVID-19 vaccine-related myositis. QJM. 2021;1146(424):425. doi: 10.1093/qjmed/hcab043.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Godoy IRB**, Rodrigues TC, Skaf A. Myositis ossificans following COVID-19 vaccination. QJM. 2021;9:hcab161. doi: 10.1093/qjmed/hcab161.* [DOI] [PMC free article] [PubMed] [Google Scholar]

A Large Cluster of New Onset Autoimmune Myositis in the Yorkshire Region Following SARS-CoV-2 Vaccination
https://pubmed.ncbi.nlm.nih.gov/35893834/

A temporal association between COVID-19 vaccination and immune-mediated necrotizing myopathy
https://pubmed.ncbi.nlm.nih.gov/35307849/

ΕΝΔΟΚΡΙΝΟΛΟΓΙΚΕΣ ΔΙΑΤΑΡΑΧΕΣ

https://doi.org/10.1210/endocr/bqab203

https://doi.org/10.3389/fendo.2022.1027047

https://doi.org/10.3390/vaccines12070750

https://ada.com/covid/covid-19-symptoms-and-effects-on-male-genitals/

ΠΡΟΣΒΟΛΗ/ΔΥΣΛΕΙΤΟΥΡΓΙΑ ΤΟΥ ΘΥΡΕΟΕΙΔΟΥΣ ΑΔΕΝΑ

Jafarzadeh A, Nemati M, Jafarzadeh S, et al. Thyroid dysfunction following vaccination with COVID-19 vaccines: a basic review of the preliminary evidence. J Endocrinol Invest. 2022; 45(10): 1835–1863. doi: 10.1007/s40618-022-01786-7.

11 cases of SARS-CoV-2 vaccine-associated subacute thyroiditis
https://pubmed.ncbi.nlm.nih.gov/35182366/

A Case of COVID-19 Vaccine Associated New Diagnosis Myasthenia Gravis
https://pubmed.ncbi.nlm.nih.gov/34709075/

A Case Report of Concurrent Graves' Disease and Subacute Thyroiditis Following SARS-CoV-2 Vaccination: An Autoimmune/Inflammatory Syndrome (ASIA)
https://pubmed.ncbi.nlm.nih.gov/35726807/

A Case Report of Conversion From Hashimoto's Thyroiditis to Graves' Disease in a Type 1 Diabetic Patient Following the COVID-19 Vaccination
https://pubmed.ncbi.nlm.nih.gov/35713143/

Vahid Reisi-Vanani, Mahour Farzan, Mahan Farzan, Hosein Ataei-Goujani, Maryam Keihani, Golshan Taghipour-Boroujeni,. Role of the immune system and possible mechanisms in COVID-19 vaccine-induced thyroiditis: Case report and literature review,. Journal of Clinical and Translational Endocrinology: Case Reports, Volume 26, 2022,100138, ISSN 2214-6245, https://doi.org/10.1016/j.jecr.2022.100138.
(https://www.sciencedirect.com/science/article/pii/S2214624522000338)

A. Siolos, K. Gartzonika, S. Tigas

Thyroiditis following vaccination against COVID-19: report of two cases and review of the literature

Metabolism open (2021), Article 100136

View PDFView articleView in ScopusGoogle Scholar

A. Patrizio, S.M. Ferrari, A. Antonelli, P. Fallahi

A case of Graves' disease and type 1 diabetes mellitus following SARS-CoV-2 vaccination

J Autoimmun, 125 (2021), Article 102738

View PDFView articleView in ScopusGoogle Scholar

B.G. İremli, S.N. Şendur, U. Ünlütürk

Three cases of subacute thyroiditis following SARS-CoV-2 vaccine: post-vaccination ASIA syndrome

J Clin Endocrinol Metab (2021)

Google Scholar

M.S. Jeeyavudeen, A.W. Patrick, F.W. Gibb, A.R. Dover

COVID-19 vaccine-associated subacute thyroiditis: an unusual suspect for de Quervain's thyroiditis

BMJ Case Reports CP, 14 (11) (2021), Article e246425

View at publisher

CrossrefView in ScopusGoogle Scholar[15]

A. Vojdani, E. Vojdani, D. Kharrazian

L. Das, S. Bhadada, A. Sood

Post-COVID-vaccine autoimmune/inflammatory syndrome in response to adjuvants (ASIA syndrome) manifesting as subacute thyroiditis

J Endocrinol Invest (2021), pp. 1-3

Google Scholar

N. Murvelashvili, A. Tessnow

A case of hypophysitis following immunization with the mRNA-1273 SARS-CoV-2 vaccine

J Invest Med High Impact Case Rep., 9 (2021), Article 23247096211043386

Google Scholar

Y. Shoenfeld, N. Agmon-Levin

'ASIA'–autoimmune/inflammatory syndrome induced by adjuvants

J Autoimmun, 36 (1) (2011), pp. 4-8

View PDFView articleView in ScopusGoogle Scholarhttps://www.sciencedirect.com/science/article/pii/S2214624522000338

M. Stasiak, B. Tymoniuk, R. Michalak, B. Stasiak, M.L. Kowalski, A. Lewiński

Subacute thyroiditis is associated with HLA-B* 18: 01,-DRB1* 01 and-C* 04: 01—the significance of the new molecular background

J Clin Med, 9 (2) (2020), p. 534

View at publisher

CrossrefView in ScopusGoogle Scholarhttps://www.sciencedirect.com/science/article/pii/S2214624522000338

S.O. Oyibo

Subacute thyroiditis after receiving the adenovirus-vectored vaccine for coronavirus disease (COVID-19)

Cureus, 13 (6) (2021)

Google Scholar

J. Schimmel, E.L. Alba, A. Chen, M. Russell, R. Srinath

Letter to the editor: thyroiditis and thyrotoxicosis after the SARS-CoV-2 mRNA vaccine

Thyroid, 31 (9) (2021), p. 1440

View at publisher

CrossrefView in ScopusGoogle Scholar

Takedani K., Notsu M., Ishiai N., Asami Y., Uchida K., Kanasaki K. Graves' disease after exposure to the SARS-CoV-2 vaccine: A case report and review of the literature. BMC Endocr. Disord. 2023;23:132. doi: 10.1186/s12902-023-01387-2. [DOI] [PMC free article] [PubMed] [Google Scholar]

ΠΡΟΣΒΟΛΗ ΤΗΣ ΥΠΟΦΥΣΗΣ

A Case of Hypophysitis Following Immunization With the mRNA-1273 SARS-CoV-2 Vaccine
https://pubmed.ncbi.nlm.nih.gov/34553641/

ΣΑΚΧΑΡΩΔΗΣ ΔΙΑΒΗΤΗΣ

Unnati Bhatia, Nishant Aggarwal, Rachel Barjuca, Alexandra Halalau. Type 1 Diabetes Mellitus Caused by COVID-19 mRNA Vaccination: A Case Report and Literature Review of 17 Published Cases. AACE Clinical Case Reports, Volume 10, Issue 5, 2024, Pages 179-183, ISSN 2376-0605,
https://doi.org/10.1016/j.aace.2024.06.001.
(https://www.sciencedirect.com/science/article/pii/S2376060524000567)

DOI: 10.3390/vaccines10111905

DOI: 10.3346/jkms.2023.38.e12

https://doi.org/10.1111/jdi.13781

ΑΛΛΕΣ ΕΠΙΠΛΟΚΕΣ

ΣΥΝΔΡΟΜΟ ΔΙΑΦΥΓΗΣ ΤΡΙΧΟΕΙΔΩΝ ΑΓΓΕΙΩΝ (CAPILLARY LEAK SYNDROME)

Ruggiero R, Balzano N, Di Napoli R, Mascolo A, Berrino PM, Rafaniello C, Sportiello L, Rossi F, Capuano A. Capillary leak syndrome following COVID-19 vaccination: Data from the European pharmacovigilance database Eudravigilance. Front Immunol. 2022 Sep 13;13:956825. doi: 10.3389/fimmu.2022.956825. PMID: 36177033; PMCID: PMC9513245.

ΕΠΙΔΕΙΝΩΣΗ ΕΚΔΗΛΩΣΕΩΝ β ΜΕΣΟΓΕΙΑΚΗΣ ΑΝΑΙΜΙΑΣ

Anthony M. Kyriakopoulos, Stephanie Seneff, Pathology Deterioration in a Pure β-zero Thalassemia Heterozygote After mRNA COVID-19 Vaccination: A Case Report and Literature Review , International Journal of Vaccine Theory, Practice, and Research : Vol. 3 No. 2 (2024): Injuries, Causes, and Treatments, Part 2

ΠΟΛΥΣΥΣΤΗΜΙΚΟ ΦΛΕΓΜΟΝΩΔΕΣ ΣΥΝΔΡΟΜΟ ΕΝΗΛΙΚΩΝ (MULTISYSTEM INFLAMMATORY SYNDROME IN ADULTS)

A case of multisystem inflammatory syndrome (MIS-A) in an adult woman 18 days after COVID-19 vaccination
https://pubmed.ncbi.nlm.nih.gov/34511054

A case of multisystem inflammatory syndrome in adults following natural infection and subsequent immunization
https://pubmed.ncbi.nlm.nih.gov/34954311/

A Challenging Diagnosis: A Case of Multisystem Inflammatory Syndrome Following COVID-19 Vaccination
https://pubmed.ncbi.nlm.nih.gov/35421914/

Cheng MH, Zhang S, Porritt RA, Noval Rivas M, Paschold L, Willscher E, Binder M, Arditi M, Bahar I. Superantigenic character of an insert unique to SARS-CoV-2 Spike supported by skewed TCR repertoire in patients with hyperinflammation. Proc Natl Acad Sci U S A. 2020;117:25254–25262. doi: 10.1073/pnas.2010722117 **[DOI] [PMC free article] [PubMed] [Google Scholar]**

Nune A, Iyengar KP, Goddard C, et al. *Multisystem inflammatory syndrome in an adult following the SARS-CoV-2 vaccine (MIS-V). BMJ Case Rep 2021;14. doi:doi:10.1136/bcr-2021-243888. [Epub ahead of print: 29 Jul 2021].pmid:http://www.ncbi.nlm.nih.gov/pubmed/34326117* PubMedGoogle Scholar

Multisystem Inflammatory Syndrome in an Adult after COVID-19 Vaccination: a Case Report and Literature Review.

Park JW, Yu SN, Chang SH, Ahn YH, Jeon MH. J Korean Med Sci. 2021 Nov 22;36(45):e312. doi: 10.3346/jkms.2021.36.e312. PMID: 34811978 Free PMC article. Review**.**

ΑΛΩΠΕΚΙΑ

Alopecia areata after SARS-CoV-2 vaccination
https://pubmed.ncbi.nlm.nih.gov/34931171/

ΑΙΦΝΙΔΙΟΙ ΘΑΝΑΤΟΙ - ΥΠΕΡΒΑΛΛΟΥΣΑ ΘΝΗΣΙΜΟΤΗΤΑ (EXCESS MORTALITY)

Εισαγωγικό σημείωμα - Ορισμός

Η πληθώρα αιφνιδίων θανάτων και μάλιστα σε πολύ νέους ανθρώπους και σε ανθρώπους σε παραγωγική ηλικία έχει προβληματίσει πολύ όλον τον κόσμο. Η στάση μεγάλης μερίδας του ιατρικού κόσμου που φαίνεται να αδιαφορεί ή να προβάλλει παιδαριώδη επιχειρήματα αντί να αναζητά τα αληθινά αίτια, ώστε να γίνει αποτελεσματική πρόληψη, ξενίζει και δημιουργεί απορίες.
Υπάρχει το αμείλικτο ερώτημα γιατί δεν γίνεται συστηματικά νεκροψία, το αυτονόητο δηλαδή σε κάθε περίπτωση αιφνιδίου θανάτου…

Η υπερβάλλουσα θνησιμότητα, δηλαδή ο μεγαλύτερος από τον αναμενόμενο αριθμός θανάτων, από κάθε αιτία, σε συγκεκριμένη χρονική περίοδο, σε σύγκριση με τον αριθμό θανάτων στον ίδιο πληθυσμό σε ομαλή περίοδο, δηλαδή όταν δεν υπήρχε υγειονομική κρίση, είναι πολύ χρήσιμη παράμετρος παρακολούθησης της πορείας της υγείας των πολιτών και έγκαιρης λήψης μέτρων.
Δεδομένου ότι πάντοτε υπάρχουν εποχιακές αποκλίσεις, συνηθίζεται να γίνεται σύγκριση με τον μέσο όρο του αριθμού θανάτων της προηγούμενης πενταετίας.

Προκειμένου να μην υπάρχει σύγχυση λόγω της απώλειας ανθρωπίνων ζωών από την COVID λοίμωξη, έχει συμφωνηθεί διεθνώς να γίνεται σύγκριση **του ετήσιου αριθμού θανάτων από κάθε αιτία**, με τον **μέσο όρο της πενταετίας 2015-2019** και όχι με τον αριθμό θανάτων του αμέσως προηγούμενου χρόνου όπως ακούστηκαν να λένε κάποιοι ειδικοί στη χώρα μας, προφανώς όχι από άγνοια, αλλά θελοντας να θολώσουν τα νερά…

Eurostat. Database - Eurostat
http://ec.europa.eu/eurostat/data/database

DataBank | the World Bank
https://databank.worldbank.org/home.aspx

AUSTRALIA **https://www.abs.gov.au/articles/measuring-australias-excess-mortality-during-covid-19-pandemic-until-first-quarter-2023** δεν γίνεται καμία αναφορά στα εμβόλια!

Australian Bureau of Statistics (ABS) Provisional Mortality Statistics: Reference Period: Jan—Dec 2022; abs.gov.au, 2023. [(accessed on 7 July 2023)]; Available online:

https://www.abs.gov.au/statistics/health/causes-death/provisional-mortality-statistics/jan-dec-2022.

Australian Bureau of Statistics (ABS) Provisional Mortality Statistics. Australian Bureau of Statistics (ABS); Canberra, Australia: 2023. [Google Scholar]

Dowd E., Nunes Y., Alegria C. US Disability Data: Part 4—Relation with Excess Deaths. Bureau of Labor Statistics (BLS). Phinancetechnologies.com. 2022. [(accessed on 8 November 2022)]. Available online: https://phinancetechnologies.com/HumanityProjects/US%20Disabilities%20-%20Part4.htm.

Agrawal, V, J Cantor, N Sood, and C Whaley (2023), "The Impact of COVID-19 Shelter-in-place Policy Responses on Excess Mortality", *Health Economics*, July, hec.4737.

Matveeva, O. · Shabalina, S.A.

Comparison of vaccination and booster rates and their impact on excess mortality during the COVID-19 pandemic in European countries

Front Immunol. 2023; **14**:1151311

Crossref

PubMed

Google Scholar

Pallari, C.T. · Achilleos, S. · Quattrocchi, A. · et al.

Magnitude and determinants of excess total, age-specific and sex-specific all-cause mortality in 24 countries worldwide during 2020 and 2021: results on the impact of the COVID-19 pandemic from the C-MOR project

BMJ Glob Heal. 2024; **9**, e013018

Crossref

PubMed

Google Scholar

Aarstad J. Deaths among young people in England increased significantly in 10 of 11 weeks after COVID-19 vaccination and doubled in three. EXCLI J. 2024 Jul 4;23:908-911. doi: 10.17179/excli2024-7498. PMID: 39253530; PMCID: PMC11382299.

A Covid-19 quartile comparison of official with excess mortality: Voice and accountability and the impact of vaccines

- Weining Xin
- Sameer Nair-Desai

- Alex Cukierman
- Yothin Jinjarak
- Joshua Aizenman

23 Feb 2022

`![](../../../../../../../../../../var/folders/34/zq18d8kx7kbgby0j06p_j6t40000gn/T/TemporaryItems/NSIRD_screencaptureui_EM2XPo/Screenshot 2022-01-04 at 17.01.16.png)`

- COVID-19

Out-of-Hospital Cardiac Arrest: Does a History ...

American Heart Association Journals

https://www.ahajournals.org › doi › JAHA.124.035763

by S Nadhir · 2024 — Acute *myocarditis*, when symptomatic, may manifest dramatically as cardiac arrest, constituting a substantial contributor to sudden cardiac death ...

Full article: Sudden cardiac death caused by myocarditis in ...

Taylor & Francis Online

https://www.tandfonline.com › ... › Volume 4, Issue 3

Kuhbandner C, Reitzner M. Estimation of excess mortality in Germany during 2020-2022. Cureus 2023;15:e39371.

- Doshi P, Godlee F, Abbasi K. Covid-19 vaccines and treatments: we must have raw data, now. BMJ. 2022 Jan 19;376:o102. doi: 10.1136/bmj.o102. PMID: **35045956** DOI: 10.1136/bmj.o102

  Erratum in:BMJ. 2022 Jan 24;376:o189. doi: 10.1136/bmj.o189. PMID: 35074800

  Comment in Covid-19 vaccines: individual patient data should be submitted to the European Medicines Agency.

Wieseler B. BMJ. 2022 Feb 24;376:o417. doi: 10.1136/bmj.o417. PMID: 35210257 No abstract available.

Department of Health and Social Care. Excess mortality in England and English regions. In: GOV.UK [Internet]. 9 Mar 2023. [cited 18 Mar 2023]. Available: https://www.gov.uk/government/statistics/excess-mortality-in-england-and...

//

Excess mortality across countries in the Western World ...

BMJ

BMJ Public Health

https://bmjpublichealth.bmj.com › content

by S Mostert · 2024 · Cited by 22 — In 2022, when most containment measures were lifted and COVID-19 *vaccines* were continued, preliminary data present 808 392 excess *deaths* (P- ...

Saskia Mostert, Marcel Hoogland, Minke Huibers, Gertjan Kaspers - Excess mortality across countries in the Western World since the COVID-19 pandemic: 'Our World in Data' estimates of January 2020 to December 2022: BMJ Public Health 2024;2:e000282.

https://doi.org/10.1136/bmjph-2023-000282

https://bmjpublichealth.bmj.com/content/2/1/e000282

This article has a correction

Expression of concern: Excess mortality across countries in the western world since the COVID-19 pandemic: 'Our World in Data' estimates of January 2020 to December 2022 - 14 June 2024

https://www.reuters.com/fact-check/study-does-not-say-covid-vaccines-may-have-fuelled-excess-deaths-2024-06-13/

ΠΡΟΣΠΑΘΕΙΑ ΝΑ ΦΑΝΕΙ ΜΕΓΑΛΥΤΕΡΗ ΘΝΗΣΙΜΟΤΗΤΑ ΜΕΤΑΞΥ ΤΩΝ ΑΝΕΜΒΟΛΙΑΣΤΩΝ

World Mortality Dataset: international data on all-cause mortality.
https://github.com/akarlinsky/world_mortality?tab=readme-ov-file
https://github.com/dkobak/excess-mortality

Edouard Mathieu and Max Roser (2021) - "How do death rates from COVID-19 differ between people who are vaccinated and those who are not?" Published online at

OurWorldinData.org. Retrieved from: 'https://ourworldindata.org/covid-deaths-by-vaccination' [Online Resource]

Janine Aron, John Muellbauer, Charlie Giattino and Hannah Ritchie (2020) - “A pandemic primer on excess mortality statistics and their comparability across countries” Published online at OurWorldinData.org. Retrieved from: 'https://ourworldindata.org/covid-excess-mortality' [Online Resource]

Aron, J. and J. Muellbauer. 2020a. “Measuring excess mortality: England is the European outlier in the Covid-19 pandemic.” VOXEU, Centre for Economic Policy Research, London, 18 May, 2020.

Aron, J. and J. Muellbauer. 2020b. “Measuring excess mortality: the case of England during the Covid-19 Pandemic.” INET Oxford COVID-19 Research, Economics Department, Oxford University.

Denaxas, S., H. Hemingway, L. Shallcross, M. Noursadeghi, B. Williams, D. Pillay, L. Pasea, A. González-Izquierdo, C. Pagel, S. Harris, A. Torralbo, C. Langenberg, W. Wong, and A. Banerjee. 2020. “Estimating excess 1- year mortality from COVID-19 according to underlying conditions and age in England: a rapid analysis using NHS health records in 3.8 million adults.” 10.13140/RG.2.2.36151.27047.

The Economist. 2020. “Tracking Covid-19 excess deaths across countries,” The Economist, 16 April, 2020,

Unravelling Myths: A Difference-In-Differences Analysis of Post-Vaccination Mortality in Italy During COVID-19

Bonanno, G and De Luca, M

Dec 2024 (Early Access)

SOCIAL INDICATORS RESEARCH

The COVID-19 pandemic has given rise to numerous conspiracy theories, focusing on topics such as vaccine effectiveness, the virus's origin and public health measures. These narratives have spread rapidly through social and traditional media, influencing public perception and behaviour towards vaccination efforts. In particular, they have contributed significantly to vaccine hesitancy. This stud

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ΜΙΚΡΟΤΕΡΗ ΥΠΕΡΒΑΛΛΟΥΣΑ ΘΝΗΣΙΜΟΤΗΤΑ

Kevin W McConeghy, Kwan Hur, Issa J Dahabreh, Rong Jiang, Lucy Pandey, Walid F Gellad, Peter Glassman, Chester B Good, Donald R Miller, Andrew R Zullo, Stefan Gravenstein, Francesca Cunningham, Early Mortality After the First Dose of COVID-19 Vaccination: A Target Trial Emulation, *Clinical Infectious Diseases*, Volume 78, Issue 3, 15 March 2024, Pages 625–632, https://doi.org/10.1093/cid/ciad604
https://doi.org/10.1093/cid/ciad604

ΘΝΗΤΟΤΗΤΑ ΣΤΗΝ ΕΛΛΑΔΑ (GREECE DEATH RATE) ΤΕΛΕΥΤΑΙΑ ΔΗΜΟΣΙΕΥΜΕΝΑ ΣΤΟΙΧΕΙΑ

https://www.statistics.gr/documents/20181/c3ca3e2e-c1b5-efb5-3419-9a91f05ee791

https://www.statistics.gr/documents/20181/3f8bce86-31b9-bb81-3421-328ed08f6973

Παρατηρούμε ότι γίνεται σύγκριση με την πενταετία 2018–2023, αντί με την πενταετία 2015–2019

ΣΤΑΤΙΣΤΙΚΗ ΑΙΦΝΙΔΙΩΝ ΘΑΝΑΤΩΝ, ΠΙΘΑΝΑ ΑΙΤΙΑ (SUDDEN DEATH STATISTICS, POSSIBLE CAUSES

https://www.cdc.gov/mmwr/volumes/73/wr/mm7314a5.htm

https://thesouthfirst.com/health/covid19-vaccine-link-to-sudden-deaths-of-young-people-karnataka-forms-expert-panel-to-find-answers/

https://apnews.com/article/fact-check-excess-deaths-covid-died-suddenly-793316776380

https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/riskofdeathfollowingcovid19vaccinationorpositiv

https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.123.066270

https://www.cdc.gov/mmwr/volumes/73/wr/pdfs/mm7314a5-H.pdf

https://yourlocalepidemiologist.substack.com/p/covid-19-vaccines-and-sudden-deaths

https://www.nbcnews.com/health/health-news/cdc-finds-covid-vaccines-not-linked-sudden-death-young-people-rcna147188

https://apnews.com/article/fact-check-covid-vaccines-athlete-deaths-1500-989195878254

https://www.cidrap.umn.edu/covid-19/oregon-data-covid-vaccines-not-tied-sudden-cardiac-death-young-people

https://www.mcgill.ca/oss/article/medical-general-science/athletes-vaccines-and-cardiac-deaths

https://www.heraldopenaccess.us/openaccess/sudden-cardiac-deaths-before-after-covid-19-pandemia-and-spike-protein-derivates-uses

https://www.nzherald.co.nz/nz/no-certain-cause-of-healthy-teens-death-after-covid-vaccine-coroner-rules/7XWZDY7CMNGOJCI4E54JMVKFEI/#google_vignette https://flaglerlive.com/covid-sudden-death/

https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2824101

ΑΙΦΘΝΙΔΙΟΙ ΘΑΝΑΤΟΙ ΣΤΗΝ ΕΛΛΑΔΑ (SUDDEN DEATHS IN GREECE)

https://www.researchgate.net/publication/295370638_Sudden_death_in_the_young_in_Greece_the_unknown_cause_cases_and_the_hidden_cardiac_diseases

https://www.statistics.gr/documents/20181/c3ca3e2e-c1b5-efb5-3419-9a91f05ee791

https://www.milletnews.com/greece/shocking-incident-in-crete-6-sudden-deaths-in-less-than-24-hours

https://greekreporter.com/2022/02/08/greece-death-rate-covid/

https://en.rua.gr/2022/05/14/sudden-deaths-of-children-in-greece-what-is-happening/

https://www.instagram.com/independent_journalism_2/p/C5wEvNzOtLq/?img_index=1

https://www.europarl.europa.eu/doceo/document/E-9-2022-002019_EN.html

https://www.ndtv.com/world-news/greece-facing-population-collapse-as-unexplained-deaths-soar-elon-musk-reacts-5448119

ΣΤΑΤΙΣΤΙΚΑ ΣΤΟΙΧΕΙΑ ΓΙΑ ΥΠΕΡΒΑΛΛΟΥΣΑ ΘΝΗΣΙΜΟΤΗΤΑ (Excess mortality statistics)

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Excess_mortality_statistics

https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20230714-2

https://www.europarl.europa.eu/doceo/document/E-9-2023-003117_EN.html

https://www.statista.com/statistics/1417204/yearly-excess-deaths-in-europe/

https://www.euromomo.eu/

https://www.mortality.org/

https://ourworldindata.org/grapher/cumulative-excess-deaths-covid

https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm

M Pizzato · 2024 · Γίνεται αναφορά σε 5 — ***About half a million excess deaths occurred in each of the first three pandemic years***, while only a modest excess was observed in 2023. The excess was notably ...

https://www.swissre.com/institute/research/topics-and-risk-dialogues/health-and-longevity/covid-19-pandemic-synonymous-excess-mortality.html

https://www.economist.com/graphic-detail/coronavirus-excess-deaths-tracker

https://www.nature.com/articles/s41586-022-05522-2

https://www.who.int/data/sets/global-excess-deaths-associated-with-covid-19-modelled-estimates

https://www.census.gov/library/stories/2024/03/excess-mortality-during-covid-19.html

https://www.gov.uk/government/statistics/excess-mortality-in-england-and-english-regions

Analysis estimating ***excess mortality*** during and after the COVID-19 pandemic, 20 March 2020 to 29 December 2023.

https://bmjpublichealth.bmj.com/content/2/1/e000282

https://www.pnas.org/doi/10.1073/pnas.2309557120

https://www.telegraph.co.uk/news/2024/06/04/covid-vaccines-may-have-helped-fuel-rise-in-excess-deaths/

https://www.europarl.europa.eu/doceo/document/P-9-2021-004862_EN.html

https://www.reuters.com/fact-check/no-evidence-link-uk-excess-deaths-covid-19-vaccines-2024-02-06/

https://www.researchgate.net/publication/374018682_Excess_Mortality_and_the_Effect_of_the_COVID-19_Vaccines_Part_1_European_Data

https://www.researchgate.net/publication/373989367_COVID-19_vaccine-associated_mortality_in_the_Southern_Hemisphere

https://hansard.parliament.uk/commons/2024-01-16/debates/152B485D-812D-43CC-9D25-C2B651564810/ExcessDeathTrends

Expression of concern: Excess mortality across countries in the western world since the COVID-19 pandemic: 'Our World in Data' estimates of January 2020 to December 2022 - 14 June 2024

https://www.thelancet.com/journals/lanepe/article/PIIS2666-7762%2824%2900163-7/fulltext

W Msemburi · 2023 · Γίνεται αναφορά σε 656 — These estimates call our attention to four important points. First and foremost, COVID-19 has resulted in marked global ***excess mortality***: 14.83 ...

από S Mostert · 2024 · Γίνεται αναφορά σε 11 — The total number of ***excess deaths*** in 47 countries of the Western World was 3 098 456 from 1 January 2020 until 31 December 2022.

https://www.gov.uk/government/statistics/excess-mortality-within-england-post-pandemic-method/excess-mortality-within-england-2023-data-statistical-commentary

Official Statistics   Excess mortality within England: 2023 data - statistical commentary Updated 17 October 2024

https://www.who.int/publications/m/item/methods-for-estimating-the-excess-mortality-associatedwith-the-covid-19-pandemic

Methods for estimating the excess mortality associated with the COVID-19 pandemic 19 May 2023   Technical document

https://en.wikipedia.org/wiki/Excess_mortality

https://www.bmj.com/company/newsroom/high-excess-death-rates-in-the-west-for-3-years-running-since-start-of-pandemic/   **High excess death rates in the West for 3 years running since start of pandemic**

NATURE COMMUNICATIONS | https://doi.org/10.1038/s41467-022-28157-3

https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/comparisonsofallcausemortalitybetweeneuropeancountriesandregions/28december2019toweekending1july2022

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Excess_mortality_statistics

https://link.springer.com/article/10.1007/s44197-024-00200-0

https://www.mdpi.com/2076-393X/11/1/74

https://www.rmit.edu.au/news/factlab-meta/no-credible-evidence-vaccines-behind-excess-deaths

https://www.news.com.au/lifestyle/health/health-problems/covid-vaccines-may-have-contributed-to-rise-in-excess-deaths-researchers-suggest/news-story/cdf3a64c434c29a8ebc3215ab3aa335b

https://x.com/Nicholas___D/status/1525049058334760962?mx=2

https://www.health.qld.gov.au/__data/assets/pdf_file/0029/144758/info33.pdf

https://www.trinitybugle.com/techscience/there-is-no-excess-mortality-in-the-eu-however-greece-and-cyprus-lag-behind-the-optimistic-trend.html

https://www.youtube.com/watch?v=WjG3VoX3Ldk

https://www.youtube.com/watch?v=ku2Fv7xnL1o

https://www.youtube.com/watch?v=Y7vTqEmlkvw https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm

https://x.com/EU_Eurostat/status/1592458637753974784

https://bmjgroup.com/high-excess-death-rates-in-the-west-for-3-years-running-since-start-of-pandemic/

Lamptey E. Post-vaccination COVID-19 deaths: a review of available evidence and recommendations for the global population. Clin Exp Vaccine Res. 2021 Sep;10(3):264-275. doi: 10.7774/cevr.2021.10.3.264. Epub 2021 Sep 30. PMID: 34703810; PMCID: PMC8511593.

J Pearson-Stuttard · 2024 · Γίνεται αναφορά σε 12 — ***Excess mortality*** in England post COVID-19 pandemic: implications for secondary prevention. Jonathan Pearson-Stuttard

Forthun I, Madsen C, Emilsson L, et al. **Excess mortality in Denmark, Finland, Norway and Sweden during the COVID-19 pandemic 2020–2022.** ***European Journal of Public Health.*** 17 May 2024. doi: 10.1093/eurpub/ckae091.

Edouard Mathieu, Hannah Ritchie, Lucas Rodés-Guirao, Cameron Appel, Charlie Giattino, Joe Hasell, Bobbie Macdonald, Saloni Dattani, Diana Beltekian, Esteban Ortiz-Ospina and Max Roser (2020) - "Coronavirus Pandemic (COVID-19)". Published online at OurWorldinData.org. Retrieved from: 'https://ourworldindata.org/coronavirus' [Online Resource]

Knutson et al. (2023). Estimating global and country-specific excess mortality during the Covid-19 pandemic. ***The Annals of Applied Statistics.***

Msemburi et al. (2023). The WHO estimates of excess mortality associated with the COVID-19 pandemic. ***Nature.***

Karlinsky, A. and Kobak, D. (2021) Tracking excess mortality across countries during the COVID-19 pandemic with the World Mortality Dataset. ***eLife***, DOI: 10.7554/eLife.69336.

Galmiche, S., Coustaury, C., Charniga, K. *et al.* Patterns and drivers of excess mortality during the COVID-19 pandemic in 13 Western European countries. *BMC Global Public Health* **2**, 78 (2024). https://doi.org/10.1186/s44263-024-00103-z

High numbers of excess deaths in countries with ...

European Parliament
https://www.europarl.europa.eu › E-9-2023-003117_EN

23 Oct 2023 — There *were high numbers of excess deaths in 2023* in countries with high COVID-19 vaccination rates such as the Netherlands, Australia, New Zealand and Denmark.

https://jethrojeff.com/

ΥΠΕΡΒΑΛΛΟΥΣΑ ΘΝΗΣΙΜΟΤΗΤΑ ΣΤΗΝ ΕΛΛΑΔΑ (EXCESS MORTALITY IN GREECE)

Panagiotakos D, Tsiampalis T. Excess mortality in Greece during 2020: the role of COVID-19 and cardiovascular disease. Hellenic J Cardiol. 2021 Sep-Oct;62(5):378-380. doi: 10.1016/j.hjc.2021.04.002. Epub 2021 Apr 6. PMID: 33836241; PMCID: PMC8022518.

https://data.who.int/countries/300

https://www.researchgate.net/publication/359947259_Mortality_in_Greece_during_the_Covid-19_pandemic

https://greekcitytimes.com/2022/11/19/greece-leads-europe-excess-mortality/

https://lab.imedd.org/en/oi-thanatoi-sthn-pandhmia-endehetai-na-einai-perissoteroi-apo-autous-pou-gnorizoume

https://www.hippokratia.gr/2023/06/13/overall-mortality-trends-in-greece-during-the-first-period-of-austerity-and-the-economic-crisis-2009-2015/

ΣΥΝΕΝΤΕΥΞΗ ΤΥΠΟΥ (PRESS CONFERENCE) ΟΜΑΔΑΣ ΕΥΡΩΒΟΥΛΕΥΤΩΝ ΤΗΝ 21-11-2023

https://ieu-monitoring.com/event/eu-parliament-agenda-on-21-november-2023

15:00 – 15:30

Shocking confirmations about Covid-19 vaccines

Strasbourg, Louise Weiss, WEISS N-1.2

Marcel de GRAAF (NI, NL) and Joachim KUHS (ID,DE)

https://www.youtube.com/watch?v=is2HH_act8I

https://www.youtube.com/watch?v=9L3xxE8AGqE

https://rumble.com/v3ykp00-239470992.html?fbclid=IwAR1B9zcwHj4bg4YPbF625HZyNlLiKN8_pik8RnKZ

« ΚΑΚΕΣ» ΠΑΡΤΙΔΕΣ COVID ΕΜΒΟΛΙΩΝ ΔΙΑΦΟΡΕΣ ΣΤΗΝ ΣΥΧΝΟΤΗΤΑ ΚΑΙ ΣΟΒΑΡΟΤΗΤΑ ΑΝΕΠΙΘΥΜΗΤΩΝ ΑΝΤΙΔΡΑΣΕΩΝ ΑΝΑΛΟΓΑ ΜΕ ΤΗΝ ΠΑΡΤΙΔΑ

Η ΠΡΩΤΗ ΑΝΑΚΟΙΝΩΣΗ ΑΠΟ ΜΕΛΕΤΗ ΣΤΗ ΔΑΝΙΑ

Max Schmeling, Vibeke Manniche, Peter Riis Hansen.: Batch-dependent safety of the BNT162b2 mRNA COVID-19 vaccine. Eur J Clin Invest. 2023 Aug;53(8):e13998. https://doi.org/10.1111/eci.13998. First published: 30 March 2023 Epub 2023 Apr 9. PMID: 36997290

Η ανακοίνωση αυτή δέχθηκε σφοδρή κριτική, στην οποία οι συγγραφείς απάντησαν με την παρακάτω δημοσίευση:

Max Schmeling, Vibeke Manniche, Peter Riis Hansen Batch-dependent safety of the BNT162b2 mRNA COVID-19 vaccine, Letter to the Editor. European Journal of Clinical Investigation, 10.1111/eci.14102, **53**, 12, (2023).https://doi.org/10.1111/eci.13998 First published: 13 October 2023 https://doi.org/10.1111/eci.14102

Manniche, V., Schmeling, M., Gilthorpe, J. D., & Hansen, P. R. (2024). Reports of Batch-Dependent Suspected Adverse Events of the BNT162b2 mRNA COVID-19 Vaccine: Comparison of Results from Denmark and Sweden. *Medicina*, *60*(8), 1343. https://doi.org/10.3390/medicina60081343

Η μελέτη αυτή έδειξε παρόμοια με της Δανίας ευρήματα στη Σουηδία. Και στις δύο χώρες, χειρότερες ήταν οι παρτίδες που κυκλοφόρησαν πρώτες.

Αξιοσημείωτο είναι ότι η εταιρεία παραγωγής του εμβολίου, γνώριζε από πολύ ενωρίς τις μεγάλες διαφορές παρενεργειών από παρτίδα σε παρτίδα όπως δείχνει η πρώτη περιοδική έκθεση ασφάλειας του εμβολίου. **The first Periodic Safety Update Report (PSUR) for the BNT162b2 vaccine** υπεβλήθη στην EMA από την αδειοδοτημένη εταιρεία παραγωγής του εμβολίου (BioNTech) την 19 Αυγούστου 2021, και δημοσιοποιήθηκε από την εταιρεία μετά από ανώνυμο αίτημα πολίτη. Δημοσιεύθηκε από το blog TKP στην Αυστρία. Αυτή η αναφορά που κάλυπτε την περίοδο 19 Δεκεμβρίου 2020 έως 18 Ιουνίου 2021, ανέδειξε τη μεγάλη ετερογένεια των διαφόρων παρτίδων του εμβολίου της Pfizer ως προς την πρόκληση ανεπιθύμητων ενεργειών.

Periodic Safety Update Report #1 for COVID-19 Mrna Vaccine (Nucleoside Modified) (BNT162b2). Submitted to the European Medicines Agency on 19 August 2021, Made Publicly Available in Response to A Freedom of Information Act (FOIA) Request from an Anonymous Reader and Published by the Austrian Science and Political Blog, TKP.

Available online: https://tkp.at/2023/01/17/aerzte-tragen-die-verantwortung-bei-impf-schaeden-und-fuer-deren-meldung

Hviid A. *The batch volumes are SHIPPED vax and NOT administered vax * The small batches were from start of the vax roll-out given to risk groups with enhanced saf. surv. *The batches with ZERO reports have not been used. 2023. Enlace: https://twitter.com/anders_hviid/status/1646390909787832325?s=20 Google Scholar

Schmeling M. 3. Zero reports batches (4 batches) consists of 532,350 doses and have thus been used. 2023. Enlace: https://archive.ph/UPjVo Google Scholar

Rose J. Danish study on lot variation and associations with SAEs. 2023 https://jessicar.substack.com/p/danish-study-on-lot-variation-and Google Scholar

Li X, Ostropolets A, Makadia R, et al. Characterising the background incidence rates of adverse events of special interest for covid-19 vaccines in eight countries: multinational network cohort study. *BMJ*. 2021; 373:n1435. View PubMedGoogle Scholar

Xiong X, Yuan J, Li M, Jiang B, Lu ZK. Age and gender disparities in adverse events following COVID-19 vaccination: real-world evidence based on big data for risk management. *Front Med*. 2021; 8:700014. View Web of Science®Google Scholar

Batch-dependent safety of the BNT162b2 mRNA COVID-19 vaccine 2023, European Journal of Clinical Investigation

Reports of Batch-Dependent Suspected Adverse Events of the BNT162b2 mRNA COVID-19 Vaccine: Comparison of Results from Denmark and Sweden 2024, Medicina (Lithuania)

ΜΕΛΕΤΕΣ ΠΟΥ ΔΙΕΡΕΥΝΟΥΝ ΕΞΑΡΤΩΜΕΝΗ ΑΠΟ ΤΗΝ ΠΑΡΤΙΔΑ ΑΥΞΗΣΗ ΑΝΕΠΙΘΥΜΗΤΩΝ ΕΝΕΡΓΕΙΩΝ ΤΩΝ ΕΜΒΟΛΙΩΝ

Στην Γερμανία

https://www.pei.de/EN/newsroom/positions/covid-19-vaccines/statement-covid-19-vaccines-no-batch-specific-increases-suspected-side-effects.html?nn=164146 δεν αποκάλυψε διαφορές. **Το Paul-Ehrlich-Institut, βάσει ευρημάτων από την προοπτική μελέτη παρατήρησης** SafeVac 2.0. ανακοίνωσε την 18-8-2023, ότι «δεν μπορούν να επιβεβαιώσουν διαφορές μεταξύ διαφορετικών παρτίδων mRNA εμβολίου Comirnaty https://doi.org/10.1111/eci.13998 (της Pfizer) ως προς την συχνότητα και βαρύτητα ανεπιθύμητων ενεργειών». Η μελέτη SafeVac 2.0. περιέλαβε 734,394 ανθρώπους με τουλάχιστον ένα έγκυρο αριθμό παρτίδας, ενώ αξιολογήθηκαν και πληροφορίες από 445,483 ανθρώπους που είχαν δηλώσει μία δεύτερη δόση. Έτσι, αξιολογήθηκαν συνολικά 1,179,877 εμβολιασμοί στην Γερμανία, με 401 διαφορετικές παρτίδες. Καταμετρήθηκαν συνολικά 5,074,069 ανεπιθύμητες ενέργειες, όχι μόνο οι σοβαρές. Μεταξύ αυτών ήσαν 3,061,920 επί συνόλου 703,164 εμβολιασμών με την πρώτη και δεύτερη δόση Comirnaty https://doi.org/10.1111/eci.13998(της Pfizer), από 244 διαφορετικές παρτίδες. Συνολικά εκτιμήθηκαν αντιδράσεις σε 3,935 εμβολιασμούς ως σοβαρές, είτε επειδή έτσι χαρακτηρίστηκαν από το ίδιο το άτομο που έκανε την δήλωση ή επειδή ανήκαν στις προκαθορισμένες 16 ανεπιθύμητες ενέργειες ειδικού ενδιαφέροντος. Οι 3,935 εμβολιασμοί είχαν σχέση με 38,174 σοβαρές αντιδράσεις από 137 διαφορετικές παρτίδες Comirnaty, χωρίς να εμφανίζεται δυσαναλογία αριθμού εμβολιασθέντων και αριθμού ανεπιθύμητων ενεργειών, με οποιαδήποτε παρτίδα. Το συμπέρασμα των υπευθύνων της μελέτης ήταν :There were no discernible batch-specific increases of adverse events reported via the SafeVac 2.0 app.

Μελέτη στο Ηνωμένο Βασίλειο www.gov.uk/government/publications/freedom-of-information-responses-from-the- mhra-week-commencing-6-JUN-22
june-2022 => FOI 22/661 plus Annexes 1 to 3
Τον Ιούνιο 2022, η Ρυθμιστική Αρχή Φαρμάκων και Υγειονομικών Προϊόντων του Ηνωμένου Βασιλείου [the United Kingdom Medicines and Healthcare Products Regulatory Agency (MHRA)] δημοσίευσε αξιολόγηση του συστήματος αυθόρμητης δήλωσης παρενεργειών με συμπλήρωση κίτρινης κάρτας (Yellow Card) και την απάντηση στο ερώτημα αν υπάρχει συσχέτιση με ορισμένες παρτίδες COVID εμβολίων, ως μέρος μιας απόφασης για ελεύθερη πληροφόρηση. Αυτές οι αξιολογήσεις δεν έδειξαν ανησυχητικά στοιχεία για κάποια παρτίδα.

Στην Τσεχία

Tomáš Fürst, Petr Šourek, Zuzana Krátká, Jaroslav Janošek, Batch-dependent safety of COVID-19 vaccines in the Czech Republic and comparison with data from Denmark, European Journal of Clinical Investigation, 10.1111/eci.14271, 54, 10, (2024).

Del Saz BS. Batch-dependent safety of the BNT162b2 mRNA COVID-19 vaccine. Eur J Clin Invest. 2023 Dec;53(12):e14050. doi: 10.1111/eci.14050. Epub 2023 Jul 3. PMID: 37395096

Borja Somovilla del Saz: Batch-dependent safety of the BNT162b2 mRNA COVID-19 vaccine European Journal of Clinical Investigation 2023; epub ahead of print e14050 https://doi.org/10.1111/eci.14050

ΑΝΙΧΝΕΥΣΗ ΠΑΡΟΥΣΙΑΣ DNA ΣΕ mRNA ΕΜΒΟΛΙΑ ΤΩΝ ΕΤΑΙΡΕΙΩΝ PFIZER ΚΑΙ MODERNA

https://osf.io/preprints/osf/mjc97_v1

https://slguardian.org/special-dna-contamination-in-pfizers-covid-19-vaccines-raising-cancer-concerns/

https://www.canceractive.com/article/dna-fragments%20found%20above%20safety%20limits%20in%20covid%20mrna%20vaccines

Wang, Tyler J, Alex Kim, and Kevin Kim. 2024. "A Rapid Detection Method of Replication-Competent Plasmid DNA from COVID-19 mRNA Vaccines for Quality Control." *Journal of High School Science* 8 (4): 427–39.

World Health Organization (WHO) guidelines state that a single vaccine dose should not contain more than 10 nanograms of residual DNA. The study, however, found levels in Pfizer's vaccines exceeding this limit by six to 470 times.

https://granitegrok.com/world/2024/11/another-researcher-finds-loads-of-junk-dna-in-your-covid-vaccine

https://www.jeremyrhammond.com/2023/09/28/linkedin-censors-dna-contamination-in-mrna-covid-19-vaccines https://www.scstatehouse.gov/CommitteeInfo/SenateMedicalAffairsCommittee/PandemicPreparedness/Phillip-Buckhaults-SC-Senate-09122023-final.pdf

https://www.lunduniversity.lu.se/article/qa-covid-19-vaccine-study-gains-attention

https://www.tga.gov.au/sites/default/files/2024-12/FOI%2025-0070.pdf

https://assets.publishing.service.gov.uk/media/669e40cdce1fd0da7b592a11/FW__FOI_24_212_final_redaction.pdf

Didier Raoult. Confirmation of the presence of vaccine DNA in the Pfizer anti-COVID-19 vaccine. 2024. ⟨hal-04778576⟩

https://eu.usatoday.com/story/news/factcheck/2024/03/29/covid-19-vaccines-dna-fragments-harmless/73134331007/

https://health.wusf.usf.edu/health-news-florida/2024-01-12/politifact-fl-dna-fragments-in-mrna-covid-vaccines-wont-harm-you-as-ladapo-suggests

https://doi.org/10.3390/mps7030041

https://www.kget.com/business/press-releases/globenewswire/8992943/dna-contamination-of-covid-vaccines-explored-in-journal-of-american-physicians-and-surgeons/

https://www.youtube.com/watch?v=ICNdzPC2ExY

https://swprs.org/dna-contamination-in-pfizer-and-moderna-covid-vaccines/

ΚΛΗΣΗ ΑΞΙΩΜΑΤΟΥΧΩΝ ΥΓΕΙΟΝΟΜΙΚΩΝ ΚΑΙ ΔΙΟΙΚΗΤΙΚΩΝ ΣΕ ΑΚΡΟΑΣΗ/ΑΝΑΚΡΙΣΗ ΣΕ ΚΟΙΝΟΒΟΥΛΙΑ

ΚΛΗΣΗ ΣΕ ΚΟΙΝΟΒΟΥΛΙΑ - ΕΞΕΤΑΣΗ/ΑΚΡΟΑΣΗ ΠΡΟΣΩΠΩΝ ΠΟΥ ΧΑΡΑΞΑΝ ΠΟΛΙΤΙΚΗ ΑΝΤΙΜΕΤΩΠΙΣΗΣ ΤΗΣ ΠΑΝΔΗΜΙΑΣ –ΑΠΟΔΟΣΗ ΕΥΘΥΝΩΝ

ΕΥΡΩΠΑΪΚΟ ΚΟΙΝΟΒΟΥΛΙΟ

https://www.europarl.europa.eu/doceo/document/E-9-2021-004138_EN.html

https://www.europarl.europa.eu/committees/en/archives/9/covi/events/events-hearings

https://www.age-platform.eu/european-parliament-will-investigate-eu-response-to-covid/

https://www.youtube.com/watch?v=5A2ZkW8pUWg https://www.socialistsanddemocrats.eu/newsroom/sds-pfizer-ceos-shameful-disregard-covid-19-committee-must-have-consequences

https://www.edf-feph.org/joint-letter-age-epsu-edf-covid-special-committee-needs-to-develop-solutions-to-uphold-the-rights-of-workers-and-persons-in-need-for-care-and-support/

https://www.bbc.co.uk/programmes/m000skly

https://www.rfi.fr/en/international-news/20240621-eu-chief-s-texts-for-covid-vaccines-under-court-scrutiny

https://brusselssignal.eu/2024/10/trouble-ahead-eu-top-court-to-hear-covid-era-pfizergate-case-against-commission/

https://www.youtube.com/watch?v=c451CxcHepc

https://www.youtube.com/watch?v=HnSnQor8zDY

https://www.youtube.com/watch?v=C3nrW5u2ITw

https://www.youtube.com/watch?v=Btmw70EEgdw

https://www.youtube.com/watch?v=9L3xxE8AGqE

https://rumble.com/v3ykp00-239470992.html

ΚΟΙΝΟΒΟΥΛΙΟ ΤΟΥ ΗΝΩΜΕΝΟΥ ΒΑΣΙΛΕΙΟΥ

https://www.bbc.com/news/explainers-57085964

https://covid19.public-inquiry.uk/hearings/

https://gardencourtchambers.co.uk/uk-covid-19-inquiry-module-4-public-hearings-open/

https://committees.parliament.uk/work/657/coronavirus-lessons-learnt/news/

https://www.youtube.com/watch?v=_maVbRawDtE

https://www.google.com/search?q=hearings+in+the+united+kingdom+Parliament+over+COVID+and+covid+vaccines&client=firefox-b-d&s

https://www.youtube.com/watch?v=Dh813N27H8Y

https://www.hrsa.gov/vaccine-compensation

https://news.sky.com/story/watch-covid-inquiry-latest-grieving-families-speak-at-hearing-13288119https://news.sky.com/story/watch-covid-inquiry-latest-grieving-families-speak-at-hearing-13288119

https://news.sky.com/story/watch-covid-inquiry-latest-grieving-families-speak-at-hearing-13288119 https://www.youtube.com/watch?v=fptdqqEPjJo

https://www.youtube.com/watch?v=xDinHPJOIoE https://hansard.parliament.uk/commons/2024-04-18/debates/9F01F787-D758-43D4-B8D1-4FA357EB3EED/Covid-19ResponseAndExcessDeaths

Covid-19: Response and Excess Deaths - Hansard

UK Parliament

https://hansard.parliament.uk › Commons › debates › Co...

Andrew Bridgen 18 Apr 2024 — We are witnesses to the greatest medical scandal in this country in living memory, and possibly ever: the excess deaths in 2022 and 2023.

[Relevant documents: e-petition 639085, Launch a Public Inquiry into excess mortality in England and Wales; e-petition 628188, Investigate UK excess deaths not related to Covid.]

Στην ΑΥΣΤΡΑΛΙΑ

https://www.health.gov.au/our-work/covid-19-vaccine-claims-scheme

https://www.youtube.com/watch?v=7sRl5y3cgIo

https://www.parliament.nsw.gov.au/Hansard/Pages/HansardResult.aspx#/docid/HANSARD-1323879322-139532

https://www.abc.net.au/news/2024-04-24/senate-committee-calls-for-covid-royal-commission/103760670

https://www.health.vic.gov.au/immunisation/vaccination-for-healthcare-workers

https://www.healthindustryhub.com.au/pharmaceutical-news-trends/senate-committee-grills-pfizer-and-moderna-over-covid-19-vaccine-claims/

https://www.parliament.nsw.gov.au/researchpapers/Documents/ebrief%20final.pdf

https://www.ahpra.gov.au/News/2021-11-23-Senator-Rennick.aspx

https://www.parliament.vic.gov.au/events/hearings/completed/hearing-for-review-of--pandemic-orders-2022-06-16/

https://www.wa.gov.au/government/covid-19-coronavirus

https://www.abc.net.au/news/2024-02-27/qld-vaccine-mandate-police-paramedics-frontline-workers/103515692

ΣΤΙΣ ΗΝΩΜΕΝΕΣ ΠΟΛΙΤΕΙΕΣ

https://www.rev.com/transcripts/senate-hearing-on-covid-19-vaccine-development-transcript-september-9

PSI Chairman Johnson Subpoenas HHS for Records on ...

https://www.ronjohnson.senate.gov › ...

https://www-ronjohnson-senate-gov.translate.goog/2025/1/psi-chairman-johnson-subpoenas-hhs-for-records-on-covid-19-vaccine-safety-dr-fauci

https://www.youtube.com/watch?v=k8RyV3VEDKI

https://www.pbs.org/newshour/health/watch-live-fauci-walensky-testify-in-senate-on-the-federal-response-to-new-covid-19-variants

https://www.wusf.org/politics-issues/2024-06-02/congress-turns-to-fauci-after-grilling-an-nih-scientist-over-covid-emails

https://www.congress.gov/event/118th-congress/house-event/116287/text

https://oversight.house.gov/release/covid-select-subcommittee-releases-dr-faucis-transcript-highlights-key-takeaways-in-new-memo/

https://www.congress.gov/event/118th-congress/house-event/LC72977/text

https://www.heritage.org/public-health/commentary/5-takeaways-house-gops-first-hearing-covid-19

https://www.youtube.com/watch?v=YI1jsHpgRc4

ΣΤΗΝ ΙΑΠΩΝΙΑ

https://apinitiative.org/en/project/covid19/

https://www.youtube.com/watch?v=Yvr1PZZ15Nk

https://remnantnewspaper.com/web/index.php/headline-news-around-the-world/item/7209-breaking-news-former-minister-for-internal-affairs-and-communications-in-japan-apologizes-for-deaths-and-injuries-linked-to-covid-vaccine-criticizes-ban-on-ivermectin

https://www.todayville.com/so-many-have-died-former-japanese-minister-apologizes-for-covid-jab-linked-deaths/

https://0minus.substack.com/p/replicon-mrna

ΧΩΡΕΣ ΠΟΥ ΣΤΑΜΑΤΗΣΑΝ ΤΗ ΧΡΗΣΗ ΤΟΥ ΕΜΒΟΛΙΟΥ CHADOX1 NCOV-19 (OXFORD-ASTRAZENECA) ή ΤΗΝ ΠΕΡΙΟΡΙΣΑΝ ΜΕ ΗΛΙΚΙΑΚΑ ΚΡΙΤΗΡΙΑ

Η Δανία ανακοίνωσε αρχικά προσωρινή παύση για δύο εβδομάδες, την 11-3-2021, και οριστική παύση την 13-3-2021.

Την 30-3-2021 ανακοίνωσαν παύση χρήσης του εμβολίου για τους κάτω των 55 ετών επαρχίες του Καναδά και την **31-3-2021** ανακοίνωσε η Γερμανία κατάργηση χρήσης του εμβολίου στους κάτω των 60 ετών.

Τον Απρίλιο 2021, η κατάσταση είχε διαμορφωθεί ως εξής**:**

- είχε σταματήσει εντελώς η χρήση του εμβολίου της **AstraZeneca σε τέσσερις ευρωπαϊκές χώρες : Δανία, Λάτβια, Ολλανδία και Νορβηγία**
- **επιτρεπόταν η χρήση του με ηλικιακούς περιορισμούς, σε έξι ακόμη :Φινλανδία, Γαλλία, Γερμανία, Ισλανδία, Λιθουανία και Σουηδία**
- **εξακολούθησε η χρήση του σε όλους τους ενήλικες σε 12 ευρωπαϊκές χώρες** : Αυστρία, Βουλγαρία, Κύπρο, Εσθονία, Ιρλανδία, Ιταλία, Λουξεμβούργο, Πορτογαλλία, Ρουμανία, Σλοβενία, Ισπανία και Ηνωμένο Βασίλειο.

Ωστόσο η ΕΜΑ υποστήριξε τη συνέχιση της χρήσης του εμβολίου!

Covid-19: EMA defends AstraZeneca vaccine as Germany and Canada halt rollouts
Owen Dyer, The BMJ, 2021
BMJ 2021;373:n883

European Medicines Agency. Signal assessment report on embolic and thrombotic events with covid-19 vaccine (ChAdOx1-S [recombinant]): Covid-19 vaccine AstraZeneca (other viral vaccines). 24 March 2021. www.ema.europa.eu/en/documents/prac-recommendation/signal-assessment-report-embolic-thrombotic-events-smq-covid-19-vaccine-chadox1-s-recombinant-covid_en.pdf.

ΧΩΡΕΣ ΠΟΥ ΑΝΑΚΟΙΝΩΣΑΝ ΟΤΙ ΘΑ ΞΑΝΑΡΧΙΣΟΥΝ ΤΗ ΧΡΗΣΗ ΤΟΥ ΕΜΒΟΛΙΟΥ ΜΕΤΑ ΤΗΝ ΚΑΘΗΣΥΧΑΣΤΙΚΗ ΘΕΣΗ ΠΟΥ ΠΗΡΕ Η ΕΜΑ ΚΑΙ Ο Π.Ο.Υ

https://www.who.int/news/item/17-03-2021-who-statement-on-astrazeneca-covid-19-vaccine-safety-signals

https://www.reuters.com/business/healthcare-pharmaceuticals/eu-uk-drug-regulators-rally-behind-astrazeneca-vaccine-after-safety-concerns-2021-03-18/

https://www.science.org/content/article/european-countries-resume-use-astrazenecas-covid-19-vaccine-hoping-pause-has-not-dented

ΠΑΥΣΗ ΔΙΑΘΕΣΗΣ ΤΟΥ ΕΜΒΟΛΙΟΥ ΣΕ ΑΛΛΕΣ ΧΩΡΕΣ

Στην Αυστραλία από 21 Μαρτιου 2023 https://www.health.gov.au/our-work/covid-19-vaccines/advice-for-providers/clinical-guidance/tts

ΑΠΟΣΥΡΣΗ ΤΟΥ ΕΜΒΟΛΙΟΥ ChAdOx1 nCoV-19 (Oxford-AstraZeneca) ΑΠΟ ΤΗΝ ΕΤΑΙΡΕΙΑ ΠΑΡΑΓΩΓΗΣ ΤΟΥ

https://www.bbc.com/news/health-68977026 AstraZeneca announced on Wednesday, 8 May 2024 that it was taking its COVID-19 vaccine (Vaxzevria) off the market due to a "surplus of available updated vaccines" that target new variants of the virus and declining demand

https://www.ema.europa.eu/en/medicines/human/EPAR/vaxzevria

https://www.independent.co.uk/news/science/astrazeneca-covid-vaccine-withdraw-blood-clots-b2541291.html

https://www.europarl.europa.eu/doceo/document/E-10-2024-001557_EN.html

https://www.sciencemediacentre.org/expert-reaction-to-astrazeneca-withdrawing-its-covid-19-vaccine/

https://www.ukri.org/who-we-are/how-we-are-doing/research-outcomes-and-impact/mrc/the-story-behind-the-oxford-astrazeneca-covid-19-vaccine-success/

ΑΝΑΚΟΙΝΩΣΗ ΛΗΞΗΣ ΤΗΣ ΠΑΝΔΗΜΙΑΣ 5 ΜΑΪΟΥ 2023

Ο Παγκόσμιος Οργανισμός Υγείας είχε ανακοινώσει ότι η λοίμωξη από τον ιό SARS-CoV-2 αποτελεί Έκτακτη Ανάγκη Δημόσιας Υγείας Διεθνούς Ενδιαφέροντος την 30 Ιανουαρίου 2020, και την 11 Μαρτίου 2020 ότι αποτελεί πανδημία.

Η κατάσταση έκτακτη ανάγκης άρθηκε στις 5 Μαΐου 2023

https://www.who.int/news/item/05-05-2023-statement-on-the-fifteenth-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-coronavirus-disease-(covid-19)-pandemic

The WHO Director-General concurs with the advice offered by the Committee regarding the ongoing COVID-19 pandemic. He determines that COVID-19 is now an established and ongoing health issue which no longer constitutes a public health emergency of international concern (PHEIC).

The WHO Director-General considered the advice provided by the Committee regarding the proposed Temporary Recommendations and issued them as per the below statement. The WHO Director-General will convene an IHR Review Committee to advise on Standing Recommendations for the long-term management of the SARS-CoV-2 pandemic, taking into account the 2023-2025 COVID-19 Strategic Preparedness and Response Plan. During this transition, States Parties are advised to continue following the issued Temporary Recommendations. The Director-General expressed his sincere gratitude to the Chair, the Members, and the Advisors of the Committee for their engagement and advice during the last three years.

Στις οδηγίες (Temporary Recommendations issued by the WHO Director-General to all States Parties) υπήρχε (στο No 6) η φράση:

Continue to lift COVID-19 international travel related health measures, based on risk assessments, and to not require any proof of vaccination against COVID-19 as a prerequisite for international travel.

https://www-who-int.translate.goog/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing---5-may-2023?_x_tr_sl=en&_x_tr_tl=el&_x_tr_hl=el&_x_tr_pto=sc

https://news.un.org/en/story/2023/05/1136367

https://pmc.ncbi.nlm.nih.gov/articles/PMC10498859/

Harris E. WHO Declares End of COVID-19 Global Health Emergency. *JAMA.* 2023;329(21):1817. doi:10.1001/jama.2023.8656

Cheng K, Wu C, Gu S, Lu Y, Wu H, Li C. WHO declares the end of the COVID-19 global health emergency: lessons and recommendations from the perspective of ChatGPT/GPT-4. Int J Surg. 2023 Sep 1;109(9):2859-2862. doi: 10.1097/JS9.0000000000000521. PMID: 37246993; PMCID: PMC10498859.

Sarker R, Roknuzzaman ASM, Nazmunnahar, Shahriar M, Hossain MJ, Islam MR. The WHO has declared the end of pandemic phase of COVID-19: Way to come back in the normal life. Health Sci Rep. 2023 Sep 5;6(9):e1544. doi: 10.1002/hsr2.1544. PMID: 37674622; PMCID: PMC10478644.

https://www.epj.org/epjb-news/2803-epjb-highlight-how-did-the-covid-pandemic-end-so-abruptly

ΧΩΡΕΣ ΠΟΥ ΑΠΕΣΥΡΑΝ ΜΕΤΡΑ ΕΠΙΒΟΛΗΣ ΤΟΥ ΕΜΒΟΛΙΑΣΜΟΥ ΚΑΙ ΔΙΑΦΟΡΑ ΠΕΡΙΟΡΙΣΤΙΚΑ ΜΕΤΡΑ ΠΡΟ ΤΗΣ ΚΗΡΥΞΗΣ ΛΗΞΗΣ ΤΗΣ ΠΑΝΔΗΜΙΑΣ

➢ Δανία

Η πρώτη χώρα που σταμάτησε το εμβολιαστικό της πρόγραμμα, από 15-5-2022, δηλώνοντας ότι το κάνει διότι ο ιός είναι πλέον υπό έλεγχο

https://www.cnbc.com/2022/04/28/denmark-the-first-country-to-halt-its-covid-vaccination-program.html

- **Αυστρία**

https://www.bbc.com/news/world-europe-60681288

- **Ηνωμένο Βασίλειο**

https://www.gov.uk/government/speeches/pm-statement-on-living-with-covid-21-february-2022

Location: House of Commons
Delivered on: 21 February 2022

PM (Boris Johnson) statement in the House Of Commons

… accepting JCVI advice for a new Spring booster offered to those aged 75 and over, older care home residents, and those over 12 who are immunosuppressed.

So let us learn to live with this virus and continue protecting ourselves without restricting our freedoms.

People with Covid are no longer legally required to self-isolate, although the guidance is that those who test positive should stay at home and avoid contact with others for at least five full days.

Patients are no longer required to wear masks in NHS hospitals, GP surgeries and emergency departments, unless they have suspected or confirmed Covid infection.

- **Σκωτία https://www.bbc.com/news/uk-scotland-53166816**

  - The raft of restrictions put in place over the pandemic were lifted at the beginning of May 2022 as Scotland moved into the phase of "living with Covid".

- **Ουαλία**

Masks are no longer required in shops or on public transport in **Wales**, or in health and social care services - although they are recommended. Lateral flow tests (LFTs) are still free until the end of July.

- **Βόρεια Ιρλανδία**

Legal measures have been replaced by guidance in **Northern Ireland**, which recommends that face masks are still worn in certain places, such as enclosed public spaces and health and social care settings.

ΧΩΡΕΣ ΠΟΥ ΑΠΕΣΥΡΑΝ ΤΙΣ ΣΥΣΤΑΣΕΙΣ ΓΙΑ ΕΜΒΟΛΙΑΣΜΟ Ή ΤΙΣ ΠΕΡΙΟΡΙΣΑΝ ΣΕ ΣΥΓΚΕΚΡΙΜΕΝΕΣ ΟΜΑΔΕΣ ΤΟΥ ΠΛΗΘΥΣΜΟΥ

Γερμανία

Όχι στους κάτω των 18 ετών
Robert Koch Institut, Epidemiologisches Bulletin 21/2023, p. 3, p. 37
Στα παιδιά διατίθεται το εμβόλιο μόνο ιδιωτικά και επί πληρωμή (πληρώνουν τα ασφαλιστικά Ταμεία)

Ηνωμένο Βασίλειο. Οδηγίες για ενισχυτική δόση σε συγκεκριμένες ομάδες

https://www.gov.uk/government/publications/covid-19-autumn-2023-vaccination-programme-jcvi-update-7-july-2023/jcvi-statement-on-the-covid-19-vaccination-programme-for-autumn-2023-update-7-july-2023

https://assets.publishing.service.gov.uk/media/66e7fbf624c4f1826d81bb32/Greenbook-chapter-14a-20240916.pdf

https://www.manchester.ac.uk/about/news/the-uk-is-no-longer-offering-covid-vaccines-to-pregnant-women--heres-why-that-might-be-a-bad-idea
The UK is no longer offering COVID vaccines to pregnant women from spring 2025

Νορβηγία

Το εμβόλιο δεν διατίθεται σε παιδιά https://www.fhi.no/en/id/corona/coronavirus-immunisation-programme/

https://www.fhi.no/en/publ/information-letters/vaksine-mot-koronavirus/

the Norwegian Institute of Public Health's website: https://www.fhi.no/kvp

Νέα Ζηλανδία

Τα COVID εμβόλια δεν είναι διαθέσιμα για παιδιά 6 μηνών έως 4 ετών αν δεν ανήκουν σε ειδική κατηγορία κινδύνου

Αυστραλία

https://www.health.gov.au/our-work/covid-19-vaccines/who-can-get-vaccinated/children#:~:text=Consent-,Who%20is%20eligible,aged%205%20years%20and%20over.

Διαθέσιμο σε παιδιά μόνο αν είναι ανοσοκατεσταλμένα.

Καναδάς

https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-26-covid-19-vaccine.html

Οδηγίες της Ευρωπαϊκής Ένωσης

https://www.ecdc.europa.eu/en/covid-19/questions-answers/questions-and-answers-vaccines
Page last updated 13 Mar 2024

The decision of whether to include younger age groups in the COVID-19 vaccination programme is taken at the national level. More information on the strategies of the countries regarding vaccination of younger age groups is available (as per information published on 3 March 2023) in the Overview of the implementation of COVID-19 vaccination strategies and deployment plans in the EU/EEA (europa.eu).

van Kessel R, Forman R, Milstein R, Mastylak A, Czabanowska K, Czypionka T, Durand-Zaleski I, Hirche A, Krysinska-Pisarek M, Maynou L, Roberts B, Torbica A, Vrangbæk K, Wang Y, Wouters OJ, Mossialos E. Divergent COVID-19 vaccine policies: Policy mapping of ten European countries. Vaccine. 2023 Apr 24;41(17):2804-2810. . Epub 2023 Mar 22. PMID: 36967287; PMCID: PMC10030332. doi: 10.1016/j.vaccine.2023.03.036

> All countries initially prioritized vaccine distribution to healthcare workers, others at significant risk of contracting COVID-19, and individuals with significant pre-existing medical conditions. Among the policy differences reported in our data, England, Germany Ireland, and Italy included individuals aged 75 and older in their highest priority groups together with healthcare professionals. By contrast, Austria, France, the Netherlands, Poland, and Spain included this cohort in their second or third-highest priority groups. All children five years of age and older were eligible to be vaccinated in all countries under study, except in England where, as of January 2022, children were only eligible if they were members of a high-risk group (eg, children with auto-immune conditions, cardiovascular diseases, or respiratory conditions).
>
> Our findings also revealed substantial heterogeneity in eligibility for a first booster vaccination. In Austria, Germany, Italy, and Poland, all individuals 12 years of age and older were eligible for a first booster vaccination, as were those who were 16 years of age and older in England and Ireland; by contrast, booster vaccinations for 12-to-15-year-olds in England were provided only to those who met strict conditions (e.g., were immunocompromised or members of specific clinical risk groups). Denmark, the Netherlands, and Spain considered individuals 18 years of age and older as eligible for a first booster vaccination. Similar heterogeneity was reported regarding eligibility for the second booster vaccination as of April 2022.
>
> In terms of priority groups for second boosters, Austria recommended a second booster to those 80 years or older, and at-risk population groups between the ages of 65 and 79 years. Ireland advised a second booster for those 65 years or older and those who are immunocompromised. Denmark and Spain advised a second booster only for persons with severely compromised immune system. Germany advised a second booster for those 70 years and older, nursing home residents, those who are immunosuppressed, and healthcare workers working in medical facilities and nursing homes. England, France, Italy, the Netherlands, and Poland did not specifically designate any population groups as priority groups for a second booster.

Zheng, Wen et al. Global landscape of COVID-19 vaccination programmes for older adults: a descriptive study. The Lancet Healthy Longevity, Volume 5, Issue 11, 100646

updated through to July 20, 2024

U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION - **CDC**. *Interim Clinical Considerations for Use of COVID-19 Vaccines in the United States*. October , 2024
https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim- considerations-us.html Accessed February 1, 2025

ΧΩΡΕΣ ΠΟΥ ΑΠΟΚΛΕΙΟΥΝ ΠΡΟΣΒΑΣΗ ΣΕ ΚΑΠΟΙΑ COVID ΕΜΒΟΛΙΑ (ΜΗ ΔΙΑΘΕΣΗ mRNA ΕΜΒΟΛΙΩΝ) ΣΕ ΜΕΡΟΣ ΤΟΥ ΠΛΗΘΥΣΜΟΥ Ή ΣΤΟ ΣΥΝΟΛΟ ΤΟΥ

Αρκετές χώρες απέσυραν τις συστάσεις για εμβολιασμό ή τις περιόρισαν μόνο σε συγκεκριμένες ομάδες του πληθυσμού, με βάση ηλικιακά και άλλα κριτήρια.

Κάποιες χώρες απέσυραν την διαθεσιμότητα συγκεκριμένων εμβολίων, σε κάποιες μερίδες του πληθυσμού

Sweden, Denmark pause Moderna COVID-19 vaccine for younger age groups
https://www.reuters.com/business/healthcare-pharmaceuticals/sweden-pauses-use-moderna-covid-vaccine-cites-rare-side-effects-2021-10-06/

https://www.forbes.com/sites/roberthart/2021/11/10/germany-france-restrict-modernas-covid-vaccine-for-under-30s-over-rare-heart-risk-despite-surging-cases/

Fernandez-Montero A, Gribble AK, Garralaga LM, Huang YC, Fisher K, et al. (2023) COVID-19 Vaccination Policies and Coverage Across 48 OECD-Related Countries at the End of the COVID-19 Emergency. Ann Vaccines Immunization 7(1): 1023
https://www.jscimedcentral.com/public/assets/articles/vaccines-7-1023.pdf

Montana Considers Becoming First US State To Ban mRNA Vaccine Use
https://www.iflscience.com/montana-considers-becoming-first-us-state-to-ban-mrna-vaccine-use-77981

ΑΝΑΛΥΣΕΙΣ ΚΙΝΔΥΝΟΙ/ΟΦΕΛΟΣ (RISK/BENEFIT) - ΑΞΙΟΛΟΓΗΣΗ

Οι περισσότερες εργασίες εχουν δείξει ότι μόνο στην ηλικιακή ομάδα άνω των 65 ετών μπορεί να υπάρχει όφελος από τον εμβολιασμό, ενώ όλο και περισσότερες μελέτες δείχνουν όχι μόνο έλλειψη αποτελεσματικότητας των εμβολίων αλλά ακόμη και «αρνητική αποτελεσματικότητα», δηλαδή μεγαλύτερη επιρρέπεια των εμβολιασμένων σε COVID λοίμωξη και σε άλλες λοιμώξεις, όπως και περισσότερο σοβαρή νόσηση, πιθανώς μέσω μηχανισμού ADE (Antibody Dependent Enhancement).

Ο ισχυρισμός ότι τα COVID-19 εμβόλια έχουν σώσει πολλά εκατομμύρια ανθρώπων προκύπτει από προτυποποίηση βάσει των ποσοστών περιπτώσεων με έκβαση θάνατο case fatality rates (CFR) στην Κίνα, τον Φεβρουάριο 2020, που δημοσιεύθηκαν από Verity R. et al. στο *Lancet* Infect. Dis.

Οι συγγραφείς υπολόγισαν CFR 6.4% (5.7–7.2) στους άνω των 60 ετών και μέχρι 13.4% (11.2–15.9) στους 80 και άνω, με συνολική θνησιμότητα για την Κίνα 0.66% (0.39–1.33). Ευτυχώς, μεταλλάχθηκε ο ιός και αυτές οι προγνώσεις προτυποποίησης δεν επαληθεύτηκαν στα επόμενα τρία χρόνια.

Verity R., Okell L.C., Dorigatti I., Winskill P., Whittaker C., Imai N., Cuomo-Dannenburg G., Thompson H., Walker P.G.T., Fu H., et al. Estimates of the severity of coronavirus disease 2019: A model-based analysis. Lancet Infect. Dis. 2020;20:669–677. doi: 10.1016/S1473-3099(20)30243-7. **[DOI] [PMC free article] [PubMed] [Google Scholar] .**

Dopp K., *Seneff S. COVID-19 and all-cause mortality data by age group reveals risk of COVID vaccine-induced fatality is equal to or greater than the risk of a COVID death for all age groups under 80 years old as of 6 February 2022. Vixra.org. 2022;21:preprint.* [Google Scholar]

Bardosh K, Krug A, Jamrozik E, et al COVID-19 vaccine boosters for young adults: a risk benefit assessment and ethical analysis of mandate policies at universities. Journal of Medical Ethics 2024;50:126-138. https://doi.org/10.1136/jme-2022-108449
Linked Articles

- Response

Ethics of college vaccine mandates, using reasonable comparisons
Leo L Lam, Taylor Nichols
Journal of Medical Ethics 2023; 50 140-142 Published Online First: 30 Mar 2023. doi: 10.1136/jme-2022-108852

Communicating the Benefits of Vaccination in Light of Potential Risks JAMA Cardiology Editor's Note June 1, 2022

Xu K, Wang Z, Qin M, Gao Y, Luo N, Xie W, et al. . A systematic review and meta-analysis of the effectiveness and safety of COVID-19 vaccination in older adults. Front Immunol. (2023) 14:1113156. doi: 10.3389/fimmu.2023.1113156 - DOI - PMC - PubMed

Gresham LM, Marzario B, Dutz J, Kirchhof MG. An evidence-based guide to SARS-CoV-2 vaccination of patients on immunotherapies in dermatology. J Am Acad Dermatol. (2021) 84:1652–66. doi: 10.1016/j.jaad.2021.01.047 - DOI - PMC - PubMed

Impact of COVID-19 vaccines on mortality in England: December 2020 to March 2021

COVID-19 deaths were defined as any death within 28 days of a positive SARS-CoV-2 test.
The daily impact of vaccination on deaths was estimated based on vaccine effectiveness against mortality multiplied by vaccine coverage. Observed deaths were then divided by the impact to estimate the expected deaths in the absence of vaccination.
Vaccine effectiveness against mortality was based on PHE estimates of effectiveness of vaccination against symptomatic infection (58%) and of death given infection (54%) which combined gives 81% protection against death. In order to allow for the time taken to develop an immune response to vaccination and for a mortality endpoint, we assumed it would take 31 days before the effect of vaccination on deaths is observed. For example, the coverage of 64.9% in age 80+ on 19 January applies to deaths on 19 February.

The calculation was done in the 60 to 69, 70 to 79, and 80+ year olds separately. The overall total is cumulated across all days until 31st March 2021 and across the three years age groups. By the end of March 2021, it is estimated that 9,100 deaths were averted in individuals aged 80 years and older, 1,200 in individuals aged 70 to 79 and 100 in individuals aged 60 to 69 years giving a total of 10,400 deaths averted in individuals aged 60 years or older. There is increasing evidence that both vaccines in use in England prevent infection and transmission. The indirect effects of the vaccination programme will not be incorporated in this analysis, therefore the figure of 10,400 deaths averted is likely to be an underestimate.

RISK DIFFERENCES AND NUMBER NEEDED TO VACCINATE (NNTV) TO PREVENT ONE INFECTION, ONE CASE OF SYMPTOMATIC ILLNESS, AND ONE DEATH FROM COVID-19.

https://www.cdc.gov/mmwr/volumes/70/wr/mm7043e2.htm

Xu S, Huang R, Sy LS, et al. COVID-19 Vaccination and Non–COVID-19 Mortality Risk — Seven Integrated Health Care Organizations, United States, December 14, 2020–July 31, 2021. MMWR Morb Mortal Wkly Rep 2021;70:1520–1524. DOI:http://dx.doi.org/10.15585/mmwr.mm7043e2.https://www.cdc.gov/mmwr/volumes/70/wr/mm7043e2.htm

There is no increased risk for mortality among COVID-19 vaccine recipients. This finding reinforces the safety profile of currently approved ...

RISK/BENEFIT RATIO

Huespe, I.A.; Ferraris, A.; Lalueza, A.; Valdez, P.R.; Peroni, M.L.; Cayetti, L.A.; Mirofsky, M.A.; Boietti, B.; Gómez-Huelgas, R.; Casas-Rojo, J.M.; et al. COVID-19 Vaccines Reduce Mortality in Hospitalized Patients with Oxygen Requirements: Differences between Vaccine Subtypes. A Multicontinental Cohort Study. J. Med. Virol. **2023**, 95, e28786. [Google Scholar] [CrossRef]

Mohammed, I. et al. *The efficacy and effectiveness of the COVID-19 vaccines in reducing infection, severity, hospitalization, and mortality: A systematic review. Hum. Vaccin. Immunother.**18**, 2027160. 10.1080/21645515.2022.2027160 (2022).* [DOI] [PMC free article] [PubMed] [Google Scholar]

Rahmani, K. *et al. The effectiveness of COVID-19 vaccines in reducing the incidence, hospitalization, and mortality from COVID-19: A systematic review and meta-analysis. Front. Public Health**10**, 873596. 10.3389/fpubh.2022.873596 (2022).* [DOI] [PMC free article] [PubMed] [Google Scholar]

Wu, N. *et al. Long-term effectiveness of COVID-19 vaccines against infections, hospitalisations, and mortality in adults: Findings from a rapid living systematic evidence synthesis and meta-analysis up to December, 2022. Lancet Respir. Med.**11**, 439–452. 10.1016/S2213-2600(23)00015-2 (2023).* [DOI] [PMC free article] [PubMed] [Google Scholar]https://www.nature.com/articles/s41467-023-36494-0

Nafilyan, V., Bermingham, C.R., Ward, I.L. *et al.* Risk of death following COVID-19 vaccination or positive SARS-CoV-2 test in young people in England. *Nat Commun* **14**, 1541 (2023). https://doi.org/10.1038/s41467-023-36494-0

no significant increase in cardiac or all-cause mortality in the 12 weeks following COVID-19 vaccination compared to more than 12 week

Impact of COVID-19 vaccines on mortality in England: December 2020 to February 2021 PDF
https://assets.publishing.service.gov.uk/media/605b259de90e0724c14950bb/COVID-19_vaccine_impact_on_mortality_240321.pdf

… estimates suggesting that between 6,100 and 6,600 deaths have been averted as a result of the COVID-19 vaccinations...

Savinkina A, Bilinski A, Fitzpatrick M, et al. Estimating deaths averted and cost per life saved by scaling up mRNA COVID-19 vaccination in low-income and lower-middle-income countries in the COVID-19 Omicron variant era: a modelling study. BMJ Open 2022;12:e061752. 10.1136/bmjopen-2022-061752 [DOI] [PMC free article] [PubMed] [Google Scholar]
C:\Users\badpixel\Documents\mama\The Lancethttps:\www.thelancet.com › laninf › article › fulltext
Based on official reported COVID-19 deaths, we estimated that vaccinations prevented *14·4 million* *(95% credible interval [CrI] 13·7–15·9) death*s ...

Watson, Oliver J et al. Global impact of the first year of COVID-19 vaccination: a mathematical modelling study. The Lancet Infectious Diseases, Volume 22, Issue 9, 1293 - 1302 https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(22)00320-6/fulltext
Correction:
Errata
Correction to *Lancet Infect Dis* 2022; 22: 1293–302
September 5, 2023

https://pubmed.ncbi.nlm.nih.gov/33954775/**Bartsch SM,** Wedlock PT, O'Shea KJ, Cox SN, Strych U, Nuzzo JB, Ferguson MC, Bottazzi ME, Siegmund SS, Hotez PJ, Lee BY. Lives and Costs Saved by Expanding and Expediting Coronavirus Disease 2019 Vaccination. J Infect Dis. 2021 Sep 17;224(6):938-948. PMID: 33954775; PMCID: PMC8136017. DOI: 10.1093/infdis/jiab233

Vaccinating adolescents against SARS-CoV-2 in England: a risk-benefit analysis.
Gurdasani D, Bhatt S, Costello A, Denaxas S, Flaxman S, Greenhalgh T, Griffin S, Hyde Z, Katzourakis A, McKee M, Michie S, Ratmann O, Reicher S, Scally G, Tomlinson C, Yates C,

Safety of Ancestral Monovalent COVID-19 Vaccines in US Children
JAMA Network Open Research April 24, 2024

Ziauddeen H, Pagel C. J R Soc Med. 2021 Nov;114(11):513-524. doi: 10.1177/01410768211052589. Epub 2021 Nov 1. PMID: 34723680 Free PMC article.

Cunningham, A.S. Rapid response: COVID-19 vaccine candidate is unimpressive: NNTV is around 256. BMJ **2020**, 371, m4347. [Google Scholar]

Walach, H., Klement, R. J., & Aukema, W. (2021). **RETRACTED**: The Safety of COVID-19 Vaccinations—We Should Rethink the Policy. ***Vaccines***, ***9***(7), 693. https://doi.org/10.3390/vaccines9070693

Currently, our estimates show that we have to accept four fatal and 16 serious side effects per 100,000 vaccinations in order to save the lives of 2–11 individuals per 100,000 vaccinations, placing risks and benefits on the same order of magnitude.

Dagan, N.; Barda, N.; Kepten, E.; Miron, O.; Perchik, S.; Katz, M.A.; Hernán, M.A.; Lipsitch, M.; Reis, B.; Balicer, R.D. BNT162b2 mRNA COVID-19 Vaccine in a Nationwide Mass Vaccination Setting. N. Engl. J. Med. **2021**, 384, 1412–1423. [Google Scholar] [CrossRef] [PubMed]

In this Israeli field study, 4460 persons in the vaccination group became infected during the study period and nine persons died, translating into an infection fatality rate (IFR) of 0.2% in the vaccination group. In the control group, 6100 became infected and 32 died, resulting in an IFR of 0.5%,

Seneff, S.; Nigh, G. Worse than the disease? Reviewing some possible unintended consequences of the mRNA vaccines against COVID-19. Int. J. Vaccine Theory Pract. Res. **2021**, 2, 38–79. [Google Scholar]

Huang, Z., Xu, S., Liu, J., Wu, L., Qiu, J., Wang, N., Ren, J., Li, Z., Guo, X., Tao, F., Chen, J., Lu, D., Sun, X., & Wang, W. (2022). Effectiveness of inactivated and Ad5-nCoV COVID-19 vaccines against SARS-CoV-2 Omicron BA. 2 variant infection, severe illness, and death. *BMC medicine*, *20*(1), 400. https://doi.org/10.1186/s12916-022-02606-8

Mohammed, I., Nauman, A., Paul, P., Ganesan, S., Chen, K. H., Jalil, S. M. S., Jaouni, S. H., Kawas, H., Khan, W. A., Vattoth, A. L., Al-Hashimi, Y. A., Fares, A., Zeghlache, R., & Zakaria, D. (2022). The efficacy and effectiveness of the COVID-19 vaccines in reducing infection, severity, hospitalization, and mortality: a systematic review. *Human vaccines & immunotherapeutics*, *18*(1), 2027160. https://doi.org/10.1080/21645515.2022.2027160

WHO. COVID-19 vaccinations have saved more than 1.4 million lives in the WHO European Region, a new study finds. https://www.who. int/azerbaijan/news/item/16-01-2024-covid-19-vaccinations-have-saved-more-than-1.4-million-lives-in-the-who-european-region--a-new-study-finds (accessed on 08.05.2024).

Shattock, Andrew J et al. Contribution of vaccination to improved survival and health: modelling 50 years of the Expanded Programme on Immunization. The Lancet, Volume 403, Issue 10441, 2307 - 2316
https://eupha.org/popup_document.php?p=WlJmaU40eWxJcVhpSGRaMngrdkpCZz09OjpGu3tTwan%2Fg9seELiWUA6q&pp=%2Fsection_page.php

24 Apr 2024 — A major landmark study to be published by The Lancet reveals that *global immunization efforts have saved an estimated 154 million lives* in the last 50 years

- **How COVID-19 shots slash all-cause mortality and ...**

12 Feb 2024 — This blog outlines the key evidence supporting the impact of COVID-19 *vaccines* on reducing all-cause *mortality* and addresses some misinformation about the ...

Modelling reveals number of lives saved by COVID vaccine ... *https://www1.racgp.org.au › newsgp › clinical › modell...*

17 Apr 2024 — The average weekly *death rate* during the study period was 19.8 per 100,000 people for the unvaccinated and 4.7, 2.6, and 1.8 per 100,000 for ...

[Risk of death following COVID-19 vaccination or positive ...](https://www.ons.gov.uk)

Office for National Statistics

https://www.ons.gov.uk › deaths › bulletins

27 Mar 2023 — *There was evidence of an increase in cardiac death in young women* after a first dose of non-mRNA vaccines, with the risk being 3.5 times higher ..

COVID-19 vaccinations have saved more than 1.4 million ...

World Health Organization (WHO)

https://www.who.int › Home › Newsroom

16 Jan 2024 — *COVID-19 vaccines have reduced deaths due to the pandemic by at least 57*%, saving more than 1.4 million lives in the WHO European Region.

Why Do Vaccinated People Represent Most COVID-19 ...

KFF

https://www.kff.org › policy-watch › why-do-vaccinate...

30 Nov 2022 — The share of COVID-19 deaths among those who are vaccinated has risen. In fall 2021, *about 3 in 10 adults dying of COVID-19 were vaccinated* or boosted.

Gupta, S, J Cantor, K I Simon, A I Bento, C Wing, and C M Whaley (2021), "Vaccinations Against COVID-19 May Have Averted Up To 140,000 Deaths In The United States", *Health Affairs* 40(9): 1465–72.

Steele, M K, A Couture, C Reed et al. (2022), "Estimated Number of COVID-19 Infections, Hospitalizations, and Deaths Prevented Among Vaccinated Persons in the US, December 2020 to September 2021", *JAMA Network Open* 5(7): e2220385.

Haas, E J, J M McLaughlin, F Khan et al. (2022), "Infections, Hospitalisations, and Deaths Averted via a Nationwide Vaccination Campaign Using the Pfizer–BioNTech BNT162b2 mRNA COVID-19 Vaccine in Israel: A Retrospective Surveillance Study", *The Lancet Infectious Diseases* 22(3): 357–66.

ΕΡΓΑΣΙΕΣ ΠΟΥ ΔΗΛΩΝΟΥΝ ΕΥΕΡΓΕΤΙΚΗ ΕΠΙΔΡΑΣΗ ΤΩΝ COVID ΕΜΒΟΛΙΩΝ

Mohammed, I. *et al. The efficacy and effectiveness of the COVID-19 vaccines in reducing infection, severity, hospitalization, and mortality: A systematic review. Hum. Vaccin. Immunother.18, 2027160. 10.1080/21645515.2022.2027160 (2022).* [DOI] [PMC free article] [PubMed] [Google Scholar]

Rahmani, K. *et al. The effectiveness of COVID-19 vaccines in reducing the incidence, hospitalization, and mortality from COVID-19: A systematic review and meta-analysis. Front. Public Health10, 873596. 10.3389/fpubh.2022.873596 (2022).* [DOI] [PMC free article] [PubMed] [Google Scholar]

Wu, N. *et al. Long-term effectiveness of COVID-19 vaccines against infections, hospitalisations, and mortality in adults: Findings from a rapid living systematic evidence synthesis and meta-analysis up to December, 2022. Lancet Respir. Med.11, 439–452. 10.1016/S2213-2600(23)00015-2 (2023).* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΕΞΑΡΤΏΜΕΝΗ ΑΠΟ ΑΝΤΙΣΩΜΑΤΑ ΕΝΙΣΧΥΣΗ ΤΗΣ ΣΟΒΑΡΌΤΗΤΑΣ ΤΗΣ ΝΟΣΟΥ

ANTIBODY-DEPENDENT ENHANCEMENT (ADE) IN COVID-19

Lee, N. et al. Anti-SARS-CoV IgG response in relation to disease severity of severe acute respiratory syndrome. *J. Clin. Virol.* **35**, 179–184 (2006).
CAS PubMed Google Scholar

Yasui, F. et al. Prior immunization with severe acute respiratory syndrome (SARS)-associated coronavirus (SARS-CoV) nucleocapsid protein causes severe pneumonia in mice infected with SARS-CoV. *J. Immunol.* **181**, 6337–6348 (2008).
CAS PubMed Google Scholar

Jaume, M. et al. Anti-severe acute respiratory syndrome coronavirus spike antibodies trigger infection of human immune cells via a pH- and cysteine protease-independent FcγR pathway. *J. Virol.* **85**, 10582–10597 (2011). CAS PubMed PubMed Central Google Scholar

Yip, M. S. et al. Antibody-dependent infection of human macrophages by severe acute respiratory syndrome coronavirus. *Virol. J.* **11**, 82 (2014). PubMed PubMed Central Google Scholar

Wang, S. F. et al. Antibody-dependent SARS coronavirus infection is mediated by antibodies against spike proteins. *Biochem. Biophys. Res. Commun.* **451**, 208–214 (2014). CAS PubMed PubMed Central Google Scholar

Bournazos, S. & Ravetch, J. V. Fcγ receptor pathways during active and passive immunization. *Immunol. Rev.* **268**, 88–103 (2015). CAS PubMed PubMed Central Google Scholar

Agrawal, A. S. et al. Immunization with inactivated Middle East respiratory syndrome coronavirus vaccine leads to lung immunopathology on challenge with live virus. *Hum. Vaccin. Immunother.* **12**, 2351–2356 (2016). PubMed PubMed Central Google Scholar

Wang, Q. et al. Immunodominant SARS coronavirus epitopes in humans elicited both enhancing and neutralizing effects on infection in non-human primates. *ACS Infect. Dis.* **2**, 361–376 (2016). CAS PubMed PubMed Central Google Scholar

Luo, F. et al. Evaluation of antibody-dependent enhancement of SARS-CoV infection in Rhesus macaques immunized with an inactivated SARS-CoV vaccine. *Virol. Sin.* **33**, 201–204 (2018). PubMed PubMed Central Google Scholar

Sanchez-Zuno, G. A. et al. A review: antibody-dependent enhancement in COVID-19: the not so friendly side of antibodies. *Int. J. Immunopathol. Pharm.* **35**, 20587384211050199 (2021). Article CAS Google Scholar

Lee, W. S., Wheatley, A. K., Kent, S. J. & DeKosky, B. J. Antibody-dependent enhancement and SARS-CoV-2 vaccines and therapies. *Nat. Microbiol.* **5**, 1185–1191 (2020).Article CAS PubMed Google Scholar

Bournazos, S., Gupta, A. & Ravetch, J.V. The role of IgG Fc receptors in antibody-dependent enhancement. *Nat Rev Immunol* **20**, 633–643 (2020). https://doi.org/10.1038/s41577-020-00410-0

Maemura, T. et al. Antibody-dependent enhancement of SARS-CoV-2 infection is mediated by the IgG receptors FcgammaRIIA and FcgammaRIIIA but does not contribute to aberrant cytokine production by macrophages. *mBio* **12**, e0198721 (2021). Article PubMed Google Scholar

Bournazos, S., Gupta, A. & Ravetch, J. V. The role of IgG Fc receptors in antibody-dependent enhancement. *Nat. Rev. Immunol.* **20**, 633–643 (2020). Article CAS PubMed PubMed Central Google Scholar

Arvin, A. M. et al. A perspective on potential antibody-dependent enhancement of SARS-CoV-2. *Nature* **584**, 353–363 (2020). Article CAS PubMed Google Scholar

Wan, Y. et al. Molecular mechanism for antibody-dependent enhancement of coronavirus entry. *J. Virol.* **94**, e02015–e02019 (2020). CAS PubMed PubMed Central Google Scholar

Mechanisms of antibody-dependent enhancement of infectious disease Timothy J. Wells, Tyron Esposito, Larisa I. Labzin *Nature Reviews Immunology* (2025)

***Kelleni M**. SARS-CoV-2 vaccination, autoimmunity, antibody dependent Covid-19 enhancement and other potential risks: Beneath the tip of the iceberg. Int. J. Pulm. Respir. Sci. 2021;5:555658. doi: 10.19080/IJOPRS.2021.05.555658.* [DOI] [Google Scholar]

***Bartsch YC**, Wang C, Zohar T, Fischinger S, Atyeo C, Burke JS, Kang J, Edlow AG, Fasano A, Baden LR, et al. Humoral signatures of protective and pathological SARS-CoV-2 infection in children. Nat Med. 2021;27:454–462. doi: 10.1038/s41591-021-01263-3* [DOI] [PMC free article] [PubMed] [Google Scholar]

Götzinger F, Santiago-García B, Noguera-Julián A, et al. COVID-19 in children and adolescents in Europe: a multinational, multicentre cohort study. Lancet Child Adolesc Health 2020; 4: 653–661. doi:10.1016/S2352-4642(20)30177-2 ´Google ScholarPubMed
(4/578 died)

***CDC** analysis of child hospitalizations 3th September. Accessed 29 Nov. 2021.*
https://www.cdc.gov/mmwr/volumes/70/wr/pdfs/mm7036e2-H.pdf

Hause AM, Marquez P, Zhang B, Su JR, Myers TR, Gee J, Panchanathan SS, Thompson D, Shimabukuro TT, Shay DK. MMWR Morb Mortal Wkly Rep. 2023 Jan 13;72(2):39-43. doi: 10.15585/mmwr.mm7202a5. PMID: 36634021 Free PMC article.

ΑΝΕΠΙΘΥΜΗΤΕΣ ΕΝΕΡΓΕΙΕΣ ΤΩΝ COVID ΕΜΒΟΛΙΩΝ ΣΕ ΠΑΙΔΙΑ

***Zinzi A**, Gaio M, Liguori V, Ruggiero R, Tesorone M, Rossi F, Rafaniello C, Capuano A. Safety Monitoring of mRNA COVID-19 Vaccines in Children Aged 5 to 11 Years by Using EudraVigilance Pharmacovigilance Database: The CoVaxChild Study. Vaccines (Basel). 2023 Feb 9;11(2):401. doi: 10.3390/vaccines11020401. PMID: 36851276; PMCID: PMC9962857.*

Safety Monitoring of Bivalent COVID-19 mRNA Vaccine Booster Doses Among Children Aged 5-11 Years - United States, October 12-January 1, 2023.

Adverse Events Following COVID-19 Vaccination in Adolescents: Insights From Pharmacovigilance Study of VigiBase.

J Korean Med Sci. 2024.

ΕΠΙΧΕΙΡΗΜΑΤΑ ΚΑΤΑ ΤΟΥ ΕΜΒΟΛΙΑΣΜΟΥ ΠΑΙΔΙΩΝ

Ludvigsson, J. F. (2020). Children are unlikely to be the main drivers of the COVID-19 pandemic–a systematic review. *Acta Paediatrica*, *109*(8), 1525-1530.

Ludvigsson, J.F. Systematic review of COVID-19 in children show milder cases and a better prognosis than adults. Acta Paediatr. **2020**, 109, 1088–1095. [Google Scholar] [CrossRef]

Lee, P.I.; Hu, Y.L.; Chen, P.Y.; Huang, Y.C.; Hsueh, P.R. Are children less susceptible to COVID-19? J. Microbiol. Immunol. Infect. **2020**, 53, 371–372. [Google Scholar] [CrossRef]

//

Παιδί 9 ετών με βεβαιωμένη COVID-19 δεν μετέδωσε τη λοίμωξη σε πάνω από 170 άτομα με τα οποία ήρθε σε επαφή. Αυτό σημαίνει μια διαφορετική δυναμική μετάδοσης από τα παιδιά (Clin Infect. Dis https://doi.org/10.1093/cid/ciaa424, The Guardian 21-04-2020).

Child transmission of SARS-CoV-2: a systematic review and meta-analysis.

Silverberg SL, Zhang BY, Li SNJ, Burgert C, Shulha HP, Kitchin V, Sauvé L, Sadarangani M. BMC Pediatr. 2022 Apr 2;22(1):172. doi: 10.1186/s12887-022-03175-8. PMID: 35365104 Free PMC article.

Lower SARS-CoV-2 household transmission in children and adolescents compared to adults.

Schumm L, Blankenburg J, Kahre E, Armann J, Dalpke AH, Lück C, Berner R, Czyborra P. Sci Rep. 2022 Dec 27;12(1):22453. doi: 10.1038/s41598-022-24643-2. PMID: 36575230 Free PMC article.

Brandal, L.T.; Ofitserova, T.S.; Meijerink, H.; Rykkvin, R.; Lund, H.M.; Hungnes, O.; Greve-Isdahl, M.; Bragstad, K.; Nygård, K.; Winje, B.A. Minimal transmission of SARS-CoV-2 from paediatric COVID-19 cases in primary schools, Norway, August to November 2020. Eurosurveillance **2021**, 26, 2002011. [Google Scholar] [CrossRef] [PubMed]

Ludvigsson, J.F.; Engerström, L.; Nordenhäll, C.; Larsson, E. Open Schools, COVID-19, and Child and Teacher Morbidity in Sweden. N. Engl. J. Med. **2021**, 384, 669–671. [Google Scholar] [CrossRef]

I. Καβαλιώτης MIS-C ΚΑΙ ΕΜΒΟΛΙΟ. ΛΟΙΜΩΞΗ (Περιοδική έκδοση ISSN 1109-4036), Ιανουάριος 2022, σελ. 2.

> Το σύνδρομο MIS-C έχει πολύ μικρή συχνότητα στο σύνολο των νοσούντων από Sars-Cov-2, η οποία κυμαίνεται μεταξύ 0,01 και 0,02 %, ενώ η θνητότητα του είναι επίσης μικρή. Είναι 0,8% σε νοσούντες από MIS-C, ενώ στο σύνολο των νοσούντων από κορωνοϊό μειώνεται στο 0,0002%.

Andrews CD, Parker EPK, Horne E, Walker V, Palmer T, Schaffer AL, et al. OpenSAFELY: Effectiveness of COVID-19 vaccination in children and adolescents. medRxiv. 2024; Available from: https://www.medrxiv.org/content/early/2024/05/20/2024.05.20.24306810

Against COVID-19 vaccination of healthy children Steven R. Kraaijeveld, Rachel Gur-Arie, Euzebiusz Jamrozik Bioethics

COVID-19 vaccination in children as a global dilemma through an ethical lens: A retrospective review Masoud Assadi, Mehrzad Kiani, Ehsan Shamsi Gooshki, Zeinab Aryanian, Zeinab M. Afshar, Parvaneh Hatami First published: 03 December 2022 https://doi.org/10.1002/hsr2.976

Zimmermann P, Curtis N. Why is COVID-19 less severe in children? A review of the proposed mechanisms underlying the age-related difference in severity of SARS-CoV-2 infections. *Arch Dis Child*. 2021; 106(5): 429-439. View PubMedWeb of Science®Google Scholar

Savulescu J, Giubilini A, Danchin M. Global ethical considerations regarding mandatory vaccination in children. *J Pediatr*. 2021; 231: 10-16. View CASPubMed**Web of Science®Google Scholar**

Van Aardt W. The mandatory COVID-19 vaccination of school children: a bioethical and human rights assessment. *J Vaccines Vaccin*. 2021; 12: 452. Google Scholar

Ioannidis JPA. COVID-19 vaccination in children and university students. *Eur J Clin Invest*. 2021; 51(11):e13678. View CASPubMedWeb of Science®Google Scholar

Munro APS, Faust SN. Children are not COVID-19 super spreaders: time to go back to school. *Arch Dis Child*. 2020; 105(7): 618-619. View PubMedWeb of Science®Google Scholar

Atuire CA, Salas SP, Wright K, Ambe JR, de Vries J. COVID-19 vaccine trials with children: ethics pointers. *BMJ Glob Health*. 2022; 7(1):e007466. View PubMedWeb of Science®Google Scholar

Cooper DM, Afghani B, Byington CL, et al. SARS-CoV-2 vaccine testing and trials in the pediatric population: biologic, ethical, research, and implementation challenges. *Pediatr Res*. 2021; 90(5): 966-970. View CASPubMedWeb of Science®Google Scholar

Giubilini A, Gupta S, Heneghan C. A focused protection vaccination strategy: why we should not target children with COVID-19 vaccination policies. *J Med Ethics*. 2021; 47(8): 565-566. View PubMedWeb of Science®Google Scholar

ΠΡΟΒΛΗΜΑΤΙΣΜΟΙ

ΣΥΣΤΑΣΕΙΣ ΓΙΑ ΕΜΒΟΛΙΑΣΜΟ ΠΑΙΔΙΩΝ –ΑΠΟΦΑΣΕΙΣ ΓΙΑ ΕΜΒΟΛΙΑΣΜΟ (Ή ΜΗ) ΠΑΙΔΙΩΝ

Υπήρξε προβληματισμός για τους λόγους που η εταιρεία Pfizer πρόσθεσε tromethamine (Tris buffer) στο σκεύασμα του εμβολίου της για παιδιά 5-11 ετών, ενώ στο σκεύασμα για ενήλικες υπάρχει phosphate buffered saline (PBS), ενώ αφαίρεσε το χλωριούχο νάτριο και χλωριούχο κάλιο. Προβληματισμός υπήρξε (και υπάρχει) και για τους λόγους που θεωρήθηκε ότι έπρεπε να εμβολιάζονται παιδιά αυτής της ηλικίας, αφού σύμφωνα και με την JCVI (the UKs Joint Committee on Vaccination and Immunisation) ο κίνδυνος από λοίμωξη COVID σε παιδιά και νεαρά άτομα είναι παρα πολύ μικρός, αν νοσήσουν η νόσος είναι ήπια, και αποκτούν ισχυρή φυσική ανοσία.

Ο ισχυρισμος της Pfizer ότι το εμβόλιο είναι 90% αποτελεσματικό, δεν έχει νόημα σε αυτή την ηλικιακή ομάδα, αφού ήσαν μόνο 1,518 παιδιά στην ομάδα παιδιών που εμβολιάστηκαν και συγκρίθηκαν με 750 παιδιά που δεν εμβολιάστηκαν. Με τόσο μικρούς αριθμούς είναι αδύνατον να εκτιμηθεί και αν υπάρχει κίνδυνος για μυοκαρδίτιδα ή άλλες επιπλοκές.

Πάντως η συμβουλευτική επιτροπή της FDA, αποφάσισε την εξουσιοδότηση/αδειοδότηση για χορήγηση αυτού του σκευάσματος σε παιδιά, με ψήφους 17 έναντι 0!

The FDA Briefing Document titled 'EUA amendment request for Pfizer-BioNTech COVID-19 Vaccine for use in children 5 though 11 years of age'

Πρόκειται για σκεύασμα πολλαπλών δόσεων που φυλάσσεται στην κατάψυξη. Μετά την απόψυξη, το φιαλίδιο μπορεί να φυλαχθεί σε ψυγείο σε θερμοκρασία 2°C-8°C μέχρι 10 εβδομάδες. Μετά αραίωση του περιεχομένου του φιαλιδίου με 1,3 ml φυσιολογικό ορό, προκύπτει διάλυμα για 10 δόσεις του εμβολίου, όγκου 0,2 ml εκάστη. Κάθε δόση περιέχει 10 μg modified mRNA (το ένα τρίτο της ποσότητας που περιέχει η δόση του εμβολίου για ενήλικες). Μετά την αραίωση, τα φιαλίδια μπορούν να φυλαχθούν σε θερμοκρασία 2°C-25°C και πρέπει να χρησιμοποιηθούν εντός 12 ωρών.

https://dailyexpose.uk/2021/11/01/pfizer-adds-ingredient-to-vaccine-for-kids-that-treats-heart-attacks/ *By Patricia Harrity*

Ενώ ζητήθηκε να επεκταθεί αυτή η μικρή κλινική μελέτη, η εταιρεία, φαίνεται να μην υπάκουσε, ενώ συγχώνευσε δεδομένα από άλλη μελέτη στην οποία η παρακολούθηση ήταν μόνο 17 ημέρες !

The Exposé is now censored on Google, Facebook & Twitter.

The Norwegian Government. Vaccination of children and adolescents against COVID-19 2022 [https://www.regjeringen.no/en/aktuelt/vaccination-of-children-and-adolescents-against-covid-19/id2895513/

European Medicines Agency. EMA recommends approval of Comirnaty and Spikevax COVID-19 vaccines for children from 6 months of age 2022 [https://www.ema.europa.eu/en/news/ema-recommends-approval-comirnaty-spikevax-covid-19-vaccines-children-6-months-age

Department of Health and Social Care. JCVI statement on COVID-19 vaccination of children and young people aged 12 to 17 years: 15July 2021. 2021. https://www.gov.uk/government/publications/covid-19-vaccination-of-children-and-young-people-aged-12-to-17-years-jcvi-statement/jvci-statement-on-covid-19-vaccination-of-children-and-young-people-aged-12-to-17-years-15-july-2021

Woodworth KR, Moulia D, Collins JP, et al. The advisory committee on immunization practices' interim recommendation for use of Pfizer-BioNTech COVID-19 vaccine in children aged 5-11 Years—United states, November 2021. *MMWR Morb Mortal Wkly Rep*. 2021; 70(45): 1579-1583. View CASPubMedWeb of Science®Google Scholar

Husby A, Hansen JV, Fosbøl E, et al. SARS-CoV-2 vaccination and myocarditis or myopericarditis: population based cohort study. BMJ. 2021;375:e068665. doi:10.1136/bmj-2021-068665

> Uncertainty regarding the incidence and severity of myocarditis and pericarditis after SARS-CoV-2 vaccination was a contributing factor for the Joint Committee on Vaccination and Immunisation to defer recommending full vaccination of children and young people aged 12-17 years with SARS-CoV-2 mRNA vaccines in the United Kingdom.

The estimated occurrence of multisystem inflammatory syndrome in individuals aged 12-17 years is 27 per 100 000 individuals with serologically determined SARS-CoV-2 infection. Our finding of a low absolute risk of myocarditis or myopericarditis with BNT162b2 or mRNA 1273 vaccination supports the overall benefits of such vaccination on an individual, societal, and global level.

Conclusions

We found that mRNA-1273 vaccination was associated with an increased rate of myocarditis or myopericarditis compared with unvaccinated individuals overall, while BNT162b2 vaccination was associated with an increased rate of myocarditis or myopericarditis among female individuals. However, the absolute rate of myocarditis or myopericarditis cases after SARS-CoV-2 mRNA vaccination was low overall, among female participants, and among younger age groups.

In addition, the clinical outcomes after myocarditisor myopericarditis events were predominantly mild, providing evidence to support the overall safety of SARS-CoV-2 mRNA vaccines. Nevertheless, larger multinational studies and meta-analyses are needed to specify risks within smaller subgroups and the risk of myocarditis or myopericarditis after SARS-CoV-2 infection versus vaccination.

Moderna COVID-19 Vaccine Safe and Effective for Children 6 Months to 5 Years

December 27, 2022

ΔΗΜΟΣΙΕΥΣΕΙΣ ΓΙΑ COVID-19 ΣΕ ΠΑΙΔΙΑ

Aleebrahim-Dehkordi, E., Soveyzi, F., Deravi, N., Rabbani, Z., Saghazadeh, A., & Rezaei, N. (2021). Human coronaviruses SARS-CoV, MERS-CoV, and SARS-CoV-2 in children. *Journal of pediatric nursing*, *56*, 70-79.

Cotugno N, Amodio D, Buonsenso D, Palma P. Susceptibility of SARS-CoV2 infection in children. Eur J Pediatr. 2023 Nov;182(11):4851-4857. doi: 10.1007/s00431-023-05184-w. Epub 2023 Sep 13. PMID: 37702769; PMCID: PMC10640404.

Zhou, M. Y*., Xie, X. L., Peng, Y. G., Wu, M. J., Deng, X. Z., Wu, Y., ... & Shang, L. H. (2020). From SARS to COVID-19: What we have learned about children infected with COVID-19. International Journal of Infectious Diseases, 96, 710-714.*

Huang C*, Wang Y, Li X, Ren L, Zhao J, Hu Y, Zhang L, Fan G, Xu J, Gu X et al. (2020) Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet 395(10223): 497–506.* [DOI] [PMC free article] [PubMed] [Google Scholar]
Cao Q, Chen YC, Chen CL, Chiu CH. SARS-CoV-2 infection in children: transmission dynamics and clinical characteristics. J Formos Med Assoc. 2020;119:670-3.
https://doi.org/https://doi.org/10.1016/j.jfma.2020.02.009

Li Q*, Guan X, Wu P, Wang X, Zhou L, Tong Y, Ren R, Leung KSM, Lau EHY, Wong JY et al. (2020) Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. N Engl J Med 382, 1199–1207.* [DOI] [PMC free article] [PubMed] [Google Scholar]

COVID-19 National Emergency Response Center, Epidemiology and Case Management Team, Korea Centers for Disease Control and Prevention (2020) Coronavirus disease-19: the first 7,755 cases in the Republic of Korea. Osong Public Health Res Perspect 11, 85–90. [DOI] [PMC free article] [PubMed] [Google Scholar]

Clinical characteristics of novel coronavirus disease 2019 (COVID-19) in newborns, infants and children
H Hong, Y Wang, HT Chung… - Pediatrics & …, **2020** - pediatr-neonatol.com
… the latest 2019 novel coronavirus outbreak in **Wuhan**, **China**. … mild or **asymptomatic** diseases
that cannot be fully identified. … a **SARS-CoV-2 infection** through close **contact** with **infected** …
Save Cite Cited by 470 Related articles All 9 versions

Xia W, Shao J, Guo Y, Peng X, Li Z, Hu D. Clinical and CT features in pediatric patients with COVID-19 infection: different points from adults. Pediatr Pulmonol. 2020;55:1169-74. https://doi.org/10.1002/ppul.24718
» https://doi.org/https://doi.org/10.1002/ppul.24718

Mofenson, L. M., Idele, P., Anthony, D., Requejo, J., You, D., Luo, C., & Peterson, S. (2020). *The evolving epidemiologic and clinical picture of SARS-CoV-2 and COVID-19 disease in children and young people*. UN.

Hurst, J. H., Heston, S. M., Chambers, H. N., Cunningham, H. M., Price, M. J., Suarez, L., ... & Kelly, M. S. (2020). SARS-CoV-2 infections among children in the Biospecimens from Respiratory Virus-Exposed Kids (BRAVE Kids) study. *medRxiv*.

Chang, T. H., Wu, J. L., & Chang, L. Y. (2020). Clinical characteristics and diagnostic challenges of pediatric COVID-19: A systematic review and meta-analysis. *Journal of the Formosan Medical Association*, *119*(5), 982-989.

A follow-up study of children **infected** with **SARS-CoV-2** from western **China**
H Xu, E Liu, J Xie, RL Smyth, Q Zhou, R Zhao, N Zang, X Long, Y Tang, J …
Annals of translational medicine - 2020
ncbi.nlm.nih.gov

Garazzino S, Montagnani C, Donà D, Meini A, Felici E, Vergine G, et al. Multicentre Italian study of SARS-CoV-2 infection in children and adolescents, preliminary data as at 10 April 2020. Euro Surveill. 2020;25:2000600. https://doi.org/10.2807/1560-7917.ES.2020.25.18.2000600
» https://doi.org/https://doi.org/10.2807/1560-7917.ES.2020.25.18.2000600

Pediatric patients in the new wave of **SARS-CoV-2 infection** in Shanghai, **China**
JG Zhou, YM Lu, LB Wang, H Yu, T Zhang, YW Chen, WH Zhou
World Journal of Pediatrics - 2022
link.springer.com

Prevention of COVID-19 **infection** in a pediatric oncology ward in **Wuhan**
A Zhang, Q Hu, A Liu, S Wang, S Jin, Y Wang, L Wang, Y Hao
Pediatric Blood & Cancer - 2020
onlinelibrary.wiley.com

CDC COVID-19 Response Team (2020) Coronavirus disease 2019 in Children - United States, February 12-April 2, 2020. MMWR Morb Mortal Wkly Rep 69, 422–426. [DOI] [PMC free article] [PubMed] [Google Scholar]

Tagarro A*, Epalza C, Santos M, Sanz-Santaeufemia FJ, Otheo E, Moraleda C & Calvo C (2020) Screening and Severity of Coronavirus Disease 2019 (COVID-19) in Children in Madrid. JAMA Pediatr, e201346. 10.1001/jamapediatrics.2020.1346* [DOI] [PMC free article] [PubMed] [Google Scholar]

Livingston E & Bucher K (2020) Coronavirus Disease 2019 (COVID-19) in Italy. JAMA 323, 1335 [DOI] [PubMed] [Google Scholar]
Dong Y, Mo X, Hu Y, Qi X, Jiang F, Jiang Z & Tong S (2020) Epidemiology of COVID-19 among children in China. Pediatrics 145, e20200702. [DOI] [PubMed] [Google Scholar]

Royal College of Paediatrics and Child Health (2020) COVID-19 - research evidence summaries.
https://www.rcpch.ac.uk/sites/default/files/generated-pdf/document/COVID-19-research-evidence-summaries.pdf#page=2
Ruf BR & Knuf M (2014) The burden of seasonal and pandemic influenza in infants and children. Eur J Pediatr 173, 265–276. [DOI] [PMC free article] [PubMed] [Google Scholar]

Duarte-Salles T, Vizcaya D, Pistillo A, et al. Thirty-day outcomes of children and adolescents with COVID-19: an international experience. Pediatrics. 2021;148(3):e2020042929.

Ma YL, Xia SY, Wang M, Zhang SM, Du WH, Chen Q. Clinical features of children with SARS-CoV-2 infection: an analysis of 115 cases. Zhongguo Dang Dai Er Ke Za Zhi. 2020;22:290-3.
https://doi.org/https://doi.org/10.7499/j.issn.1008-8830.2003016

Dodi I, Castellone E, Pappalardo M, Rubini M, Veronese P, Ruberto C, et al. SARS-CoV-2 infection in children in Parma. Acta Biomed. 2020;91:214-5.
https://doi.org/https://doi.org/10.23750/abm.v91i2.9563

Su L, Ma X, Yu H, Zhang Z, Bian P, Han Y, et al. The different clinical characteristics of corona virus disease cases between children and their families in China-the character of children with COVID-19. Emerg Microbes Infect. 2020;9:707-13.
https://doi.org/https://doi.org/10.1080/22221751.2020.1744483

Wu P, Liang L, Chen C, Nie S. A child confirmed COVID-19 with only symptoms of conjunctivitis and eyelid dermatitis. Graefes Arch Clin Exp Ophthalmol. 2020;258:1565-6.
https://doi.org/https://doi.org/10.1007/s00417-020-04708-6

Alharbi, M., Kazzaz, Y. M., Hameed, T., Alqanatish, J., Alkhalaf, H., Alsadoon, A., ... & Al Johani, S. M. (2021). SARS-CoV-2 infection in children, clinical characteristics, diagnostic findings and therapeutic interventions at a tertiary care center in Riyadh, Saudi Arabia. *Journal of Infection and Public Health*, *14*(4), 446-453.

Screening of SARS-CoV-2 in 299 hospitalized children with hemato-oncological diseases: a multicenter survey in Hubei, China

…, F Tao, Y Hou, A Zhang, H Xiong, J Sun, X **Luo**… - Current **Medical** …, **2020** - Springer

… severe **infection**, and a few cases were completely **asymptomatic**. … the history of close **contact**
with **SARS-CoV-2** within 2 weeks. … **infected** with 2019 novel coronavirus in **Wuhan**, **China**. …

Save Cite Cited by 16 Related articles All 4 versions

Shen, J., Sun, J., Zhao, D., Li, S., Xiao, W., Cai, X., ... & Li, P. (2020). Characteristics of nosocomial infections in children screened for SARS-CoV-2 infection in China. Medical Science Monitor: International Medical Journal of Experimental and Clinical Research, 26, e928835-1.

Zimmermann, P., & Curtis, N. (2020). Coronavirus infections in children including COVID-19: an overview of the epidemiology, clinical features, diagnosis, treatment and prevention options in children. *The Pediatric infectious disease journal*, *39*(5), 355-368.

Cai, J., Wang, X., Zhao, J., Ge, Y., Xu, J., Tian, H., ... & Zeng, M. (2020). Comparison of clinical and epidemiological characteristics of asymptomatic and symptomatic SARS-CoV-2 infection in children. *Virologica Sinica*, *35*, 803-810.

[PDF] Comparative analysis of symptomatic and asymptomatic SARS-CoV-2 infection in children

J Li, KC Thoon, CY Chong, M Maiwald… - Ann Acad Med …, **2020** - academia.edu

… children, all **asymptomatic** paediatric close **contacts** of adults … -19 in children, the largest
from **China**, with most describing a … from **hospital** when they had negative **SARS-COV-2** PCR …

Save Cite Cited by 40 Related articles All 9 versions

***Davies NG**, Klepac P, Liu Y, Prem K, Jit M & Eggo RM (2020) Age-dependent effects in the transmission and control of COVID-19 epidemics. medRxiv.* [DOI] [PubMed] [Google Scholar]

Jones TC, Mühlemann B, Veith T, Zuchowski M, Hofmann J, Stein A, Edelmann A, Corman VM & Drosten C (2020) An analysis of SARS-CoV-2 viral load by patient age. https://zoonosencharitede/fileadmin/user_upload/microsites/m_cc05/virologie-ccm/dateien_upload/Weitere_Dateien/analysis-of-SARS-CoV-2-viral-load-by-patient-agepdf

Web24 News (2020) What is it about the "image" criticism of Christian Drosten. https://www.web24.news/u/2020/05/what-is-it-about-the-image-criticism-of-christian-drosten.html

***Xu Y**, Li X, Zhu B, Liang H, Fang C, Gong Y, Guo Q, Sun X, Zhao D, Shen J et al. (2020) Characteristics of pediatric SARS-CoV-2 infection and potential evidence for persistent fecal viral shedding. Nat Med 26, 502–505.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Xing YH**, Ni W, Wu Q, Li WJ, Li GJ, Wang WD, Tong JN, Song XF, Wing-Kin Wong G & Xing QS (2020) Prolonged viral shedding in feces of pediatric patients with coronavirus disease 2019. J Microbiol Immunol Infect 53, 473–480.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Bunyavanich S**, Do A & Vicencio A (2020) Nasal gene expression of angiotensin-converting enzyme 2 in children and adults. JAMA, e208707. 10.1001/jama.2020.8707* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Sungnak W,** Huang N, Becavin C, Berg M, Queen R, Litvinukova M, Talavera-Lopez C, Maatz H, Reichart D, Sampaziotis F et al. (2020) SARS-CoV-2 entry factors are highly expressed in nasal epithelial cells together with innate immune genes. Nat Med 26, 681–687.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Ciaglia E**, Vecchione C & Puca AA (2020) COVID-19 infection and circulating ACE2 levels: protective role in women and children. Front Pediatr 8, 206.* [DOI] [PMC free article] [PubMed] [Google Scholar]

***Chen J**, Jiang Q, Xia X, Liu K, Yu Z, Tao W, Gong W & Han JJ(2020) Individual Variation of the SARS-CoV2 Receptor ACE2 Gene Expression and Regulation, Preprints. 2020030191.* [DOI] [PMC free article] [PubMed]

***Patel AB** & Verma A (2020) Nasal ACE2 levels and COVID-19 in children. JAMA. 10.1001/jama.2020.8946* [DOI] [PubMed] [Google Scholar]

Spielberger, B. D., Goerne, T., Geweniger, A., Henneke, P., & Elling, R. (2021). Intra-household and close-contact SARS-CoV-2 transmission among children–a systematic review. *Frontiers in Pediatrics*, *9*, 613292.

Zimmermann, P., & Curtis, N. (2020). COVID-19 in children, pregnancy and neonates: a review of epidemiologic and clinical features. *The Pediatric infectious disease journal*, *39*(6), 469-477.

Fang, F., Chen, Y., Zhao, D., Liu, T., Huang, Y., Qiu, L., ... & Chinese Pediatric Society and the Editorial Committee of the Chinese Journal of Pediatrics. (2020). Recommendations for the diagnosis, prevention, and control of coronavirus disease-19 in children—the Chinese perspectives. *Frontiers in Pediatrics*, *8*, 553394.

COVID-19 in Early Life: Infants and Children Are Affected Too.

Leibel SL, Sun X. Physiology (Bethesda). 2021 Nov 1;36(6):359-366. doi: 10.1152/physiol.00022.2021. PMID: 34704855 Free PMC article. Review.

Prevalence of asymptomatic SARS-CoV-2 infection in children undergoing hospital screening.

Soriano-Arandes A, Soler-Palacin P, Borras-Bermejo B, Antón A. Enferm Infecc Microbiol Clin (Engl Ed). 2021 Oct;39(8):415-416. doi: 10.1016/j.eimce.2020.10.008. PMID: 34620476 Free PMC article. No abstract available.

Reasons for SARS-CoV-2 infection in children and their role in the transmission of infection according to age: a case-control study.

Calvani M, Cantiello G, Cavani M, Lacorte E, Mariani B, Panetta V, Parisi P, Parisi G, Roccabella F, Silvestri P, Vanacore N. Ital J Pediatr. 2021 Sep 27;47(1):193. doi: 10.1186/s13052-021-01141-1. PMID: 34579754 Free PMC article.

Coronavirus Disease 2019 Cluster Originating in a Primary School Teachers' Room in Japan.

Aizawa Y, Shobugawa Y, Tomiyama N, Nakayama H, Takahashi M, Yanagiya J, Kaji N, Ikuse T, Izumita R, Yamanaka T, Hasegawa S, Tamura T, Saito R, Saitoh A. Pediatr Infect Dis J. 2021 Nov 1;40(11):e418-e423. doi: 10.1097/INF.0000000000003292. PMID: 34561385 Free PMC article.

SARS-CoV-2 transmission in kindergarten to grade 12 schools in the Vancouver Coastal Health region: a descriptive epidemiologic study.

Bark D, Dhillon N, St-Jean M, Kinniburgh B, McKee G, Choi A. CMAJ Open. 2021 Aug 24;9(3):E810-E817. doi: 10.9778/cmajo.20210106. Print 2021 Jul-Sep. PMID: 34429325 Free PMC article.

Asymptomatic SARS-CoV-2 infection: A systematic review and meta-analysis.

Sah P, Fitzpatrick MC, Zimmer CF, Abdollahi E, Juden-Kelly L, Moghadas SM, Singer BH, Galvani AP. Proc Natl Acad Sci U S A. 2021 Aug 24;118(34):e2109229118. doi: 10.1073/pnas.2109229118. PMID: 34376550 Free PMC article.

***Carsetti R, Quintarelli C, Quinti I, Piano Mortari E, Zumla A, Ippolito G & Locatelli F (2020) The immune system of children: the key to understanding SARS-CoV-2 susceptibility? Lancet Child Adolesce Health 4, 414–416.* [DOI] [PMC free article] [PubMed] [Google Scholar]**
 157. ***The Scientist (2020) Possible Biological Explanations for Kids' Escape from COVID-19.***
https://www.the-scientist.com/news-opinion/possible-biological-explanations-for-kids-escape-from-covid-19-67273

De Rose DU, *Piersigilli F, Ronchetti MP, Santisi A, Bersani I, Dotta A, Danhaive O, Auriti C & Study Group of Neonatal Infectious Diseases of The Italian Society of Neonatology (SIN) (2020) Novel Coronavirus disease (COVID-19) in newborns and infants: what we know so far. Ital J Pediatr 46, 56.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Sinha IP, *Harwood R, Semple MG, Hawcutt DB, Thursfield R, Narayan O, Kenny SE, Viner R, Hewer SL & Southern KW (2020) COVID-19 infection in children. Lancet Respir Med 8, 446–447.* [DOI] [PMC free article] [PubMed] [Google Scholar]
COVID-19 in schools: Mitigating classroom clusters in the context of variable transmission.

Tupper P, Colijn C. PLoS Comput Biol. 2021 Jul 8;17(7):e1009120. doi: 10.1371/journal.pcbi.1009120. eCollection 2021 Jul. PMID: 34237051 Free PMC article.

Children's role in the COVID-19 pandemic: a systematic review of early surveillance data on susceptibility, severity, and transmissibility.

Gaythorpe KAM, Bhatia S, Mangal T, Unwin HJT, Imai N, Cuomo-Dannenburg G, Walters CE, Jauneikaite E, Bayley H, Kont MD, Mousa A, Whittles LK, Riley S, Ferguson NM. Sci Rep. 2021 Jul 6;11(1):13903. doi: 10.1038/s41598-021-92500-9. PMID: 34230530 Free PMC article.

COVID-19 and School: To Open or Not to Open, That Is the Question. The First Review on Current Knowledge.

Busa F, Bardanzellu F, Pintus MC, Fanos V, Marcialis MA. Pediatr Rep. 2021 Jun 1;13(2):257-278. doi: 10.3390/pediatric13020035. PMID: 34205837 Free PMC article. Review.

Xu, H., Liu, E., Xie, J., Smyth, R. L., Zhou, Q., Zhao, R., ... & Li, Q. (2020). A follow-up study of children infected with SARS-CoV-2 from western China. *Annals of translational medicine*, *8*(10).

Coronavirus Disease 2019 in Children.

Qiu, H., Wu, J., Hong, L., Luo, Y., Song, Q., & Chen, D. (2020). Clinical and epidemiological features of 36 children with coronavirus disease 2019 (COVID-19) in Zhejiang, China: an observational cohort study. *The Lancet infectious diseases*, *20*(6), 689-696.

Borrelli M, Corcione A, Castellano F, Fiori Nastro F, Santamaria F. Front Pediatr. 2021 May 28;9:668484. doi: 10.3389/fped.2021.668484. eCollection 2021. PMID: 34123972 Free PMC article. Review.

Miao, H., Li, H., Yao, Y., Wu, M., Lu, C., Wang, J., ... & Zhao, D. (2020). Update on recommendations for the diagnosis and treatment of SARS-CoV-2 infection in children. *European Journal of Clinical Microbiology & Infectious Diseases*, *39*, 2211-2223.

Cao, Q., Chen, Y. C., Chen, C. L., & Chiu, C. H. (2020). SARS-CoV-2 infection in children: Transmission dynamics and clinical characteristics. *Journal of the Formosan Medical Association*, *119*(3), 670.

Fang F, Luo XP. Facing the pandemic of 2019 novel coronavirus infections: the pediatric perspectives. Zhonghua Er Ke Za Zhi. 2020;58:E001. https://doi.org/https://doi.org/10.3760/cma.j.issn.0578-1310.2020.0001

Relative infectiousness of asymptomatic SARS-CoV-2 infected persons compared with symptomatic individuals: a rapid scoping review.

McEvoy D, McAloon C, Collins A, Hunt K, Butler F, Byrne A, Casey-Bryars M, Barber A, Griffin J, Lane EA, Wall P, More SJ. BMJ Open. 2021 May 4;11(5):e042354. doi: 10.1136/bmjopen-2020-042354. PMID: 33947725 Free PMC article. Review.

Intra-Household and Close-Contact SARS-CoV-2 Transmission Among Children - a Systematic Review.

Spielberger BD, Goerne T, Geweniger A, Henneke P, Elling R. Front Pediatr. 2021 Apr 9;9:613292. doi: 10.3389/fped.2021.613292. eCollection 2021. PMID: 33898355 Free PMC article.

Yeo KT, Biswas A, Ying Ho SK, Kong JY, Bharadwaj S, Chinnadurai A, Yip WY, Ab Latiff NF, Quek BH, Yeo CL, Mei Ng YP, Tai Ee KT, Chua MC, Poon WB, Amin Z. Guidance for the clinical management of infants born to mothers with suspected/confirmed COVID-19 in Singapore. Singapore Med J. 2022 Sep;63(9):489-496. doi: 10.11622/smedj.2021045. Epub 2021 Apr 19. PMID: 33866749; PMCID: PMC9678132.

SARS-CoV-2 infection in schools in a northern French city: a retrospective serological cohort study in an area of high transmission, France, January to April 2020.

Fontanet A, Tondeur L, Grant R, Temmam S, Madec Y, Bigot T, Grzelak L, Cailleau I, Besombes C, Ungeheuer MN, Renaudat C, Perlaza BL, Arowas L, Jolly N, Pellerin SF, Kuhmel L, Staropoli I, Huon C, Chen KY, Crescenzo-Chaigne B, Munier S, Charneau P, Demeret C, Bruel T, Eloit M, Schwartz O, Hoen B. Euro Surveill. 2021 Apr;26(15):2001695. doi: 10.2807/1560-7917.ES.2021.26.15.2001695. PMID: 33860747 Free PMC article.

Prior infection by seasonal coronaviruses, as assessed by serology, does not prevent SARS-CoV-2 infection and disease in children, France, April to June 2020.

Sermet-Gaudelus I, Temmam S, Huon C, Behillil S, Gajdos V, Bigot T, Lurier T, Chrétien D, Backovic M, Delaunay-Moisan A, Donati F, Albert M, Foucaud E, Mesplées B, Benoist G, Faye A, Duval-Arnould M, Cretolle C, Charbit M, Aubart M, Auriau J, Lorrot M, Kariyawasam D, Fertitta L, Orliaguet G, Pigneur B, Bader-Meunier B, Briand C, Enouf V, Toubiana J, Guilleminot T, van der Werf S, Leruez-Ville M, Eloit M. Euro Surveill. 2021

Apr;26(13):2001782. doi: 10.2807/1560-7917.ES.2021.26.13.2001782. PMID: 33797390 Free PMC article.

Simulation-Based Estimation of SARS-CoV-2 Infections Associated With School Closures and Community-Based Nonpharmaceutical Interventions in Ontario, Canada.

Naimark D, Mishra S, Barrett K, Khan YA, Mac S, Ximenes R, Sander B. JAMA Netw Open. 2021 Mar 1;4(3):e213793. doi: 10.1001/jamanetworkopen.2021.3793. PMID: 33787909 Free PMC article.

Differential clinic in children infected by SARS-CoV-2, traceability of contacts and cost-effectiveness of diagnostic tests: Cross-sectional observational study.

Fiel-Ozores A, González-Durán ML, Novoa-Carballal R, Portugués-de la Red MDM, Fernández-Pinilla I, Cabrera-Alvargonzález JJ, Martínez-Reglero C, Rey-Cao S, Concheiro-Guisán A. An Pediatr (Engl Ed). 2021 May;94(5):318-326. doi: 10.1016/j.anpede.2020.12.011. Epub 2021 Mar 24. PMID: 33778108 Free PMC article.

[The position of children in the pandemic and the role of COVID-19 in their lives].

Zaloszyc A, Tsimaratos M. Nephrol Ther. 2021 Aug;17(4):214-217. doi: 10.1016/j.nephro.2021.01.001. Epub 2021 Mar 11. PMID: 33771462 Free PMC article. French. No abstract available.

COVID-19 in childhood: Transmission, clinical presentation, complications and risk factors.

Siebach MK, Piedimonte G, Ley SH. Pediatr Pulmonol. 2021 Jun;56(6):1342-1356. doi: 10.1002/ppul.25344. Epub 2021 Mar 15. PMID: 33721405 Free PMC article. Review.

[Children and COVID-19-Data from mandatory reporting and results of contact person testing in daycare centers and schools in Frankfurt am Main, Germany, August-December 2020].

Heudorf U, Steul K, Walczok A, Gottschalk R. Monatsschr Kinderheilkd. 2021;169(4):322-334. doi: 10.1007/s00112-021-01134-8. Epub 2021 Mar 2. PMID: 33678906 Free PMC article. German.

Epidemiological burden of parents being the index cases of COVID-19 infected children.

Saha S, Saha S. World J Methodol. 2021 Jan 20;11(1):1-14. doi: 10.5662/wjm.v11.i1.1. eCollection 2021 Jan 20. PMID: 33575170 Free PMC article.

SARS-CoV-2 transmission among children and staff in daycare centres during a nationwide lockdown in France: a cross-sectional, multicentre, seroprevalence study.

Lachassinne E, de Pontual L, Caseris M, Lorrot M, Guilluy C, Naud A, Dommergues MA, Pinquier D, Wannepain E, Hausherr E, Jung C, Gajdos V, Cohen R, Zahar JR, Brichler S, Basmaci R, Boelle PY, Bloch-Queyrat C, Aupiais C; COVIDOCRECHE collaborators. Lancet Child Adolesc Health. 2021 Apr;5(4):256-264. doi: 10.1016/S2352-4642(21)00024-9. Epub 2021 Feb 8. PMID: 33571450 Free PMC article. Clinical Trial.

[Differential clinic in children infected by SARS-CoV-2, traceability of contacts and cost-effectiveness of diagnostic tests: Cross-sectional observational study].

Fiel-Ozores A, González-Durán ML, Novoa-Carballal R, Portugués-de la Red MDM, Fernández-Pinilla I, Cabrera-Alvargonzález JJ, Martínez-Reglero C, Rey-Cao S, Concheiro-Guisán A. An Pediatr (Engl Ed). 2021 May;94(5):318-326. doi: 10.1016/j.anpedi.2020.12.001. Epub 2020 Dec 10. PMID: 33485824 Free PMC article. Spanish.

What is the evidence for transmission of COVID-19 by children in schools? A living systematic review.

Xu W, Li X, Dozier M, He Y, Kirolos A, Lang Z, Mathews C, Siegfried N, Theodoratou E; UNCOVER. J Glob Health. 2020 Dec;10(2):021104. doi: 10.7189/jogh.10.021104. PMID: 33437465 Free PMC article.

The role of children in the transmission of SARS-CoV2: updated rapid review.

Li X, Xu W, Dozier M, He Y, Kirolos A, Lang Z, Song P, Theodoratou E; UNCOVER. J Glob Health. 2020 Dec;10(2):021101. doi: 10.7189/jogh.10.021101. PMID: 33312511 Free PMC article. Review

Childcare Exposure to Severe Acute Respiratory Syndrome Coronavirus 2 for 4-Year-Old Presymptomatic Child, South Korea.

Yoon Y, Choi GJ, Kim JY, Kim KR, Park H, Chun JK, Kim YJ. Emerg Infect Dis. 2021 Feb;27(2):341-347. doi: 10.3201/eid2702.203189. Epub 2020 Nov 30. PMID: 33252327 Free PMC article. Review.

Kociolek, L. K., Muller, W. J., Yee, R., Dien Bard, J., Brown, C. A., Revell, P. A., ... & Pollock, N. R. (2020). Comparison of upper respiratory viral load distributions in asymptomatic and symptomatic children diagnosed with SARS-CoV-2 infection in pediatric hospital testing programs. *Journal of clinical microbiology*, *59*(1), 10-1128.

Association between living with children and outcomes from covid-19: OpenSAFELY cohort study of 12 million adults in England.

Forbes H, Morton CE, Bacon S, McDonald HI, Minassian C, Brown JP, Rentsch CT, Mathur R, Schultze A, DeVito NJ, MacKenna B, Hulme WJ, Croker R, Walker AJ, Williamson EJ, Bates C, Mehrkar A, Curtis HJ, Evans D, Wing K, Inglesby P, Drysdale H, Wong AYS, Cockburn J, McManus R, Parry J, Hester F, Harper S, Douglas IJ, Smeeth L, Evans SJW, Bhaskaran K, Eggo RM, Goldacre B, Tomlinson LA. BMJ. 2021 Mar 18;372:n628. doi: 10.1136/bmj.n628. PMID: 33737413 Free PMC article.

Management of Canadian Pediatric Patients With Glomerular Diseases During the COVID-19 Pandemic: Recommendations From the Canadian Association of Pediatric Nephrologists COVID-19 Rapid Response Team.

Robinson C, Ruhl M, Kirpalani A, Alabbas A, Noone D, Teoh CW, Langlois V, Phan V, Lemaire M, Chanchlani R; authors of the CCRRT recommendations for adults with glomerulonephritis. Can J Kidney Health Dis. 2020 Nov 13;7:2054358120970713. doi: 10.1177/2054358120970713. eCollection 2020. PMID: 33240518 Free PMC article.

No SARS-CoV-2 carriage observed in children attending daycare centers during the intial weeks of the epidemic in Belgium.

Desmet S, Ekinci E, Wouters I, Decru B, Beuselinck K, Malhotra-Kumar S, Theeten H. J Med Virol. 2021 Mar;93(3):1828-1831. doi: 10.1002/jmv.26689. Epub 2020 Dec 17. PMID: 33230857 Free PMC article.

Modeling the impact of school reopening on SARS-CoV-2 transmission using contact structure data from Shanghai.

Lee B, Hanley JP, Nowak S, Bates JHT, Hébert-Dufresne L. BMC Public Health. 2020 Nov 16;20(1):1713. doi: 10.1186/s12889-020-09799-8. PMID: 33198707 Free PMC article.

Prevalence of asymptomatic SARS-CoV-2 infection in children undergoing hospital screening.

Soriano-Arandes A, Soler-Palacin P, Borras-Bermejo B, Antón A. Enferm Infecc Microbiol Clin (Engl Ed). 2020 Oct 13;39(8):415-6. doi: 10.1016/j.eimc.2020.10.004. Online ahead of print. PMID: 33160709 Free PMC article. No abstract available.

An Analysis of K-12 School Reopening and Its' Impact on Teachers.

Lambert JA, Trott K, Baugh RF. J Prim Care Community Health. 2020 Jan-Dec;11:2150132720967503. doi: 10.1177/2150132720967503. PMID: 33146062 Free PMC article.

Coronavirus global pandemic: An overview of current findings among pediatric patients.

Perikleous E, Tsalkidis A, Bush A, Paraskakis E. Pediatr Pulmonol. 2020 Dec;55(12):3252-3267. doi: 10.1002/ppul.25087. Epub 2020 Oct 7. PMID: 32965785 Free PMC article. Review.

The safety of paediatric surgery between COVID-19 surges: an observational study.

Okonkwo INC, Howie A, Parry C, Shelton CL, Cobley S, Craig R, Permall N, El-Sheikha SH, Herbert N, Arnold P. Anaesthesia. 2020 Dec;75(12):1605-1613. doi: 10.1111/anae.15264. Epub 2020 Oct 13. PMID: 32955100 Free PMC article.

Letter to the editor: COVID-19 cases among school-aged children and school-based measures in Hong Kong, July 2020.

Fong MW, Cowling BJ, Leung GM, Wu P. Euro Surveill. 2020 Sep;25(37):2001671. doi: 10.2807/1560-7917.ES.2020.25.37.2001671. PMID: 32945255 Free PMC article. No abstract available.

The evolving picture of SARS-CoV-2 and COVID-19 in children: critical knowledge gaps.

Idele P, Anthony D, You D, Luo C, Mofenson L. BMJ Glob Health. 2020 Sep;5(9):e003454. doi: 10.1136/bmjgh-2020-003454. PMID: 32938610 Free PMC article. No abstract available.

The Wide Spectrum of COVID-19 Clinical Presentation in Children.

Nathan N, Prevost B, Sileo C, Richard N, Berdah L, Thouvenin G, Aubertin G, Lecarpentier T, Schnuriger A, Jegard J, Guellec I, Taytard J, Corvol H. J Clin Med. 2020 Sep 12;9(9):2950. doi: 10.3390/jcm9092950. PMID: 32932612 Free PMC article.

COVID-19 and schools. Guidelines of the French Pediatric Society.

Cohen R, Delacourt C, Gras-Le Guen C, Launay E; French Pediatric Society. Arch Pediatr. 2020 Oct;27(7):388-392. doi: 10.1016/j.arcped.2020.09.001. Epub 2020 Sep 4. PMID: 32921531 Free PMC article.

Heavy Exposure of Children Aged 9-12 Years With Severe Acute Respiratory Syndrome Coronavirus 2 Did Not Lead to Infection.

Schmidt E, Steinhagen K, Rupp J. J Pediatric Infect Dis Soc. 2020 Nov 10;9(5):620-621. doi: 10.1093/jpids/piaa116. PMID: 32920648 Free PMC article.

SARS-CoV-2 in children: spectrum of disease, transmission and immunopathological underpinnings.

Williams PCM, Howard-Jones AR, Hsu P, Palasanthiran P, Gray PE, McMullan BJ, Britton PN, Bartlett AW. Pathology. 2020 Dec;52(7):801-808. doi: 10.1016/j.pathol.2020.08.001. Epub 2020 Aug 19. PMID: 32888706 Free PMC article. Review.

Qiu H, Wu J, Hong L, Luo Y, Song Q, Chen D. Clinical and Epidemiological Features of 36 Children with Coronavirus Disease 2019 (Covid-19) in Zhejiang, China: An Observational Cohort Study. Lancet Infect Dis. 2020. Epub 2020/03/30. pmid:32220650; PubMed Central PMCID: PMC7158906.

- View Article
- PubMed/NCBI
- Google Scholar

See KC, Liew SM, Ng DCE, Chew EL, Khoo EM, Sam CH, et al. Covid-19: Four Paediatric Cases in Malaysia. Int J Infect Dis. 2020;94:125–7. Epub 2020/04/19. pmid:32304822; PubMed Central PMCID: PMC7158792.

- View Article
- PubMed/NCBI
- Google Scholar

Tan YP, Tan BY, Pan J, Wu J, Zeng SZ, Wei HY. Epidemiologic and Clinical Characteristics of 10 Children with Coronavirus Disease 2019 in Changsha, China. J Clin Virol. 2020;127(NA):104353. Epub 2020/04/18. pmid:32302953; PubMed Central PMCID: PMC7195108.

- View Article
- PubMed/NCBI

- Google Scholar

Bai K, Liu W, Liu C, Fu Y, Hu J, Qin Y, et al. Clinical Analysis of 25 Novel Coronavirus Infections in Children. Pediatr Infect Dis J. 2020. pmid:32520888

- View Article
- PubMed/NCBI
- Google Scholar

ΜΕΤΑΔΟΣΗ ΝΟΣΟΥ COVID-19 ΣΕ ΠΑΙΔΙΑ ΚΑΙ ΑΠΟ ΠΑΙΔΙΑ (TRANSMISSION COVID-19 TO AND FROM CHILDREN)

An analysis of household transmission in China revealed a 'secondary attack rate' of only 4% to children compared with ~17% from adult to adult [*Li W, Zhang B, Lu J, Liu S, Chang Z, Cao P, Liu X, Zhang P, Ling Y, Tao K et al. (2020) The characteristics of household transmission of COVID-19. Clin Infect Dis. 10.1093/cid/ciaa450* [DOI] [PMC free article] [PubMed] [Google Scholar]].

NCIRS (2020) COVID-19 in schools – the experience in NSW in National Centre for Immunisation Research and Surveillance (NCIRS).

Zhu Y, *Bloxham CJ, Hulme KD, Sinclair JE, Tong ZWM, Steele LE, Noye EC, Lu J, Chew KY, Pickering J et al. (2020) Children are unlikely to have been the primary source of household SARS-CoV-2 infections. SSRN Electronic J. Pre Print. 10.1101/2020.03.26.20044826* [DOI] [Google Scholar]

ΜΕΛΕΤΕΣ ΣΥΜΦΩΝΑ ΜΕ ΤΙΣ ΟΠΟΙΕΣ ΤΑ ΠΑΙΔΙΑ ΕΙΝΑΙ ΕΞΙΣΟΥ ΕΠΙΡΡΕΠΗ ΣΤΗ ΜΟΛΥΝΣΗ ΜΕ ΤΟΥΣ ΕΝΗΛΙΚΕΣ ΑΛΛΑ ΛΙΓΟΤΕΡΟ ΠΙΘΑΝΟ ΝΑ ΕΜΦΑΝΙΣΟΥΝ ΣΟΒΑΡΑ ΣΥΜΠΤΩΜΑΤΑ (STUDIES SHOWING THAT CHILDREN ARE JUST AS SUSCEPTIBLE AS ADULTS, ALTHOUGH LESS LIKELY TO SHOW SEVERE SYMPTOMS)

Dong Y, *Mo X, Hu Y, Qi X, Jiang F, Jiang Z & Tong S (2020) Epidemiology of COVID-19 among children in China. Pediatrics 145, e20200702.* [DOI] [PubMed] [Google Scholar]

Bi Q*, Wu Y, Mei S, Ye C, Zou X, Zhang Z, Liu X, Wei L, Truelove SA, Zhang T et al. (2020) Epidemiology and transmission of COVID-19 in 391 cases and 1286 of their close contacts in Shenzhen, China: a retrospective cohort study. Lancet Infect Dis. 10.1016/S1473-3099(20)30287-5* [DOI] [PMC free article] [PubMed] [Google Scholar]

ΜΕΛΕΤΕΣ ΣΥΜΦΩΝΑ ΜΕ ΤΙΣ ΟΠΟΙΕΣ ΕΙΝΑΙ ΛΙΓΕΣ ΟΙ ΠΕΡΙΠΤΩΣΕΙΣ ΜΟΛΥΝΣΗΣ ΠΑΙΔΙΩΝ ΣΕ ΧΩΡΕΣ ΠΟΥ ΚΑΝΟΥΝ ΣΥΣΤΗΜΑΤΙΚΑ ΑΝΙΧΝΕΥΣΗ (STUDIES SHOWING only FEW POSITIVE CASES AMONGST CHILDREN, IN COUNTRIES PERFORMING POPULATION-LEVEL SCREENING FOR SARS-COV-2 ICELAND, ITALY, SOUTH KOREA ETC)

COVID-19 National Emergency Response Center, *Epidemiology and Case Management Team, Korea Centers for Disease Control and Prevention (2020) Coronavirus disease-19: the first 7,755 cases in the Republic of Korea. Osong Public Health Res Perspect 11, 85–90.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Gudbjartsson DF, *Helgason A, Jonsson H, Magnusson OT, Melsted P, Norddahl GL, Saemundsdottir J, Sigurdsson A, Sulem P, Agustsdottir AB et al. (2020) Spread of SARS-CoV-2 in the Icelandic population. N Engl J Med. 10.1056/NEJMoa2006100* [DOI] [PMC free article] [PubMed] [Google Scholar]

Lavezzo E, *Franchin E, Ciavarella C, Cuomo-Dannenburg G, Barzon L, Del Vecchio C, Rossi L, Manganelli R, Loregian A, Navarin N et al. (2020) Suppression of COVID-19 outbreak in the municipality of Vo, Italy. medRxiv.* [Google Scholar]

ΔΗΜΟΣΙΕΥΣΕΙΣ ΓΙΑ ΕΜΒΟΛΙΑΣΜΟ ΠΑΙΔΙΩΝ

Ι. Καβαλιώτης ΕΜΒΟΛΙΑ ΚΟΡΩΝΟΪΟΥ:ΑΝΑΘΕΩΡΗΣΗ ΤΗΣ ΕΠΙΤΥΧΙΑΣ; Περιοδική έκδοση ΛΟΙΜΩΞΗ. ISSN 1109-4036, Τεύχος 62, Ιανουάριος 2022 , σελ. 1-3.

Al-Khlaiwi, T. et al. National COVID-19 vaccine program and parent's perception to vaccinate their children: A cross-sectional study. Vaccines (Basel).10(2), 168. 10.3390/vaccines10020168 (2022). 10.3390/vaccines10020168 - DOI - PMC - PubMed

The Norwegian Government. Vaccination offered to 12 and 15-year-olds 2021 https://www.regjeringen.no/en/historical-archive/solbergs-government/Ministries/smk/Press-releases/2021/vaccination-offered-to-12-and-15-year-olds/id2870033/

Lower SARS-CoV-2 household transmission in children and adolescents compared to adults.

Schumm L, Blankenburg J, Kahre E, Armann J, Dalpke AH, Lück C, Berner R, Czyborra P. Sci Rep. 2022 Dec 27;12(1):22453. doi: 10.1038/s41598-022-24643-2. PMID: 36575230 Free PMC article.

Factors affecting the transmission of SARS-CoV-2 in school settings.

Yuan H, Reynolds C, Ng S, Yang W. Influenza Other Respir Viruses. 2022 Jul;16(4):643-652. doi: 10.1111/irv.12968. Epub 2022 Feb 10. PMID: 35146922 Free PMC article.

Transmission of SARS-CoV-2 by children: a rapid review, 30 December 2019 to 10 August 2020.

Clyne B, Jordan K, Ahern S, Walsh KA, Byrne P, Carty PG, Drummond L, O'Brien KK, Smith SM, Harrington P, Ryan M, O'Neill M. Euro Surveill. 2022 Feb;27(5):2001651. doi: 10.2807/1560-7917.ES.2022.27.5.2001651. PMID: 35115076 Free PMC article. Review.

Indirect protection of children from SARS-CoV-2 infection through parental vaccination.

Hayek S, Shaham G, Ben-Shlomo Y, Kepten E, Dagan N, Nevo D, Lipsitch M, Reis BY, Balicer RD, Barda N. Science. 2022 Mar 11;375(6585):1155-1159. doi: 10.1126/science.abm3087. Epub 2022 Jan 27. PMID: 35084938 Free PMC article.

Zeng L, Xia S, Yuan W, Yan K, Xiao F, Shao J, et al. Neonatal early-onset infection with SARS-CoV-2 in 33 neonates born to mothers with COVID-19 in Wuhan, China. JAMA Pediatr. 2020;174:722-5. https://doi.org/https://doi.org/10.1001/jamapediatrics.2020.0878

Zhang ZJ, Yu XJ, Fu T, Liu Y, Jiang Y, Yang BX, et al. Novel Coronavirus infection in newborn babies under 28 days in China. Eur Respir J. 2020;55:2000697. https://doi.org/10.1183/13993003.00697-2020
» https://doi.org/https://doi.org/10.1183/13993003.00697-2020

Dong L, Tian J, He S, Zhu C, Wang J, Liu C, et al. Possible vertical transmission of SARS-CoV-2 from an infected mother to her newborn. JAMA. 2020;323:1846-8. https://doi.org/https://doi.org/10.1001/jama.2020.4621

SARS-CoV-2 transmission in schools: An updated living systematic review (version 2; November 2020).

Wang J, Wang D, Chen GC, Tao XW, Zeng LK. SARS-CoV-2 infection with gastrointestinal symptoms as the first manifestation in a neonate. Zhongguo Dang Dai Er Ke Za Zhi. 2020;22:211-4. https://doi.org/10.7499/j.issn.1008-8830.2020.03.006
» https://doi.org/https://doi.org/10.7499/j.issn.1008-8830.2020.03.006

Xu W, Li X, Dong Y, Dozier M, He Y, Kirolos A, Lang Z, Mathews C, Siegfried N, Theodoratou E; UNCOVER. J Glob Health. 2021 Jun 10;11:10004. doi: 10.7189/jogh.11.10004. eCollection 2021. PMID: 34804514 Free PMC article.

Guenver C, Oualha M, Levy C, Antona D, Madhi F, Toubiana J, Lachaume N, Javouhey E, Lorrot M, Yang DD, Levy M, Caseris M, Galeotti C, Ovaert C, Wiedemann A, Girardin ML, Rybak A, Cohen R, Belot A, Angoulvant F, Ouldali N. Educational Setting and SARS-CoV-2 Transmission Among Children With Multisystem Inflammatory Syndrome: A French National Surveillance System. Front Pediatr. 2021 Oct 26;9:745364. doi: 10.3389/fped.2021.745364. PMID: 34765576; PMCID: PMC8576449.

The Burden of COVID-19 in Children and Its Prevention by Vaccination: A Joint Statement of the Israeli Pediatric Association and the Israeli Society for Pediatric Infectious Diseases.

Stein M, Ashkenazi-Hoffnung L, Greenberg D, Dalal I, Livni G, Chapnick G, Stein-Zamir C, Ashkenazi S, Hecht-Sagie L, Grossman Z. Vaccines (Basel). 2022 Jan 6;10(1):81. doi: 10.3390/vaccines10010081. PMID: 35062742 Free PMC article.

Naeimi R, Sepidarkish M, Mollalo A, Parsa H, Mahjour S, Safarpour F, et al. SARS-CoV-2 seroprevalence in children worldwide: a systematic review and meta-analysis. EClinicalMedicine. 2023;56:101786.

Department of Health and Social Care. JCVI statement on COVID-19 vaccination of children and young people aged 12 to 17 years: 15 July 2021. 2021. https://www.gov.uk/government/publications/covid-19-vaccination-of-children-and-young-people-aged-12-to-17-years-jcvi-statement/jvci-statement-on-covid-19-vaccination-of-children-and-young-people-aged-12-to-17-years-15-july-2021

Hause AM, Shay DK, Klein NP, et al. Safety of COVID-19 vaccination in United States children ages 5 to 11 years. *Pediatrics*. 2022; 150(2):e2022057313.

Kostoff R.N. et al. (Ronald N. Kostoff, Daniela Calina, Darja Kanduc, Michael B. Briggs,Panayiotis Vlachoyiannopoulos, Andrey A. Svistunov, Aristidis Tsatsakis)
Why are we vaccinating children against COVID-19? *Toxicology Reports 8 (2021) 1665–1684* **https://doi.org/10.1016/j.toxrep.2021.08.010**

Right and left ventricular cardiac magnetic resonance imaging derived peak systolic strain is abnormal in children with myocarditis.

Rhee E, Dobrila J, Kaur H, Patel MD, Uppu SC. Int J Cardiovasc Imaging. 2024 Jan;40(1):139-147. doi: 10.1007/s10554-023-02975-y. Epub 2023 Oct 20. PMID: 37861812

ΕΠΙΧΕΙΡΗΜΑΤΑ ΥΠΕΡ ΕΜΒΟΛΙΑΣΜΟΥ ΠΑΙΔΙΩΝ

Holm M, Hartling UB, Schmidt LS, et al. Multisystem inflammatory syndrome in children occurred in one of four thousand children with severe acute respiratory syndrome coronavirus 2. Acta Paediatr 2021;110:2581-3. doi:10.1111/apa.15985

Son MBF, Murray N, Friedman K, et al, Overcoming COVID-19 Investigators. Multisystem Inflammatory Syndrome in Children- Initial Therapy and Outcomes. N Engl J Med 2021;385:23-34. doi:10.1056/NEJMoa2102605

SARS-CoV-2 Vaccination for Children-An Open Issue.

Caselli D, Aricò M. Pediatr Rep. 2021 Feb 24;13(1):95-97. doi: 10.3390/pediatric13010013. PMID: 33668173 Free PMC article.

Xu Y*, Li X, Zhu B, et al. Characteristics of pediatric SARS-CoV-2 infection and potential evidence for persistent fecal viral shedding. Nat Med. 2020;26(4):502-505. doi: 10.1038/s41591-020-0817-4* [DOI] [PMC free article] [PubMed] [Google Scholar]

Madera S*, Crawford E, Langelier C, et al. Nasopharyngeal SARS-CoV-2 viral loads in young children do not differ significantly from those in older children and adults. Sci Rep. 2021;11(1):3044. doi: 10.1038/s41598-021-81934-w* [DOI] [PMC free article] [PubMed] [Google Scholar]

Han B*, Song Y, Li C, et al. Safety, tolerability, and immunogenicity of an inactivated SARS-CoV-2 vaccine (CoronaVac) in healthy children and adolescents: a double-blind, randomized, controlled, phase1/2 clinical trial. Lancet Infect Dis. 2021;21(12):1645-1653. doi: 10.1016/S1473-3099(21)00319-4* [DOI] [PMC free article] [PubMed] [Google Scholar]

Frenck RW *Jr, Klein NP, Kitchin N, et al. Safety, immunogenicity, and efficacy of the BNT162b2 Covid-19 vaccine in adolescents. N Engl J Med. 2021;385(3):239-250. doi: 10.1056/NEJMoa2107456* [DOI] [PMC free article] [PubMed] [Google Scholar]

Ali K, *Berman G, Zhou H, et al. Evaluation of mRNA-1273 SARS-CoV vaccine in adolescents. N Engl J Med. 2021;385(24):2241-2251. doi: 10.1056/NEJMoa2109522* [DOI] [PMC free article] [PubMed] [Google Scholar]

COVID-19 ΣΕ ΠΑΙΔΙΑ. ΕΜΒΟΛΙΑΣΜΟΙ ΣΕ ΠΑΙΔΙΑ ΚΑΙ ΕΦΗΒΟΥΣ

ΠΟΛΥΣΥΣΤΗΜΑΤΙΚΟ ΦΛΕΓΜΟΝΩΔΕΣ ΣΥΝΔΡΟΜΟ ΣΕ ΠΑΙΔΙΑ
(MULTISYSTEM INFLAMMATORY SYNDROME -MIS- IN CHILDREN)

A Case of Multisystem Inflammatory Syndrome in a 12-Year-old Male After COVID-19 mRNA Vaccine
https://pubmed.ncbi.nlm.nih.gov/34978781/

Coronavirus.health.ny.gov [homepage on the Internet]. New York State Health Department. Childhood Inflammatory Disease Related to COVID-19;2020 [cited 2020 Jun 26]. Available from: Available from: https://coronavirus.health.ny.gov/childhood-inflammatory-disease-related-covid-19
» https://coronavirus.health.ny.gov/childhood-inflammatory-disease-related-covid-19

Mahase E. Covid-19: concerns grow over inflammatory syndrome emerging in children. BMJ. 2020;369:m1710. https://doi.org/10.1136/bmj.m1710
» https://doi.org/https://doi.org/10.1136/bmj.m1710

AB Payne, Z Gilani, S Godfred-Cato, *et al.* Incidence of multisystem inflammatory syndrome in children among US persons infected with SARS-CoV-2. JAMA Netw Open, 4 (2021), p. e2116420 View at publisherCrossrefView in ScopusGoogle Scholar

Boribong BP, *LaSalle TJ, Bartsch YC, Ellett F, Loiselle ME, Davis JP, Gonye ALK, Sykes DB, Hajizadeh S, Kreuzer J, et al. Neutrophil profiles of pediatric COVID-19 and multisystem inflammatory syndrome in children. Cell RepMed. 2022;3:100848. doi: 10.1016/j.xcrm.2022.100848* [DOI] [PMC free article] [PubMed] [Google Scholar]

Henderson LA, *Canna SW, Friedman KG, Gorelik M, Lapidus SK, Bassiri H, Behrens EM, Ferris A, Kernan KF, Schulert GS, et al. American College of Rheumatology clinical guidance for multisystem inflammatory syndrome in children associated with SARS-CoV-2 and hyperinflammation in pediatric COVID-19: version 2. Arthritis Rheumatol. 2021;73:e13–e29. doi: 10.1002/art.41616* [DOI] [PMC free article] [PubMed] [Google Scholar]

Porritt RA, *Paschold L, Rivas MN, Cheng MH, Yonker LM, Chandnani H, Lopez M, Simnica D, Schultheiss C, Santiskulvong C, et al. HLA class I-associated expansion of TRBV11-2 T cells in multisystem inflammatory syndrome in children. J Clin Invest. 2021;131:e146614. doi: 10.1172/JCI146614* [DOI] [PMC free article] [PubMed] [Google Scholar]

Porritt RA, *Binek A, Paschold L, Rivas MN, McArdle A, Yonker LM, Alter G, Chandnani HK, Lopez M, Fasano A, et al. The autoimmune signature of hyperinflammatory multisystem inflammatory syndrome in children. J Clin Invest. 2021;131:e141420. doi: 10.1172/JCI151520* [DOI] [PMC free article] [PubMed] [Google Scholar]

Lazova S., *Gerenska D., Slabakova Y., Velikova T. Immunological features of the multisystem inflammatory syndrome associated with SARS-CoV-2 in children. Am. J. Clin. Exp. Immunol. 2022;11:64–71.* [PMC free article] [PubMed] [Google Scholar**]**

Lazova S., Dimitrova Y., Hristova D., Tzotcheva I., Velikova T. Cellular, Antibody and Cytokine Pathways in Children with Acute SARS-CoV-2 Infection and MIS-C-Can We Match the Puzzle? Antibodies. 2022;11:25. doi: 10.3390/antib11020025. **[DOI] [PMC free article] [PubMed] [Google Scholar]**

ΕΠΙΧΕΙΡΗΜΑΤΑ ΕΝΑΝΤΙΟΝ ΤΟΥ ΕΜΒΟΛΙΑΣΜΟΥ ΠΑΙΔΙΩΝ ΚΑΙ ΝΕΑΡΩΝ ΕΝΗΛΙΚΩΝ

Τα κυριότερα επιχειρήματα εναντίον της εφαρμογής εμβολιασμού έναντι COVID :

- Τα παιδιά σπάνια νοσούν
- Αν νοσήσουν, η λοίμωξη είναι συνήθως ελαφρά
- Δεν μεταδίδουν
- Η θνησιμότητα στα παιδιά είναι σχεδόν μηδενική παγκοσμίως
- Οι ανεπιθύμητες ενέργειες των εμβολίων δεν αντισταθμίζουν το πιθανό όφελος
- Οι μακροχρόνιες ενέργειες των εμβολίων είναι ακόμη άγνωστες

Palmeira P, Barbuto JA, Silva CA, Carneiro-Sampaio M. Why is SARS-CoV-2 infection milder among children? Clinics (Sao Paulo). 2020;75:1-5. https://doi.org/10.6061/clinics/2020/e1947
» https://doi.org/https://doi.org/10.6061/clinics/2020/e1947

8-year-old girl differs stroke and brain hemorrhage less than a day after getting Pfizer's COVID-19 vaccine.

ΕΜΦΑΝΙΣΗ ΠΟΛΥΣΥΣΤΗΜΑΤΙΚΟΥ ΦΛΕΓΜΟΝΏΔΟΥΣ ΣΥΝΔΡΟΜΟΥ ΣΕ ΠΑΙΔΙΑ ΜΕΤΆ ΤΟΝ ΕΜΒΟΛΙΑΣΜΌ ΤΟΥΣ

MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN

A Suspected Case of Multisystem Inflammatory Disease in Children Following COVID-19 Vaccination: A Case Report and Systematic Literature Review
https://pubmed.ncbi.nlm.nih.gov/36102702

Multisystem Inflammatory-like Syndrome in a Child Following COVID-19 mRNA Vaccination
https://pubmed.ncbi.nlm.nih.gov/35062704/

LD Zambrano, MM Newhams, SM Olson, *et al*.. Effectiveness of BNT162b2 (Pfizer-BioNTech) mRNA vaccination against multisystem inflammatory syndrome in children among persons aged 12-18 Years-United States, July-December 2021. MMWR Morb Mortal Wkly Rep, 71 (2022), pp. 52-58. View at publisher CrossrefView in ScopusGoogle Scholar39

Wangu Z, Swartz H, Doherty M. Multisystem inflammatory syndrome in children (MIS-C) possibly secondary to COVID-19 mRNA vaccination. BMJ Case Rep. **2022 Mar** 30;15(3):e247176. doi: 10.1136/bcr-2021-247176. PMID: 35354564; PMCID: PMC8968554.

[Frequency and safety of COVID-19 vaccination in children with multisystem inflammatory syndrome: a telephonic interview-based analysis.]

Aykac K, Ozturk K, Demir OO, Gumus DD, Aslan S, Cem E, Celebi MY, Karabacak MD, Alkan G, Aksoy FD, Yayla BCC, Kepenekli E, Celebi S, Emiroglu M, Devrim I, Cengiz AB, Ceyhan M, Ozsurekci Y. World J Pediatr. 2022 Oct;18(10):700-705. doi: 10.1007/s12519-022-00604-7. Epub 2022 Aug 16. PMID: 35972716 Free PMC article. No abstract available.

[Multisystem inflammatory syndrome following COVID-19 vaccination: ignored and underdiagnosed.]

Ish P, Kunal S. QJM. 2022 Oct 25;115(10):697. doi: 10.1093/qjmed/hcab292. PMID: 34940858 Free PMC article. No abstract available.

***Kono A,** Hawke P, Yoshioka R. Response to: Multisystem inflammatory syndrome following COVID-19 vaccination: ignored and underdiagnosed. QJM 2022;115:698. 10.1093/qjmed/hcab294* [DOI] [PMC free article] [PubMed] [Google Scholar]

Comment in

- **[Multisystem inflammatory syndrome following COVID-19 vaccination: ignored and underdiagnosed.]**

Ish P, Kunal S. QJM. 2022 Oct 25;115(10):697. doi: 10.1093/qjmed/hcab292. PMID: 34940858 Free PMC article. No abstract available.

ΑΝΕΠΙΘΥΜΗΤΕΣ ΕΝΕΡΓΕΙΕΣ ΤΩΝ ΕΜΒΟΛΙΩΝ COVID ΣΕ ΠΑΙΔΙΑ

Dionne A, Sperotto F, Chamberlain S, Baker AL, Powell AJ, Prakash A, et al. *Association of myocarditis with BNT162b2 messenger RNACOVID-19 vaccine in a case series of children.* JAMA Cardiol. 2021;6(12):1446–50 w. Annals of medicine and surgery, 76,103486.

Dionne A, Sperotto F, Chamberlain S, Baker AL, Powell AJ, Prakash A, Castellanos DA, Saleeb SF, de Ferranti SD, Newburger JW, Friedman KG. *Association of Myocarditis with BNT162b2 Messenger RNA COVID-19 Vaccine in a Case Series of Children.* JAMA Cardiol. 2021 Dec 1;6(12):1446-1450. PMID: 34374740; PMCID: PMC8356143 DOI: 10.1001/jamacardio.2021.3471 Free PMC article.

Manno E.C., Amodio D., Cotugno N., Rossetti C., Giancotta C., Santilli V., Zangari P., Rotulo G.A., Villani A., Giglioni E., et al. *Higher Troponin Levels on Admission are associated With Persistent Cardiac Magnetic Resonance Lesions in Children Developing Myocarditis After mRNA-Based COVID-19 Vaccination*. Pediatr. Infect. Dis. J. 2023;42:166–171. doi: 10.1097/INF.0000000000003762. [DOI] [PMC free article] [PubMed] [Google Scholar]

Das BB, Moskowitz WB, Taylor MB, Palmer A. *Myocarditis and Pericarditis Following mRNA COVID-19 Vaccination: What Do We Know So Far?* Children (Basel). 2021 Jul 18;8(7):607. DOI: 10.3390/children8070607 PMID: **34356586** PMCID: PMC8305058

https://www.naturalnews.com/2021-12-01-child-deaths-surge-after-covid-vaccine-rollout.html

Children are dying at a rate 62% higher than the 5-year-average since they began to be given the COVID-19 vaccine.

Vaccines.news.

LifeSiteNews.com

iNews.co.uk

Hadley SM, Prakash A, Baker AL, de Ferranti SD, Newburger JW, Friedman KG, Dionne A. Follow-up cardiac magnetic resonance in children with vaccine-associated myocarditis. Eur J Pediatr. 2022 Jul;181(7):2879-2883. Epub 2022 Apr 28. PMID: 35482094; PMCID: PMC9046711 DOI: 10.1007/s00431-022-04482-z

Green Book : Chapter 14a - COVID-19 - SARS-CoV-2, 16 September 2024
https://assets.publishing.service.gov.uk/media/66e7fbf624c4f1826d81bb32/Greenbook-chapter-14a-20240916.pdf

ΑΝΤΙΔΡΑΣΕΙΣ ΕΠΙΣΤΗΜΟΝΩΝ, ΟΜΑΔΩΝ ΠΟΛΙΤΩΝ ΣΤΟΝ ΕΜΒΟΛΙΑΣΜΟ ΠΑΙΔΙΩΝ

Scientists not backing Covid jabs for 12 to 15-year-olds

BBC

https://www.bbc.com › ...

3 Σεπ 2021 — The UK's *vaccine* advisory body has refused to give the green light to vaccinating healthy *children* aged 12-15 years on health grounds alone.

https://vaccines.news/2021-12-16-doctors-scientists-sign-declaration-opposing-vaccination-children.html

Over 15,000 doctors and scientists sign declaration opposing COVID-19 vaccinations for children

https://www.thetelegraph.com/news/article/Poll-finds-parents-still-hesitant-about-COVID-19-16691538.php

A survey conducted by the Kaiser Family Foundation (KFF), between Nov. 8 to 23 and involved 1,196 parents with at least one child under the age of 18, showed that most parents are still not confident that the vaccines will provide safety for their children against COVID-19.

Willingness to vaccinate children against COVID-19 ...

https://vaccines.news/author/newseditors/

https://x.com/RWMaloneMD/status/1451613579501703172

https://www.ihv.org/news/2021-archives/nature-should-children-get-covid-vaccines-what-the-science-says.html

https://www.phc.ox.ac.uk/blog/assessing-the-safety-of-covid-19-vaccination-in-children

Aleksandra M Golos, Sharath-Chandra Guntuku, Alison M Buttenheim, "Do not inject our babies": a social listening analysis of public opinion about authorizing pediatric COVID-19 vaccines, *Health Affairs Scholar*, Volume 2, Issue 7, July 2024, qxae082, https://doi.org/10.1093/haschl/qxae082

Elise Paul, Andrew Steptoe, Daisy Fancourt. Attitudes towards vaccines and intention to vaccinate against COVID-19: Implications for public health communications.
The Lancet Regional Health - Europe, Volume 1, 2021, 100012, ISSN 2666-7762, https://doi.org/10.1016/j.lanepe.2020.100012.
(https://www.sciencedirect.com/science/article/pii/S2666776220300120)

Welch EW, Johnson TP, Chen T, Ma J, Islam S, Michalegko LF, Caldarulo M, Frandell A. How Scientists View Vaccine Hesitancy. Vaccines (Basel). 2023 Jul 6;11(7):1208. PMID: 37515024; PMCID: PMC10385302.
doi: 10.3390/vaccines11071208

https://www.who.int/news/item/11-08-2022-interim-statement-on-covid-19-vaccination-for-children **Interim statement on COVID-19 vaccination for children** Suran M. Why Parents

Still Hesitate to Vaccinate Their Children Against COVID-19. *JAMA.* 2022;327(1):23–25. doi:10.1001/jama.2021.2162511 August 2022

S.N. Williams. 'I don't want my son to be part of a giant experiment': public attitudes towards COVID-19 vaccines in children, Public Health, Volume 205, 2022, Pages 116-121, ISSN 0033-3506, https://doi.org/10.1016/j.puhe.2022.01.016.
(https://www.sciencedirect.com/science/article/pii/S0033350622000178)

Copland, E., Patone, M., Saatci, D. *et al.* Safety outcomes following COVID-19 vaccination and infection in 5.1 million children in England. *Nat Commun* **15**, 3822 (2024). https://doi.org/10.1038/s41467-024-47745-z

Abecasis F. The benefits of COVID-19 vaccination programmes for children may not outweigh the risks. *Acta Paediatr*. 2022; 111(10): 1843-1845. View CASPubMedWeb of Science®Google Scholar

WHO's top scientist says no evidence healthy kids, adolescents need COVID-19 boosters
By Reuters January 18, 2022
https://www.reuters.com/business/healthcare-pharmaceuticals/whos-top-scientist-says-no-evidence-healthy-kids-adolescents-need-covid-19-2022-01-18/

https://now.fordham.edu/uncategorized/study-reveals-reasons-for-parents-skepticism-on-vaccinating-youngest-against-covid/

The moral questions behind vaccinating children against Covid-19
https://theweek.com/news/science-health/953068/the-moral-questions-behind-vaccinating-children-against-covid-19

On child vaccines, the experts are suddenly reluctant to follow 'the science' By Jonathan Cook September 5, 2021 https://znetwork.org/znetarticle/on-child-vaccines-the-experts-are-suddenly-reluctant-to-follow-the-science/?amp=1

Hearing Wrap Up: Dr. Fauci Held Publicly Accountable by Select Subcommittee https://oversight.house.gov/release/hearing-wrap-up-dr-fauci-held-publicly-accountable-by-select-subcommittee/

COVID vaccines linked to slight increases in heart, brain, blood disorders: study by Yaron Steinbuch Published Feb. 20, 2024. https://nypost.com/2024/02/20/us-news/covid-vaccines-linked-to-slight-increases-in-heart-brain-blood-disorders/

Vaccinating kids against Covid is a big mistake Iain Martin Sep 14, 2021. https://www.reaction.life/p/vaccinating-kids-against-covid-is-a-big-mistake

Scientists Call for Global Moratorium on mRNA Vaccines, Immediate Removal From Childhood Schedule by Brenda Baletti, Ph.D. January 29, 2024 https://childrenshealthdefense.org/defender/scientists-global-moratorium-mrna-vaccines-removal-childhood-schedule/

Nicolas Hulscher, Mary T. Bowden, Peter A. McCullough. Review: Calls for Market Removal of COVID-19 Vaccines Intensify as Risks Far Outweigh Theoretical Benefits. Peer Reviewed, Policy, Public Health 01/28/2025 v6.2019-2025

ΑΝΟΙΚΤΕΣ ΕΠΙΣΤΟΛΕΣ

Ιωάννης Καβαλιώτης, επιστολή προς την Ελληνική Παιδιατρική Εταιρεία

https://www.youtube.com/watch?v=VIsAoZ3fQCw

https://www.sportime.gr/extratime/koinonia/katapeltis-o-pediatros-ioannis-kavaliotis-i-elliniki-pediatriki-eteria-apodechete-na-pethani-esto-ena-igies-pedi-apo-to-emvolio/

https://www.sportime.gr/extratime/koinonia/katapeltis-o-pediatros-ioannis-kavaliotis-i-elliniki-pediatriki-eteria-apodechete-na-pethani-esto-ena-igies-pedi-apo-to-emvolio/

http://aegeanews.gr/news/dimosias-krisis/402463/katapeltis-paidiatros-ioannis-kavaliotis-elliniki-paidiatriki-etaireia-apodechetai-pethanei-esto-ena-ygies-paidi-apo-emvolio/

https://enromiosini.gr/arthrografia/elliniki-paidiatriki-etaireia-mia/

Ελένη Χασαποπούλου-Ματάμη Ανοικτή επιστολή 1 Δεκεμβρίου 2021.
https://enromiosini.gr/tag/chasapopoyloy-matami-eleni/
https://toromaiiko.com/tag/eleni-chasapopoyloy-matami/

ΣΚΕΠΤΟΜΕΝΟΙ ΓΟΝΕΙΣ και ΕΝΕΡΓΟΙ ΠΟΛΙΤΕΣ
ΑΝΟΙΚΤΗ ΕΠΙΣΤΟΛΗ
ΣΚΕΨΕΙΣ ΚΑΙ ΕΡΩΤΗΜΑΤΑ ΓΙΑ ΤΗ ΝΟΣΟ COVID 19 *ΚΑΙ ΤΟΝ ΕΜΒΟΛΙΑΣΜΟ ΤΩΝ ΠΑΙΔΙΩΝ ΜΕ ΤΑ ΝΕΑ ΕΜΒΟΛΙΑ ΚΑΤΑ ΤΟΥ ΚΟΡΩΝΟΪΟΥ*
6 ΔΕΚΕΜΒΡΙΟΥ 2021
https://www.eyewideopen.org/?p=2735
https://activeparentscitizens.blogspot.com/2021/12/covid-19.html

ΜΕΛΕΤΕΣ Ι. ΙΩΑΝΝΙΔΗ ΣΧΕΤΙΚΑ ΜΕ ΤΗΝ ΘΝΗΣΙΜΟΤΗΤΑ

On 14 October 2020, Professor Ioannidis from Stanford University published an overall Infection Fatality Rate of COVID-19 of 0.23%, and for people aged <70 years, the Infection Fatality Rate was 0.05%.

Ioannidis JPA, Axfors C, Contopoulos-Ioannidis DG. Population-level COVID-19 mortality risk for non-elderly individuals overall and for non-elderly individuals without underlying diseases in pandemic epicenters. Environ Res. 2020 Sep;188:109890. doi: 10.1016/j.envres.2020.109890. Epub 2020 Jul 1. PMID: 32846654; PMCID: PMC7327471. [Google Scholar] [CrossRef] [PubMed]

Ioannidis JPA. The Infection fatality rate of COVID-19 inferred from seroprevalence data. Bull. World Health Organ. 2021; 99:19–33F. doi:10.2471/BLT.20.265892• [Google Scholar] [CrossRef] [PubMed]

ΝΕΚΡΟΨΙΑ (AUTOPSY)

Autopsy findings in cases of fatal COVID-19 vaccine ...

Wiley Online Library
https://onlinelibrary.wiley.com › doi › ehf2

by **N Hulscher** · **2024** · Cited by 34 — This systematic review aims to investigate potential causal links between *COVID*-19 *vaccines* and death from *myocarditis* using post-mortem analysis.

Gill, J.R.; Tashjian, R.; Duncanson, E. Autopsy Histopathologic Cardiac Findings in 2 Adolescents Following the Second COVID-19

Vaccine Dose. Arch. Pathol. Lab. Med. 2022,146, 925–929. [CrossRef]

Hansen T, Titze U, Kulamadayil-Heidenreich NSA, Glombitza S, Tebbe JJ, Röcken C, Schulz B, Weise M, Wilkens L. First case of postmortem study in a patient vaccinated against SARS-CoV-2. Int J Infect Dis. 2021 Jun;107:172-175. doi: 10.1016/j.ijid.2021.04.053. Epub 2021 Apr 16. PMID: 33872783; PMCID: PMC8051011.

Motonori Takahashi, Takeshi Kondo, Gentaro Yamasaki, Marie Sugimoto, Migiwa Asano, Yasuhiro Ueno, Yasushi Nagasaki, An autopsy case report of aortic dissection complicated with histiolymphocytic pericarditis and aortic inflammation after mRNA COVID-19 vaccination, Legal Medicine, Volume 59, 2022, 102154, ISSN 1344-6223, https://doi.org/10.1016/j.legalmed.2022.102154.
(https://www.sciencedirect.com/science/article/pii/S1344622322001420)

Choi S, Lee S, Seo JW, Kim MJ, Jeon YH, Park JH, et al. Myocarditis-induced sudden death after BNT162b2 mRNA COVID-19 vaccination in Korea: case report focusing on histopathological findings. J Korean Med Sci [Internet]. 2021 (cited 2022 May 20);36(40):e286. Available from: doi:10.3346/jkms.2021.36.e286.

Pomara, C., Li Volti, G. & Cappello, F. COVID-19 deaths: are we sure it is pneumonia? Please, autopsy, autopsy, autopsy! *J. Clin. Med.* **9**, 1259 (2020).

Calabrese, F. et al. Pulmonary pathology and COVID-19: lessons from autopsy. The experience of European Pulmonary Pathologists. *Virchows Arch.* **477**, 359–372 (2020). Article CAS PubMed PubMed Central Google Scholar

Menter, T. et al. Postmortem examination of COVID-19 patients reveals diffuse alveolar damage with severe capillary congestion and variegated findings in lungs and other organs suggesting vascular dysfunction. *Histopathology* https://doi.org/10.1111/his.14134 (2020).

Hanley, B. et al. Histopathological findings and viral tropism in UK patients with severe fatal COVID-19: a post-mortem study. *Lancet Microbe* https://doi.org/10.1016/s2666-5247(20)30115-4 (2020).

Wichmann, D. et al. Autopsy findings and venous thromboembolism in patients with COVID-19: a prospective cohort study. *Ann. Intern. Med.* **173**, 268–277 (2020). Article PubMed Google Scholar

Bösmüller, H. et al. The evolution of pulmonary pathology in fatal COVID-19 disease: an autopsy study with clinical correlation. *Virchows Arch.* **477**, 349–357 (2020). Article PubMed PubMed Central CAS Google Scholar

Püschel, K. & Sperhake, J. P. Corona deaths in Hamburg, Germany. *Int. J. Leg. Med.* **134**, 1267–1269 (2020). Article Google Scholar

Lax, S. F. et al. Pulmonary arterial thrombosis in COVID-19 with fatal outcome: results from a prospective, single-center, clinicopathologic case series. *Ann. Intern. Med.* **173**, 350–361 (2020). Article PubMed Google Scholar

Satturwar, S. et al. Postmortem findings associated with SARS-CoV-2: systematic review and meta-analysis. *Am. J. Surg. Pathol.* https://doi.org/10.1097/pas.0000000000001650 (2021).

Hansen, T. et al. First case of postmortem study in a patient vaccinated against SARS-CoV-2. *Int. J. Infect. Dis.* **107**, 172–175 (2021). Article CAS PubMed PubMed Central Google Scholar

Sessa F, Salerno M, Esposito M, et al. Autopsy findings and causality relationship between death and COVID-19 vaccination: a systematic review. J Clin Med 2021;10:5876.

Schwab C, Domke LM, Hartmann L, et al. Autopsy- based histopathological characterization of myocarditis after anti-SARS-Cov- 2- vaccination. Clin Res Cardiol 2023;112:431–40.

Salerno, M. et al. No autopsies on COVID-19 deaths: a missed opportunity and the lockdown of science. *J. Clin. Med.* **9**, 1472 (2020).

Rujittika Mungmunpuntipantip, Viroj Wiwanitkit, An autopsy case report of aortic dissection after mRNA COVID-19 vaccination: correspondence, Legal Medicine, Volume 60, 2023, 102169, ISSN 1344-6223, https://doi.org/10.1016/j.legalmed.2022.102169. (https://www.sciencedirect.com/science/article/pii/S1344622322001572)s

Yoshimura Y, Sasaki H, Miyata N, Miyazaki K, Okudela K, Tateishi Y, Hayashi H, Kawana-Tachikawa A, Iwashita H, Maeda K, Ihama Y, Hatayama Y, Ryo A, Tachikawa N. An autopsy case of COVID-19-like acute respiratory distress syndrome after mRNA-1273 SARS-CoV-2 vaccination. Int J Infect Dis. 2022 Aug;121:98-101. doi: 10.1016/j.ijid.2022.04.057. Epub 2022 Apr 30. PMID: 35500794; PMCID: PMC9054706.

ΑΝΑΓΚΗ ΠΡΟΣΑΡΜΟΓΗΣ ΤΩΝ ΟΔΗΓΙΩΝ ΓΙΑ COVID ΕΜΒΟΛΙΑΣΜΟ ΣΤΗΝ ΤΩΡΙΝΗ ΠΡΑΓΜΑΤΙΚΟΤΗΤΑ, ΛΑΜΒΑΝΟΝΤΑΣ ΥΠΟΨΙΝ ΤΗΝ ΤΑΧΥΤΗΤΑ ΤΩΝ ΜΕΤΑΛΛΑΞΕΩΝ ΚΑΙ ΤΙΣ ΑΝΕΠΙΘΥΜΗΤΕΣ ΕΝΕΡΓΕΙΕΣ ΤΩΝ ΕΜΒΟΛΙΩΝ

Η κάποτε θεωρούμενη αξιόπιστη FDA, την 22-8-2024 έδωσε και πάλι το πράσινο φως σε συγκεκριμένες φαρμακοβιομηχανίες για κυκλοφορία του επικαιροποιημένου μονοδύναμου εμβολίου έναντι του στελέχους KP.2 (παραλλαγή Ο) του ιού SARS-CoV-2, που υποτίθεται ότι επικρατεί/θα επικρατεί την περίοδο 2024-2025.

Είναι πραγματικά απορίας άξιο που δίδουν EUA (emergency use authorization) ακόμη και τώρα, που έχει προ πολλού κηρυχθεί η λήξη της πανδημίας, που έχει γίνει παγκοσμίως γνωστό ότι η πραγματική θνητότητα είναι πολύ μικρότερη από ό,τι αρχικά διατυμπανιζόταν, που τα μόνα στελέχη που κυκλοφορούν πλέον είναι αποκλειστικά Ο, που όλο και πληθαίνουν οι διώξεις παθόντων από τους εμβολιασμούς, που όλο και περισσότερα κοινοβούλια χωρών καλούν σε απολογισμό υγειονομικούς και πολιτικούς υπευθύνους, οι οποίοι παραγνωρίζοντας τις πιθανές συνέπειες, πρωτοστατούσαν στην προώθηση των εμβολίων!

Ο Peter Marks, διευθυντής του Center for Biologics Evaluation and Research της FDA διατυμπανίζει “These updated vaccines meet the agency’s rigorous, scientific standards for safety, effectiveness, and manufacturing quality" και συνιστά ένθερμα τον εμβολιασμό σε όσους πληρουν τις προϋποθέσεις, "για καλύτερη προστασία (better protection) έναντι στελεχών που κυκλοφορούν τώρα".

Προφανώς, οι λέξεις emergency, safety, effectiveness, έχουν χάσει πλέον την αληθινή σημασία τους;

Οι υπεύθυνοι της FDA, δεν φαίνεται να ενοχλούνται καθόλου από το γεγονός ότι κάθε στέλεχος του ιού που κυκλοφορεί παρεκτοπίζεται ταχύτατα από άλλη παραλλαγή του ιού. Μιλούν αόριστα για πιθανή διασταυρούμενη ανοσία και ενθαρρύνουν την όλο και ταχύτερη διαδικασία παρασκευής νέων επικαιροποιημένων εμβολίων σ' ένα ατελέσφορο αγώνα δρόμου για να προλαβαίνουμε κάθε νέο μεταλλαγμένο στέλεχος!

Παράδειγμα **για να καταδειχθεί η ματαιότητα της επικαιροποίησης των εμβολίων**: στα τέλη Μαρτίου 2024, το στέλεχος KP.2, ευθυνόταν μόνο για το 4% των λοιμώξεων από SARS-CoV-2 στις Ηνωμένες Πολιτείες, σύμφωνα με το CDC (https://covid.cdc.gov/covid-data-tracker/#variant-proportions), και το γονικό του στέλεχος JN.1 για το 50%, ενώ στις αρχές Μαϊου 2024, το KP.2 ευθυνόταν για 28% των περιπτώσεων, και πλέον ξεπερνούσε το πρώην κυρίαρχο JN.1. Το KP.2 είναι μια από τις παραλλαγές του ιού που ονομάζονται “FLiRT variants”. Ενώ λοιπόν αρχές Ιουνίου 2024, η FDA παρότρυνε τις μεγάλες κατασκευάστριες mRNA εμβολίων εταιρείες να κατασκευάσουν μονοδύναμα εμβόλια επικεντρώνοντας στο JN.1, αργότερα άλλαξε την οδηγία ζητώντας να προτιμήσουν το στέλεχος KP.2. . Τα εμβόλια λοιπόν στα οποία δόθηκε την 22-8-2024 EUA, περιέχουν μόνο mRNA του KP.2, ενώ εκείνη τη στιγμή, το κυρίαρχο στέλεχος σε όλη τη χώρα ήταν το KP.3.1.1, (27.8%), ακολουθούσε το KP.3 (20.1%) και το LB.1 (16%), ενώ με μικρότερα ποσοστά απαντώνταν άλλες μεταλλάξεις μεταξύ των οποίων LB.1, KP.2, and KP.1.1. (NEBRASKA MEDICINE, August 15, 2024 και https://covid.cdc.gov/covid-data-tracker/#variant-proportion). Δηλαδή, τα νέα μονοδύναμα επικαιροποιημένα εμβόλια για τα οποία δόθηκε EUA την 22-8-2024, είχαν κατασκευαστεί με βάση στέλεχος του ιού που πλέον κυκλοφορούσε μόνο σε ποσοστό 2,4-4% (μέσος όρος σε όλη τη χώρα 3,1%)!!!

Όσον αφορά στην Ευρώπη, ήδη από 3 Μαρτίου 2023 είχε αποφασιστεί να υποβαθμιστούν από το ECDC τα στελέχη BA.2, BA.4 και BA.5 (να αφαιρεθουν από τη λίστα των VOC (variants of concern) επειδή είχαν παύσει να κυκλοφορούν, ενώ τον Αύγουστο 2024 δεν υπήρχε κανένα στέλεχος σε αυτή την κατηγορία.

Πώς λοιπόν να μην αντιστέκονται στην FDA και αντίστοιχες επιστημονικές εταιρείες όλων των χωρών του κόσμου, τόσο γιατροί που σέβονται τον εαυτό τους και την επιστήμη που σπούδασαν, αλλά και σωστά ενημερωμένοι πολίτες;

Πολύ σημανικά για αποφυγή αχρείαστων ενισχυτικών δόσεων είναι και τα ευρήματα μελετών που δείχνουν ότι **με επαναλαμβανόμενες δόσεις εμβολίου, είναι γρήγορη η εξασθένηση της ορολογικής απάντησης. Επίσης, αλλάζει η τάξη των παραγόμενων αντισωμάτων σε ανοσοσφαιρίνες IgG4, με συνέπεια λιγότερο αποτελεσματική ανοσοπροφύλαξη και αρκετές ανεπιθύμητες ενέργειες**.

Uversky VN, Redwan EM, Makis W, Rubio-Casillas A. IgG4 Antibodies Induced by Repeated Vaccination May Generate Immune Tolerance to the SARS-CoV-2 Spike Protein. Vaccines (Basel). 2023 May 17;11(5):991. doi: 10.3390/vaccines11050991. PMID: 37243095; PMCID: PMC10222767.

Gelderloos AT, Verheul MK, Middelhof I, de Zeeuw-Brouwer ML, van Binnendijk RS, Buisman AM, van Kasteren PB. Repeated COVID-19 mRNA vaccination results in IgG4 class switching and decreased NK cell activation by S1-specific antibodies in older adults. Immun Ageing. 2024 Sep 14;21(1):63. doi: 10.1186/s12979-024-00466-9. PMID: 39272189; PMCID: PMC11401348.

Dan-Yu Lin et al. *Durability of XBB.1.5 Vaccines against Omicron Subvariants*
N Engl J Med 2024;390:2124-2127 VOL. 390 NO. 22 DOI: 10.1056/NEJMc2402779 https://www.nejm.org/toc/nejm/390/22 This letter was published on May 29, 2024, at NEJM.org.

https://sph.unc.edu/sph-news/study-shows-effectiveness-of-updated-covid-19-vaccines-wanes-moderately-over-time-is-lower-against-currently-circulating-variants/

Study shows effectiveness of updated COVID-19 vaccines wanes moderately over time, is lower against currently circulating variants

Auster O, Finkel U, Dagan N, et al. *Short-term Adverse Events After the Third Dose of the BNT162b2 mRNA COVID-19 Vaccine in Adults 60 Years or Older*. *JAMA Netw Open.* 2022;5(4):e227657. doi:10.1001/jamanetworkopen.2022.765

Mayo Clinic. Don't get COVID-19 booster vaccine too soon [Internet]. YouTube. 2021. Available from: https://www.youtube.com/watch?v=Ix3cFL6ZKok

Abounouh, K., Tajudeen, R., Majidi, H. *et al. Immunologic assessment of the impact of SARS-CoV-2 vaccine booster doses on humoral immunity: a cross-sectional study in morocco*. *BMC Infect Dis* **24**, 1470 (2024). https://doi.org/10.1186/s12879-024-10345-9

Chenchula S, Karunakaran P, Sharma S, Chavan M. *Current evidence on efficacy of COVID-19 booster dose vaccination against the Omicron variant: A systematic review*. J Med Virol. 2022 Jul;94(7):2969-2976. Epub 2022 Mar 14. PMID: **35246846** PMCID: PMC9088621 DOI: 10.1002/jmv.27697

Melanie Stecher, Anja Bråthen Kristoffersen, Kristian Lie, Svein Rune Andersen, Hinta Meijerink, Jostein Starrfelt, *Effectiveness and durability of a second COVID-19 booster against severe outcomes among older people in Norway: a population-based cohort study comparing mono- and bivalent booster doses*, *International Journal of Epidemiology*, Volume 52, Issue 6, December 2023, Pages 1716–1724, https://doi.org/10.1093/ije/dyad114

Fourth dose bivalent COVID-19 vaccines outperform monovalent boosters in eliciting cross-reactive memory B cells to Omicron subvariants.

Fryer HA, Geers D, Gommers L, Zaeck LM, Tan NH, Jones-Freeman B, Goorhuis A, Postma DF, Visser LG, Hogarth PM, Koopmans MPG, GeurtsvanKessel CH, O'Hehir RE, van der Kuy PHM, de Vries RD, van Zelm MC. J Infect. 2024 Oct;89(4):106246. doi: 10.1016/j.jinf.2024.106246. Epub 2024 Aug 8. PMID: 39127451

Omicron BA.1-containing mRNA-1273 boosters compared with the original COVID-19 vaccine in the UK: a randomised, observer-blind, active-controlled trial.

Lee IT, Cosgrove CA, Moore P, Bethune C, Nally R, Bula M, Kalra PA, Clark R, Dargan PI, Boffito M, Sheridan R, Moran E, Darton TC, Burns F, Saralaya D, Duncan CJA, Lillie PJ, San Francisco Ramos A, Galiza EP, Heath PT, Girard B, Parker C, Rust D, Mehta S, de Windt E, Sutherland A, Tomassini JE, Dutko FJ, Chalkias S, Deng W, Chen X, Feng J, Tracy L, Zhou H, Miller JM, Das R; Study Investigators. Lancet Infect Dis. 2023 Sep;23(9):1007-1019. doi: 10.1016/S1473-3099(23)00295-5. Epub 2023 Jun 19. PMID: 37348519 Clinical Trial.

Real-world evidence on the efficacy of bivalent booster doses of SARS-CoV-2 vaccine in respect of monovalent boosters or primary cycle of vaccination: a narrative review.

Sane Schepisi M. Epidemiol Prev. 2023 Nov-Dec;47(6):331-343. doi: 10.19191/EP23.6.A626.081. PMID: 38314543 Review. English.

Enhancing Omicron Sublineage Neutralization: Insights From Bivalent and Monovalent COVID-19 Booster Vaccines and Recent SARS-CoV-2 Omicron Variant Infections.

Jeong HW, Rollon R, Kim SM, Gil J, Casel MA, Jang H, Choi JH, Jang SG, Lazarte JC, Kim HS, Kim JH, Choi YK. Influenza Other Respir Viruses. 2024 Oct;18(10):e70000. doi: 10.1111/irv.70000. PMID: 39377176 Free PMC article.

Current German Recommendations and International Research on the Use of COVID-19 Boosters among Health Care Providers in 2024: A Narrative Review.

Pitak-Arnnop P, Ngamskulrungroj P, Mahanonda N, Auychai P, Frech B, Shavlokhova V, Stoll C. Medicina (Kaunas). 2024 Feb 25;60(3):385. doi: 10.3390/medicina60030385. PMID: 38541111 Free PMC article. Review.

ΑΝΟΣΙΑ ΑΓΕΛΗΣ

Το 2020, ερευνητές υπολόγησαν ότι η τιμή R0 για την λοίμωξη COVID-19 ήταν μεταξύ 2 και 3, πράγμα που σημαίνει ότι ένα πρόσωπο θα μπορούσε να μολύνει 2 -3 άλλους. Επίσης αυτό σημαίνει ότι 50%-67% θα έπρεπε να είναι ανθεκτικό στη λοίμωξη πριν επιτευχθεί ανοσία αγέλης.και αρχίσουν να πέφτουν τα ποσοστά λοίμωξης. Όταν εμφανίστηκε η μετάλλαξη Ο που ήταν πιο μολυσματική η τιμή R0 υπολογίστηκε μεταξύ 15 και 21 οπότε χρειαζόταν ουδός 75%-80% του πληθυσμού για ανοσία αγέλης. Στα χρόνια που ακολούθησαν έγινε αντιληπτό ότι δεν μπορεί να επιτευχθεί ανοσία αγέλης, εφόσον τα εμβόλια που αδειοδοτήθηκαν και κυκλοφόρησαν δεν προστατεύουν από τη μόλυνση και την μετάδοση του ιού, υπάρχουν συνεχώς νέες μεταλλάξεις, και διστακτικότητα ενός μέρους του πληθυσμού να εμβολιαστεί.

Η απάντηση αν μπορεί να επιτευχθεί ανοσία αγέλης με τα παρόντα εμβόλια είναι προφανώς όχι.

Anderson RM, *Vegvari C, Truscott J, Collyer BS. Challenges in creating herd immunity to SARS-CoV-2 infection by mass vaccination. Lancet. 2020;396:1614–1616. doi: 10.1016/S0140-6736(20)32318-7.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Fontanet A*, Cauchemez S. COVID-19 herd immunity: where are we? Nat Rev Immunol. 2020;20(10):583-584. doi: 10.1038/s41577-020-00451-5* [DOI] [PMC free article] [PubMed] [Google Scholar]

Chaudhary, J. K., Yadav, R., Chaudhary, P. K., Maurya, A., Kant, N., Rugaie, O. A., Haokip, H. R., Yadav, D., Roshan, R., Prasad, R., Chatrath, A., Singh, D., Jain, N., & Dhamija, P. (2021). Insights into COVID-19 Vaccine Development Based on Immunogenic Structural Proteins of SARS-CoV-2, Host Immune Responses, and Herd Immunity. *Cells*, *10*(11), 2949. https://doi.org/10.3390/cells10112949 PMID: **34831172** PMCID: PMC8616290 DOI: 10.3390/cells10112949

Anderson RM, *Vegvari C, Truscott J, Collyer BS. Challenges in creating herd immunity to SARS-CoV-2 infection by mass vaccination. Lancet. 2021;396(10263):1614-1616. doi: 10.1016/S0140-6736(20)32318-7* [DOI] [PMC free article] [PubMed] [Google Scholar]

Frederiksen LSF, Zhang Y, Foged C, Thakur A. The Long Road Toward COVID-19 Herd Immunity: Vaccine Platform Technologies and Mass Immunization Strategies. Front Immunol. 2020 Jul 21;11:1817.   PMID: 32793245; PMCID: PMC7385234 DOI: 10.3389/fimmu.2020.01817

Dong M, He F, Deng Y. How to Understand Herd Immunity in the Context of COVID-19. Viral Immunol. 2021 Apr;34(3):174-181. Epub 2020 Dec 21. PMID: 33351708 DOI: 10.1089/vim.2020.0195

Jones D*, Helmreich S. A history of herd immunity. Lancet 2021; 396:810–1.* [DOI] [PMC free article] [PubMed] [Google Scholar]

Shim E*. Projecting the impact of SARS-CoV-2 variants and the vaccination program on the fourth wave of the COVID-19 pandemic in South Korea. Int J Environ Res Public Health.*

2021;18(14):7578 doi: 10.3390/ijerph18147578 [DOI] [PMC free article] [PubMed] [Google Scholar]

Nejadghaderi SA, Safiri S. J Med Virol. 2021 May;93(5):2578-2579. doi: 10.1002/jmv.26768. Epub 2021 Feb 23. PMID: 33386744 No abstract available.

Morens, D. M., Folkers, G. K., & **Fauci, A. S**. (2022). The Concept of Classical Herd Immunity May Not Apply to COVID-19. *The Journal of infectious diseases*, *226*(2), 195–198. https://doi.org/10.1093/infdis/jiac109 PMID: **35356987** PMCID: PMC9129114 DOI: 10.1093/infdis/jiac109

***Liu H**, Zhang J, Cai J, et al. Herd immunity induced by COVID-19 vaccination programs to suppress epidemics caused by SARS-CoV-2 wild type and variants in China.medRxiv:2021.07.23.21261013. 10.1101/2021.07.23.21261013.* [DOI]

She J, Hou D, Chen C, Bi J, Song Y. Challenges of vaccination and herd immunity in COVID-19 and management strategies. Clin Respir J. 2022 Nov;16(11):708-716. doi: 10.1111/crj.13543. Epub 2022 Sep 29. PMCID: PMC9539035 PMID: 36172975

Mukherjee S, Ray SK. Challenges in Engendering Herd Immunity to SARS-CoV-2 Infection: Possibly Impossible But Plausibile. Infect Disord Drug Targets. 2022;22(4):e170122200309. . PMID: **35040409** DOI: 10.2174/1871526522666220117153838

Suryawanshi YN, Biswas DA. Herd Immunity to Fight Against COVID-19: A Narrative Review. Cureus. 2023 Jan 9;15(1):e33575. doi: 10.7759/cureus.33575. PMCID: PMC9909126 PMID: 36779140.

Pacheco-García, U., & Serafín-López, J. (2023). Indirect Dispersion of SARS-CoV-2 Live-Attenuated Vaccine and Its Contribution to Herd Immunity. *Vaccines*, *11*(3), 655. https://doi.org/10.3390/vaccines11030655 PMID: **36992239** PMCID: PMC10055900 DOI: 10.3390/vaccines11030655

Herd immunity and COVID-19: What you need to know
Understand what's known about herd immunity and what it means for illnesses like COVID-19.
By Mayo Clinic Staff
June 01, 2024 https://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/herd-immunity-and-coronavirus/art-20486808

- Herd immunity may not be possible when viruses change a lot in a short time, as with the virus that causes COVID-19.
- Reaching herd immunity is harder if a disease can be spread by people who catch the virus but don't have symptoms.
- Herd immunity is much harder to achieve if the protection from having and recovering from the illness or getting a vaccine doesn't last a long time.

Spread of the viruses that cause COVID-19, flu and RSV are examples of when herd immunity may not be a realistic goal. With this type of illness, the goal is to control and limit the spread of the virus.

Herd immunity: understanding COVID-19. Randolph HE, Barreiro LB. Immunity. 2020;52:737–741. doi: 10.1016/j.immuni.2020.04.012. [DOI] [PMC free article] [PubMed] [Google Scholar]

The long road toward COVID-19 herd immunity: vaccine platform technologies and mass immunization strategies. Frederiksen LS, Zhang Y, Foged C, Thakur A. Front Immunol. 2020;11:1817. doi: 10.3389/fimmu.2020.01817. [DOI] [PMC free article] [PubMed] [Google Scholar]

Herd immunity - estimating the level required to halt the COVID-19 epidemics in affected countries. Kwok KO, Lai F, Wei WI, Wong SY, Tang JW. J Infect. 2020;80:0–3. doi: 10.1016/j.jinf.2020.03.027. [DOI] [PMC free article] [PubMed] [Google Scholar]

COVID-19 vaccines and herd immunity: perspectives, challenges and prospects. Wong RS. https://pubmed.ncbi.nlm.nih.gov/34448786/ Malays J Pathol. 2021;43:203–217. [PubMed] [Google Scholar]

Herd immunity to COVID-19. Kadkhoda K. Am J Clin Pathol. 2021;155:471–472. doi: 10.1093/ajcp/aqaa272. [DOI] [PMC free article] [PubMed] [Google Scholar]

Segmentation and shielding of the most vulnerable members of the population as elements of an exit strategy from COVID-19 lockdown. van Bunnik BA, Morgan AL, Bessell PR, et al. Philos Trans R Soc Lond B Biol Sci. 2021;376:20200275. doi: 10.1098/rstb.2020.0275. [DOI] [PMC free article] [PubMed] [Google Scholar]

COVID-19: individual and herd immunity. Bach JF, Berche P, Chatenoud L, Costagliola D, Valleron AJ. C R Biol. 2021;344:7–18. doi: 10.5802/crbiol.41. [DOI] [PubMed] [Google Scholar]

Great expectations of COVID-19 herd immunity. Giurgea LT, Morens DM. mBio. 2022;13:0. doi: 10.1128/mbio.03495-21. [DOI] [PMC free article] [PubMed] [Google Scholar]

Five reasons why COVID herd immunity is probably impossible. Aschwanden C. Nature. 2021;591:520–522. doi: 10.1038/d41586-021-00728-2. [DOI] [PubMed] [Google Scholar]

A herd immunity approach to the COVID-19 pandemic? Takefuji Y. Health Technol (Berl) 2022;12:1037–1041. doi: 10.1007/s12553-022-00676-5. [DOI] [PMC free article] [PubMed] [Google Scholar]

Core concept: herd immunity is an important-and often misunderstood-public health phenomenon. McDermott A. Proc Natl Acad Sci U S A. 2021;118:0. doi: 10.1073/pnas.2107692118. [DOI] [PMC free article] [PubMed] [Google Scholar]

The herd-immunity threshold must be updated for multi-vaccine strategies and multiple variants. Yadegari I, Omidi M, Smith SR. Sci Rep. 2021;11:22970. doi: 10.1038/s41598-021-00083-2. [DOI] [PMC free article] [PubMed] [Google Scholar]

[Impact of Microbiota: A Paradigm for Evolving Herd Immunity against Viral Diseases](#) Viruses 2020

[Challenges of vaccination and herd immunity in COVID-19 and management strategies](#) Clin Respir J 2022

[Can Africa achieve herd immunity?](#) Glob Health Res Policy 2021
https://vaxopedia.org/tag/herd-immunity/

ΠΡΩΤΟΚΟΛΛΑ ΠΡΟΛΗΨΗΣ ΚΑΙ ΘΕΡΑΠΕΙΑΣ COVID

Είναι γενικά αποδεκτό ότι σε όλες τις χώρες υπήρξαν ελλείψεις στον σχεδιασμό για τον τρόπο πρόληψης και μετάδοσης του ιού. Ο ιός εξακολουθεί να ενδημεί και μεταλλάσσεται συνεχώς και όλοι σκέπτονται ότι θα ήταν πολύ καλύτερη η έκβαση αν είχε πέσει το βάρος αλλού και όχι αποκλειστικά στα εμβόλια…

Πρέπει λοιπόν να συσταθούν επιτροπές επιστημόνων που θα ασχοληθούν με τη σύνταξη σωστών πρωτοκόλλων πρόληψης και θεραπείας . Τα πρωτόκολλα της FLCCC που πρόσφατα μετονομάστηκε Independent Medical Alliance, είναι πολύ καλό πρότυπο με δοκιμασμένη επιτυχία.

FLCCC

I-PREVENT Covid - Flu and RSV Protection Protocol [Internet]. Independent Medical Alliance; I-prevent: covid, flu and rsv. Available from: https://covid19criticalcare.com/protocol/i-prevent-covid-flu-rsv/

I-PREVENT Vaccine Injury [Internet]. Independent Medical Alliance; Available from: https://imahealth.org/protocol/i-prevent-vaccine-injury/

https://imahealth.org/protocol/i-care-early-covid-treatment/

https://imahealth.org/protocol/i-care-for-kids/

https://imahealth.org/protocol/math-covid-hospital-treatment/

https://imahealth.org/protocol/i-recover-post-vaccine-treatment/

https://imahealth.org/protocol/i-recover-long-covid-treatment/

Peter McCullugh Protocols

McCullough PA, Kelly RJ, Ruocco G, Lerma E, Tumlin J, Wheelan KR, Katz N, Lepor NE, Vijay K, Carter H, Singh B, McCullough SP, Bhambi BK, Palazzuoli A, De Ferrari GM, Milligan GP, Safder T, Tecson KM, Wang DD, McKinnon JE, O'Neill WW, Zervos M, Risch

HA. Pathophysiological Basis and Rationale for Early Outpatient Treatment of SARS-CoV-2 (COVID-19) Infection. Am J Med. 2021 Jan;134(1):16-22. doi: 10.1016/j.amjmed.2020.07.003. Epub 2020 Aug 7. PMID: 32771461; PMCID: PMC7410805.

https://www.petermcculloughmd.com/

ΕΟΔΥ

https://eody.gov.gr/en/covid-19/

ΚΙΝΔΥΝΟΙ ΑΠΟ ΚΑΚΗ ΤΕΧΝΙΚΗ ΕΜΒΟΛΙΑΣΜΟΥ – ΠΑΡΑΛΕΙΨΗ ΑΝΑΡΡΟΦΗΣΗΣ ΠΡΟ ΤΗΣ ΕΓΧΥΣΗΣ

Είναι γνωστό ότι τα εμβόλια που έχουν αδειοδοτηθεί, τόσο για ενήλικες όσο και για παιδιά, βάσει των οδηγιών των κατασκευαστριών εταιρειών, προορίζονται αποκλειστικά για ενδομυϊκή χρήση. Ωστόσο, στα βίντεο που προβάλλονταν διαρκώς με επωνύμους και μη για να παρακινηθούν όλοι να εμβολιαστούν, ήταν σπάνιες οι φορές που βλέπαμε να εισέρχεται ενδομυϊκά η βελόνη, σε βαθμό που μπερδεύνταν ακόμη και ιατροί και νόμιζαν ότι το εμβόλιο πρέπει να χορηγείται υποδορίως! Επίσης, με έκπληξη είδαμε ότι ούτε μία φορά δεν προηγήθηκε της έγχυσης αναρρόφηση! Ερωτήθηκαν διάφοροι από τους υπευθύνους και οι απαντήσεις έδειχναν ότι υπήρχε εντολή να μη γίνεται αναρρόφηση!. Και ναι μεν οι οδηγίες για εκτέλεση ενδμυικής ένεσης συμβατικών εμβολίων έχουν αλλάξει τα τελευταία χρόνια και συνιστούν να παραλείπεται η αναρρόφηση χάριν απλούστευσης των χειρισμών και ελάττωσης του πόνου στα παιδιά, στην συγκεκριμένη περίπτωση όμως ,επρόκειτο για ένα σκεύασμα που δεν γνωρίζαμε τι συνέπειες θα μπορούσε να έχει τυχόν ενδαγγειακή έγχυσή του… Από τη στιγμή μάλιστα που άρχισαν να γίνονται γνωστές περιπτώσεις μυοκαρδίτιδας, αρκετοί επιστήμονες έκαναν τη σκέψη ότι μπορεί να ευθύνεται τουλάχιστον σε κάποιες από αυτές, η τυχαία είσοδος της βελόνης σε αγγείο. Κάποιοι επιστήμονες της Δανίας, που διατηρεί ως υποχρεωτική την αναρρόφηση προ της έγχυσης όλων των εμβολίων, ακούστηκαν να λένε ότι έμμεση ένδειξη της πιθανής υπαιτιότητας παράλειψης της αναρρόφησης στην πρόκληση μυοκαρδίτιδας, είναι το σημαντικα χαμηλότερο ποσοστό μυοκαρδίτιδας στην Δανία σε σύγκριση με άλλη Σκανδιναβική χώρα. Δυστυχώς όμως, εξ όσων γνωρίζουμε, αυτό δεν αποτυπώθηκε ως τώρα σε κάποια δημοσίευση…

Οι παρακάτω παραπομπές συνηγορούν υπέρ της αναγκαιότητας εκτέλεσης αναρρόφησης.

Li C, Chen Y, Zhao Y, Lung DC, Ye Z, Song W, et al. Intravenous injection of coronavirus disease 2019 (COVID-19) mRNA vaccine can induce acute myopericarditis in mouse model. Clin Infect Dis 2022; 74(11):1933-50.

At present, the World Health Organization, and various national authorities, including the U.S. Centers for Disease Control and Prevention do not recommend aspirating prior COVID-19 vaccine administration. Contrary to this, Danish Serum Institute is still recommending this practice and provides a guideline on how to perform it correctly

Vaccine Administration. 2021. https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html

Η Δανία εξακολουθεί να συνιστά αναρρόφηση προ της έγχυσης

Name. Intramuskulær injektion på børn og voksne n.d. 2022.
https://www.ssi.dk/vaccinationer/injektionsteknik/intramuskulaer-injektion-beorn-og-voksne

Dr Peter Aabe *https://www.youtube.com/watch?v=kncohD7yWIc*

Dr. John Campbell,

"I think most people in the UK and the United States are giving the vaccines wrongly," said Dr. John Campbell, a retired nurse lecturer in the UK who advocates for aspiration, in a YouTube video

"This really has to change," he added.

However, other experts say previous research on plunger withdrawal found it had more drawbacks than benefits.

"You have to leave the needle in longer," said Dr. Kirk Knowlton, the director of cardiovascular research at Intermountain Medical Center Heart Institute in Salt Lake City, Utah. "It gets jiggled around a little bit. It's more painful."

Dr. Knowlton *said tweaking the injection method sounds simple, but it would require new training on a large scale.*

Many experts question whether there is a need to adjust the vaccination technique in the first place. Myocarditis occurs about twice after every 100,000 injections. On top of that, research shows it's typically mild and resolves quickly.

"I think that gives us a pause before we drastically and dramatically change our overall strategy," Knowlton said.

However, the study on mice has prompted some countries to revisit their recommendations. Denmark and Hong Kong now instruct providers to pull back the stopper to check for blood before injecting vaccines.

"I think it's something that we should consider from a public health perspective," Dr. Schooley said. "I think that the inconvenience of it is actually relatively minimal. We've got the personnel to do it. And it would be a good way to test this hypothesis."

The researchers behind the study hypothesize mRNA might inadvertently enter a vein, sending instructions to cells in the heart that temporarily provoke unwanted immune activity in that area. They demonstrated that the heart cells in mice produced spike proteins, but there has been no such evidence in humans.

Dr. Knowlton, who specializes in mice studies, said the theory was intriguing, but cautioned that other factors could be at play.

The mice received a very large dose of mRNA and their immune systems function slightly differently, he said.

He said the findings should ultimately reassure the public that the risks from myocarditis, regardless of the method of vaccine administration, are exceedingly low.

"Even when they gave it intravenously, the mice did surprisingly well," Knowlton said.

Li C, Chen Y, Zhao Y, Lung DC, Ye Z, Song W, et al. Intravenous injection of COVID-19 mRNA vaccine can induce acute myopericarditis in mouse model. Clin Infect Dis. 2021 doi: 10.1093/cid/ciab707. [DOI] [PMC free article] [PubMed] [Google Scholar]

Nicolai L, Leunig A, Pekayvaz K, et al. Thrombocytopenia and splenic platelet directed immune responses after intravenous ChAdOx1 nCov-19 administration. BioRxiv 2021; doi: [10.1101/2021.06.29.450356](10.1101/2021.06.29.450356) Google Scholar WorldCat

Cichon G, Schmidt HH, Benhidjeb T, Löser P, Ziemer S, Haas R, et al. Intravenous administration of recombinant adenoviruses causes thrombocytopenia, anemia and erythroblastosis in rabbits. J Gene Med. 1999;1:360–371. doi: 10.1002/(SICI)1521-2254(199909/10)1:5<360::AID-JGM54>3.0.CO;2-Q. [DOI] [PubMed] [Google Scholar]

Merchant H. Inadvertent injection of COVID-19 vaccine into deltoid muscle vasculature may result in vaccine distribution to distance tissues and consequent adverse reactions. Postgrad Med J. 2021 doi: 10.1136/postgradmedj-2021-141119. [DOI] [PubMed] [Google Scholar]

Rahamimov N, Baturov V, Shani A, Ben Zoor I, Fischer D, Chernihovsky A. Inadequate deltoid muscle penetration and concerns of improper COVID mRNA vaccine administration can be avoided by injection technique modification. Vaccine. 2021;39:5326–5330. doi: 10.1016/j.vaccine.2021.06.081. [DOI] [PMC free article] [PubMed] [Google Scholar]

To aspirate or not to aspirate? Considerations for the ...

National Institutes of Health (NIH) (.gov)

https://pmc.ncbi.nlm.nih.gov › articles › PMC8941363

COVID-19: How Wrong Injection Technique is Causing Blood ...

YouTube · India Today

184,6K+ views · 3 years ago

Need for vaccine aspiration confirmed, why is this not ...

YouTube · Dr. John Campbell

1M+ views · 3 years ago

Reason given was that *aspiration* would waste a vaccin dose in case it was found the injection was *not* done in muscle. This was in The ...

[3:18]

The wrong injection techniques used to administer copic 19 vaccines may …

by P Rzymski · 2022 · Cited by 14 — The appearance of *blood* in the syringe indicates that this is a case and shall result in another *vaccination* attempt. In this situation, the ...

[**Covid-19: 'Wrong injection technique could also be leading ...**]

[**Times of India**]

[***https://timesofindia.indiatimes.com › India News***]

3 Jul 2021 — A new study shows that *wrong injection technique could be one of the reasons behind clotting* following inoculation by adeno virus-based Covid vaccines.

[**To aspirate or not to aspirate? Considerations for the ...**]

Rzymski P, Fal A. To aspirate or not to aspirate? Considerations for the COVID-19 vaccines. Pharmacol Rep. 2022 Dec;74(6):1223-1227. doi: 10.1007/s43440-022-00361-4. Epub 2022 Mar 23. PMID: 35320581; PMCID: PMC8941363.

[**National Institutes of Health (NIH) (.gov)**]

[***https://pmc.ncbi.nlm.nih.gov › articles › PMC8941363***]

[**AstraZeneca vaccine: pull back or push through?**]

[**LinkedIn · Pieter J. Gaillard**]

[*150+ reactions · 3 years ago*]

If **there is** ***blood*** **in the syringe, then the injection must be reinserted with a new needle. Otherwise, the** ***vaccine*** **may well enter the bloodstream ...**

Why vaccines are injected in your upper arm muscle, and ...

ABC

Australian Broadcasting Corporation

https://www.abc.net.au › news › science › covid-19-vac...

7 Jan 2021 — Injecting ***vaccines*** **into muscle also has very few severe side effects, and overall invokes less inflammation than a** ***vaccine*** **in a** ***vein*****.**

Dr. Roach: Intramuscular injection usually easy and safe

The Detroit News

The Detroit News

https://www.detroitnews.com › life › advice › 2020/06/05

5 Jun 2020 — ***It is extremely unlikely that you'll hit a blood vessel*****, and the practice of aspiration is now discouraged by the Centers for Disease Control ...**

Avoiding shoulder injury related to vaccine administration

Australian Government Department of Health and Aged Care

https://immunisationhandbook.health.gov.au › files

PDF

Shoulder injury related to ***vaccine*** **administration (SIRVA) is a rare complication of incorrect** ***vaccine*** **administration,** ***when*** **the** ***vaccine*** **is given too high into ..**

Acute limb ischemia secondary to vaccine-induced ...

ScienceDirect.com

https://www.sciencedirect.com › science › article › pii

by B Xie · 2023 — We report three cases of limb ischemia from arterial occlusion occurring after *vaccination* with various COVID-19 *vaccines* at a single healthcare system.

Faulty method of injecting vaccine could cause clotting

New Telegraph

https://newtelegraphng.com › faulty-method-of-injectin...

8 Jul 2021 — "*When* the skin is pinched up, the needle tip reaches only the subcutaneous tissue. As a result, the *vaccine* is not absorbed properly and may *hit* ...

by P Rzymski · 2022 · Cited by 14 — There is evidence that performing an *aspiration* during intramuscular *injection* (including *vaccination*) can increase pain at the *injection* site ...

COVID-19 vaccines and cardiac inflammation

Australian Government Department of Health and Aged Care

https://www.health.gov.au › myocarditis-pericarditis

12 Jan 2024 — Cases of *myocarditis* and pericarditis after *COVID*-19 *vaccines* are rare: mostly reported in males under 40 years of age, after the second dose.

Missing: OMITTING ASPIRATION

Autopsy findings in cases of fatal COVID-19 vaccine ...

[Wiley Online Library](https://onlinelibrary.wiley.com)

https://onlinelibrary.wiley.com › doi › ehf2

by N Hulscher · 2024 · Cited by 34 — This systematic review aims to investigate potential causal links between *COVID*-19 *vaccines* and death from *myocarditis* using post-mortem analysis.

Myocarditis after COVID-19 Vaccines

Centers for Disease Control and Prevention | CDC (.gov)

https://www.cdc.gov › covid-19 › clinical-considerations

Cases of *myocarditis* and pericarditis have rarely been observed after *COVID*-19 *vaccination* in the United States and evidence from multiple *vaccine* safety ...

covid-19-vaccine-reference-guide. ...

Australian Government Department of Health and Aged Care

https://www.health.gov.au › sites › default › files

DOC

As *COVID*-19 has mutated into different strains, including Delta and Omicron, the clinical symptoms profile has changed. Omicron is more transmissible than the ...

News-Medical, Thomas L. Free spike proteins in the blood appear to play a role in myocarditis post-COVID mRNA vaccine. News-Medical. Published January 5, 2023. https://www.news-medical.net/news/20230105/Free-spike-proteins-in-the-blood-appear-to-play-a-role-in-myocarditis-post-COVID-mRNA-vaccine.aspx

5 Jan 2023 — All developed *myocarditis* after receiving the *COVID*-19 *vaccine*, typically within a week of the second dose. However, a few became sick after the ...

[Myocarditis and Covid-19 vaccines]

[British Heart Foundation]

https://www.bhf.org.uk › coronavirus-and-your-health

***There's a link between mRNA Covid-19 vaccines and an increased risk of myocarditis* and pericarditis. Myocarditis is inflammation of the heart muscle.**

AstraZeneca Covid vaccine · Myocarditis · Read the article · Heart and Coronavirus

[Q&A: What Causes Rare Instances of Myocarditis After mRNA ...]

[Yale School of Medicine]

https://medicine.yale.edu › news-article › qanda-what-c...

16 May 2023 — *Myocarditis is a rare side effect of mRNA COVID-19 vaccines*, which have been used with great success as protection against the SARS CoV-2 virus ...

[Aspiration before intramuscular vaccines injection, should ...]

[National Institutes of Health (NIH) (.gov)]
https://pmc.ncbi.nlm.nih.gov › articles › PMC8783631

by Á Herraiz-Adillo · 2022 · Cited by 4 — In terms of efficacy, there may be a risk of a rapid drop in immunogenicity with the intravascular injection of *vaccines* due to rapi

[Effects of Rapid Vaccine Injection Without Aspiration and ...]

[National Institutes of Health (NIH) (.gov)]

https://pubmed.ncbi.nlm.nih.gov › ...

by İ Göl · 2017 · Cited by 34 — Manual pressure and rapid injection *without aspiration* are effective and useful in relief of pain and reduction of crying time due to *vaccine* injections.

[Chapter 6: Vaccine Administration | Pink Book]

[Centers for Disease Control and Prevention | CDC (.gov)]

https://www.cdc.gov › hcp › table-of-contents › chapter...

by VAP Book — Inject Vaccines Rapidly Without Aspiration Aspiration can increase pain because of the combined effects of a longer needle-dwelling time in the ...

[Effects of Rapid Vaccine Injection Without Aspiration and ...]

[Wiley]

https://sigmapubs.onlinelibrary.wiley.com › full › wvn

by İ Göl · 2017 · Cited by 34 — The mean oxygen saturation during and after *vaccine* injections was significantly lower in the rapid injection *without aspiration* group than in ...

[Intramuscular injection safety without aspiration in the ...]

[SciELO Brasil]

https://www.scielo.br › reben

by AMOA Silva · 2021 · Cited by 2 — The intramuscular vaccination technique without aspiration in the ventro-gluteal region *is safe for adverse events following immunization*.

[ABSTRACT] · [RESUMEN] · [RESUMO] · [Text]

[Vaccine administration practices: Canadian Immunization ...]

[Canada.ca]

[https://www.canada.ca › publications › healthy-living]

5 Sept 2024 — Injection *without aspiration*. *Aspiration prior* to injection of *vaccine* is *not* recommended, as there are *no* large blood vessels at the ...

[Vaccinating behaviour guided by imitation and aspiration]

[Royal Society]

[https://royalsocietypublishing.org › doi › rspa.2020.0327]

by MR Arefin · 2020 · Cited by 22 — *Vaccinating* decisions can be influenced by imitation as well as self-evaluation or *aspiration*. This work analyses *vaccinating* behaviours by ...

[Why we don't aspirate when we vaccinate]

[SaskHealthAuthority] *[https://www.saskhealthauthority.ca › news-events › news]*

1 Dec 2021 — As well, *aspiration can cause vaccinations to be more painful*, which is something we would all like to avoid. Simply put, there is no benefit ...

[Effects of Rapid Vaccine Injection Without Aspiration and ... ResearchGate]

[https://www.researchgate.net › publication › 31386354...]

22 Oct 2024 — ... These studies found that the *vaccine* injections administered by *aspiration* were more painful compared to injections administered quickly and ...

Effects of Rapid Vaccine Injection Without Aspiration and ... Wiley

https://sigmapubs.onlinelibrary.wiley.com › pdf › wvn

by İ Göl · 2017 · Cited by 34 — However, two infants in the rapid injection *without aspiration* group had low oxygen saturation levels starting *before* the injections. In fact, mean oxygen ...

To aspirate or not to aspirate? Considerations for the ...

Springer *https://link.springer.com › Pharmacological Reports*

by P Rzymski · 2022 · Cited by 14 — There is evidence that performing an *aspiration* during intramuscular injection (including *vaccination*) can increase pain at the injection site ...

Aspiration in injections: should we continue or

ProQuest *https://www.proquest.com › scholarly-journals › docview*

Current guidelines published by the American Academy of Pediatrics (AAP) [57] recommend that *aspiration prior* to IM *vaccinations* may *not* be necessary, while ...

Administration of vaccines | The Australian Immunisation ...

Australian Government Department of Health and Aged Care

https://immunisationhandbook.health.gov.au › contents

It is *not* necessary to draw back on the syringe plunger *before* injecting a *vaccine*.[16] *Aspiration* can increase pain because of the combined *effects* of a ...

Aspiration in injections: should we continue or...

F1000Research

https://f1000research.com › Browse

by Y Sepah · 2017 · Cited by 33 — Similarly, the US CDC guidelines for administration of *vaccines* have clear instructions *not* to *aspirate before* injection (for both IM and SC routes), as *no* ...

(PDF) The effect of the rapid injection technique without ... ResearchGate

https://www.researchgate.net › ... › Pain

by I Gol · 2020 · Cited by 6 — Recommended sites for *vaccine* administration do *not* have large blood vessels and there are *no* studies reporting any damage from non-*aspiration* ...

Ask the Experts: Administering Vaccines Immunize.org

https://www.immunize.org › Ask the Experts

27 Jan 2025 — Administering *Vaccines*; General Issues. Do you need to *aspirate before* giving a *vaccination*? *No*. ACIP does *not* recommend *aspiration* when ...

Immunisation procedures

GOV.UK*https://assets.publishing.service.gov.uk › media*

PDF

Vaccines should not be drawn up in advance of an immunisation session. The vaccine must be checked to ensure that the right product and correct dose is used in ...

Persistence in risk and effect of COVID-19 vaccination on ...

Nature*https://www.nature.com › ... › articles*

PDF by World Health Organization · 2019 · Cited by 107 — Symptoms may begin before, during or immediately after vaccination. The manifestations are those of an acute stress response and/or a vasovagal reaction. A ...

Vaccination before or after anaesthesia or surgery

Australian Government Department of Health and Aged Care

https://immunisationhandbook.health.gov.au › contents

8 Jun 2018 — *There is no evidence of adverse outcomes* related to anaesthesia and surgery in recently vaccinated children. However, the systemic effects of ...

Missing: ASPIRATION | Show results with: ASPIRATION

Why vaccination is important and the safest way to protect ...

NHS

nhs.uk

https://www.nhs.uk › vaccinations › why-vaccination-is...

However, if people stop having *vaccines*, it's possible for infectious diseases to quickly spread again. Information: The World Health Organization (WHO) has ...

Missing: ASPIRATION | Show results with: ASPIRATION

Vaccine hesitancy

W

Wikipedia

https://en.wikipedia.org › wiki › Vaccine_hesitancy

***Vaccine* hesitancy often *results* in disease outbreaks and deaths from *vaccine*-preventable diseases.**

Vaccinations in Athletes

German Journal of Sports Medicine

https://www.germanjournalsportsmedicine.com › issue-6

In individual athletes, however, systemic *vaccine*-related responses like fatigue, myalgia, and headache may be considerably stronger and longer lasting.

Vaccine safety and side effects

European Vaccination Information Portal

https://vaccination-info.europa.eu › about-vaccines › vac...

Vaccine side effects can include *mild fever or pain or redness at the injection site*. Serious side effects are very rare.

Missing: ASPIRATION | Show results with: ASPIRATION

No "aspiration before vaccination" causing serious side effects?

ktwop.com

https://ktwop.com › 2021/03/26 › no-aspiration-before-...

26 Mar 2021 — However it now seems that one of the causes of the *vaccine* side-*effects* may be because basic *vaccination* techniques are *not* being followed.

Registered nurse standards for practice

Nursing and Midwifery Board of Australia

https://www.nursingmidwiferyboard.gov.au › registered-...

Registered nurse (RN) practice is person-centred and evidence-based with preventative, curative, formative, supportive, restorative and palliative elements.

28 Sept 2023 — Cerebral palsy is a group of conditions that affect movement and posture. It's caused by damage that occurs to the developing brain, most often before birth.

The NHS Constitution for England

GOV.UK

https://www.gov.uk › ... › NHS Constitution for England

17 Aug 2023 — This Constitution establishes the principles and values of the NHS in England. It sets out rights to which patients, public and staff are entitled, and pledges

Reasons to Vaccinate

Centers for Disease Control and Prevention | CDC (.gov)

https://www.cdc.gov › vaccines-children › reasons

9 Aug 2024 — Without vaccines, *your child is at risk of becoming seriously ill* or even dying from childhood diseases such as measles and whooping cough. It ...Missing: ASPIRATION | Show results with: ASPIRATION

A/79/79-E/2024/54 General Assembly Economic and ...

UNSD

https://unstats.un.org › sdgs › files › report › SG-S...

PDF

2 May 2024 — Some regions, including sub-Saharan Africa, are facing teacher shortages, high student-teacher ratios, and inadequate training and lack of ...

[No, doctors don't need to aspirate the injection when giving ...]

YouTube · WBNS 10TV

25,2K+ views · 3 years ago

2:45

The nurse or doctor should not aspirate the vaccine when injecting into the deltoid muscle where your coven 19 vaccine is administered.

Vacancies | UNICEF Careers

Unicef

https://jobs.unicef.org

Search for jobs. Contract type: Consultant, Fixed Term Appointment, Internship, Temporary Appointment. Locations: East Asia and Pacific Region.

Do not aspirate or drawback as *this can increase pain and discomfort in children*; Inject the medication at a slow and steady pace; Remove the needle and apply ...

***Global Vaccine* Leader. Through the power of innovation, our vision is to advance science to enhance public health worldwide. We stand on the front line with ...**

There have been a small number of reports of serious and life-threatening anticholinergic side *effects* associated with hyoscine hydrobromide patches, ...

Do *not* drive yourself to A&E. The person you ... It may also be caused by something getting into your lungs, such as water or food (*aspiration* pneumonia).

View metronidazole information, including dose, uses, side-*effects* ... Our website cannot function properly *without* these cookies and they can only be deactivated ...

14 Jul 2023 — Let a health care provider know if you have a high fear of needles or a history of fainting *before*, during or after *vaccination*. You may be able ...

(PDF) The effect of the rapid injection technique without ...

ResearchGate *https://www.researchgate.net › ... › Pain*

by I Gol · 2020 · Cited by 6 — Recommended sites for *vaccine* administration do *not* have large blood vessels and there are *no* studies reporting any damage from non-*aspiration* ...

Ask the Experts: Administering Vaccines

Immunize.org

https://www.immunize.org › Ask the Experts

27 Jan 2025 — Administering *Vaccines*; General Issues. Do you need to *aspirate before* giving a *vaccination*? *No*. ACIP does *not* recommend *aspiration* when ...

[Immunisation procedures](https://assets.publishing.service.gov.uk)

GOV.UK

https://assets.publishing.service.gov.uk › media

PDF

***Vaccines should not be drawn up in advance of an immunisation session*. The vaccine must be checked to ensure that the right product and correct dose is used in ...**

Persistence in risk and effect of COVID-19 vaccination on ...

Nature

https://www.nature.com › ... › articles

No “aspiration before vaccination” causing serious side effects?

ktwop.com

https://ktwop.com › 2021/03/26 › no-aspiration-before-...

26 Mar 2021 — However it now seems that one of the causes of the *vaccine* side-*effects* may be because basic *vaccination* techniques are *not* being followed.

Registered nurse standards for practice

[Nursing and Midwifery Board of Australia](https://www.nursingmidwiferyboard.gov.au)

https://www.nursingmidwiferyboard.gov.au › registered-...

Registered nurse (RN) practice is person-centred and evidence-based with preventative, curative, formative, supportive, restorative and palliative elements.

IDSA Practice Guidelines

IDSA

https://www.idsociety.org › practice-guideline › practic...

Summarized in this clinical practice guideline are recommendations for treatment and management of patients with COVID-19. On June 26, 2023, IDSA released ..

Nursing guidelines : Intramuscular Injections

The Royal Children's Hospital

https://www.rch.org.au › rchcpg › Intramuscular_Inject...

Do not aspirate or drawback as *this can increase pain and discomfort in children*; Inject the medication at a slow and steady pace; Remove the needle and apply ...

IDSA Practice Guidelines

IDSA
https://www.idsociety.org › practice-guideline › practic...

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Nursing guidelines : Intramuscular Injections

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https://www.rch.org.au › rchcpg › Intramuscular_Inject...

Do not aspirate or drawback as *this can increase pain and discomfort in children*; Inject the medication at a slow and steady pace; Remove the needle and apply ...

Aspiration Before Tissue Filler—An Exercise in Futility and ...

National Institutes of Health (NIH) (.gov)

https://pmc.ncbi.nlm.nih.gov › articles › PMC8670299

by GJ Goodman · 2022 · Cited by 45 — The available studies demonstrate that *aspiration cannot be relied on* and should not be employed as a safety measure. It is safer to adopt injection techniques ...

Aspiration before intramuscular vaccines injection, should ...

National Institutes of Health (NIH) (.gov)

https://pmc.ncbi.nlm.nih.gov › articles › PMC8783631

by Á Herraiz-Adillo · 2022 · Cited by 4 — Indeed, several randomised controlled studies have found that aspiration prior to intramuscular injection *can lead to increased pain in children*. However, this ...

How to Aspirate a Needle Before an Injection (And Why It's ...

CIA

CIA Medical

https://www.ciamedical.com › Medical Resources

26 Oct 2022 — When you aspirate a needle, *you can see if any blood flows back into the needle hub*. If so, this means that the tip of the needle has penetrated ...

New Injectors' Guide To Aspirating

Harley Academy

https://www.harleyacademy.com › new-injectors-guide-...

14 Mar 2022 — Strong negative pressure created by pulling the plunger back too far, or too quickly, whilst *aspirating can cause small vessels to collapse*.

Aspiration in injections: should we continue or

PQ

ProQuest

https://www.proquest.com › scholarly-journals › docview

Aspiration during any kind of injection is meant *to ensure that the needle tip is at the desired location* during this blind procedure.

Aspiration in Filler Injections: Study…

American Med Spa Association

https://americanmedspa.org › Blog Listing

13 Jul 2022 — Watching for that flash of blood *can help injectors determine if they have entered a vessel*, but a negative aspiration is no guarantee that ...

5 things you need to know about Aspirating

SkinViva Training Academy

https://www.skinvivatraining.com › 2017/09/21 › top-5...

21 Sept 2017 — Firstly, even a tiny amount of movement could potentially move your needle out of a safe zone into an artery in the time from completing ...

Aspirating versus not Aspirating Prior to Injection of ...

Canadian Agency for Drugs and Technologies in Health

https://www.cda-amc.ca › pdf › htis › nov-2014

PDF

It states that *aspiration is not necessary for IM injections* because the recommended anatomic sites for IM injections do not contain major blood vessels and it.

Missing: importance | Show results with: importance

[Neither Positive Nor Negative Aspiration Before Filler ...]

[Oxford Academic]

[https://academic.oup.com › asj › article-pdf › sjaa215]

by GJ Goodman · 2021 · Cited by 12 — The concept that a negative *aspiration* is protective also relies on the belief that the tip of the needle or cannula is stationary from the ...

[To aspirate or not: An integrative review of the evidence]

[Littleton Regional Healthcare]

[https://littletonhealthcare.org › NursesPages › files]

PDF

May or may not aspirate during an I.M. injection; aspiration during subcutaneous injection *isn't necessary*. • Aspiration before injection isn't necessary.

[A Critical Literature Review Analysing the Evidence Base ...]

[Gavin Publishers]

[https://www.gavinpublishers.com › article › view › a-crit...]

Aspiration immediately *prior* to the *injection* is often posed as a potential method for reducing the risk of vascular complications in aesthetic practice.

[Aspiration in injections: should we continue or abandon the ...]

ResearchGate

https://www.researchgate.net › Home › Injections

Aspiration during any kind of injection is meant *to ensure that the needle tip is at the desired location* during this blind procedure.

Vaccine administration practices: Canadian Immunization ...

Canada.ca

https://www.canada.ca › publications › healthy-living

5 Sept 2024 — *Aspiration prior* to *injection* of vaccine is not recommended, as there are no large blood vessels at the recommended immunization sites and not ...

Aspiration! Something that is widely taught

Cosmetic Courses

https://cosmeticcourses.co.uk › aspiration-something-th...

8 Apr 2024 — Aspiration is a technique that is widely taught to new injectors as *a way to assess safety* to gauge if they are intravascular in position.

Aspirating during the intramuscular injection procedure: a ...

Worktribe

https://hull-repository.worktribe.com › OutputFile

PDF

by H Sisson · Cited by 63 — It also highlights the importance of aspirating when using the dorsogluteal muscle due to its proximity to the gluteal artery. Administering an IM injection is ...

To Aspirate or Not Aspirate?

School of Nursing Online Journal

https://nursingjournal.co.nz › Fogarty-Brianna

PDF

This is often necessary when giving children *injections*. -*Aspiration* has the potential to cause tissue damage. (McGrath, 2005). It is *important* to continue to ...

To aspirate or not to aspirate? Considerations for the ...

Springer

https://link.springer.com › Pharmacological Reports

by P Rzymski · 2022 · Cited by 14 — Aspiration is a technique practiced to *avoid accidental vaccine injection* into a vessel during intramuscular administration. The appearance of ...

Intramuscular injections for neonates

Safer Care Victoria

https://www.safercare.vic.gov.au › neonatal › intramuscu...

As there are no large blood vessels in the recommended sites, *aspiration before injection* of vaccines (pulling back on the syringe plunger after needle ...

Intramuscular injection

W

Wikipedia

https://en.wikipedia.org › wiki › Intramuscular_injection

While historically aspiration, or pulling back on the syringe before injection, was recommended to *prevent inadvertent administration into a vein*, it is no ...

Pain During Intramuscular Injection Technique: To Aspirate ...

The Conference Exchange

https://stti.confex.com › stti › webprogram › Paper95571

28 Jul 2019 — Alberta Health Services states *aspiration may increase time the needle is in the tissue* but may also increase shearing (Alberta Health Services, ...

Joint Injections (Joint Aspirations)

R

American College of Rheumatology

https://rheumatology.org › patients › joint-injections-joi...

Removing joint fluid can provide pain relief and improve mobility. Fluid from a joint aspiration can be examined by a healthcare provider or sent for laboratory ...

[**Injection Techniques Clinical Skills Guidance**]

[University of Glasgow]

[*https://www.gla.ac.uk › Media_678206_smxx*]

PDF

Injections are usually used when a rapid action is required, if the drug is altered by intestinal sections or cannot be absorbed by the alimentary tract, when ...

[**Aspiration in injections: should we continue or abandon the ...**]

[ResearchGate]

[*https://www.researchgate.net › Home › Injections*]

Aspiration during any kind of injection is meant *to ensure that the needle tip is at the desired location* during this blind procedure.

[**Investigation of the Necessity of Aspiration During ...**]

[Sage Journals]

[*https://journals.sagepub.com › doi*]

In addition, it is considered that the *aspiration* procedure is required to be performed if the *injected* drug has serious systemic side effects (Crawford & ...

[**Why do you not need to aspirate with subcutaneous ...**]

[Quora]

[*https://www.quora.com › Why-do-you-not-need-to-asp...*]

This can be a concern for intramuscular injections, so *aspiration is a precaution against injecting directly into a vein*. In my practice, I had ...

[**Injection technique 1: administering drugs via the ...**]

[Nursing Times]

[*https://www.nursingtimes.net › assessment-skills › inject...*]

by E Shepherd · 2018 · Cited by 20 — The UKHSA (2013) does not recommend *aspiration* for IM vaccinations in the anterolateral aspect of the thigh or the deltoid area of the upper arm ...

[**Improving Patient Safety Associated with Intramuscular ...**]

[UNH Scholars Repository]

[*https://scholars.unh.edu › cgi › viewcontent*]

PDF

by A Annutto · 2023 · Cited by 1 — However, for some medications that carry a higher risk of complications, *aspiration* may be a beneficial safeguard that could prevent a serious ...

[**Joint Aspiration and Injection: A Look at the Basics**]

HCPLive

https://www.hcplive.com › view › joint-aspiration-and-i...

7 Jun 2011 — *Joint aspiration may be used for diagnosis or for relieving pressure*, and joint injection may be used for treatment.

Medication Administration: Intramuscular Injections

Elsevier healthcare hub

https://elsevier.health › en-US › preview › intramuscula...

Aspiration before injection and slow *injection* of the medication are not supported by research for vaccine administration. For all other medications, there ...

Should a nurse aspirate when giving a vaccine?

Quora

https://www.quora.com › Should-a-nurse-aspirate-when...

It is normally done in *order to avoid accidental injection in a blood vessel*. As in the Deltoid muscle, like in any other muscle there are blood ...

Aspiration is an important safety feature that every injector ...

Instagram · thebeautyartistrn

40+ likes · 1 year ago

This is done *to avoid the adverse of occluding a vein or an artery* which would lead to major complications. This usually does not happen, but ...

Medication Administration: Intramuscular Injections

Elsevier healthcare hub

https://elsevier.health › en-US › preview › intramuscula...

Aspiration before injection and slow *injection* of the medication are not required for vaccine administration. ... The vastus lateralis and deltoid muscle are the ...

Aspiration

YouTube · Dr. John Campbell

94,3K+ views · 1 year ago

How to Perform Intramuscular *Injections* Like a Pro! Nurse Guide ... *Aspiration* prevention: What you need to know. Mass General for ...

Missing: importance | Show results with: importance

Immunisation procedures

GOV.UK

https://assets.publishing.service.gov.uk › media

PDF

Deep SC *injections* should be given with the needle at a 45º angle to the skin and the skin should be bunched, not stretched. It is not necessary to *aspirate* the ...

[7.3 Intradermal and Subcutaneous Injections]()

[BC Open Textbooks]()

https://opentextbc.ca › clinicalskills › chapter › 6-7-intra...

SC injections do not need to be *aspirated* as the likelihood of injecting into a blood vessel is small. Usually, no more than 1 ml of medication is given ...

[Aspirating for Blood When Administering Intramuscular (IM) ...]()

[Children's Mercy]()

https://www.childrensmercy.org › siteassets › ad...

PDF

To *aspirate* when giving an IM *injection*, is to apply negative pressure in the syringe after the needle is inserted and *before* medication is administered. To ...

Missing: importance | Show results with: [importance]()

[Nursing guidelines : Intramuscular Injections]()

[The Royal Children's Hospital]()

https://www.rch.org.au › rchcpg › Intramuscular_Inject...

The IM route allows for rapid absorption of specific medications. Choosing a muscle is dependent on the medication volume and the age or size of the patient.

7.4 Intramuscular Injections – Clinical Procedures for Safer ...

BC Open Textbooks

https://opentextbc.ca › clinicalskills › chapter › 6-8-iv-pu...

If required by agency policy, *aspirate* for blood *prior* to administering an IM medication. Upon *injection*, if a patient complains of radiating pain or a ...

The Importance of Aspirating When Injecting Dermal Fillers

rejuvenationaestheticacademy.com

https://rejuvenationaestheticacademy.com › Blog

25 Oct 2024 — What Is *Aspiration*? Aspirating is the process of pulling back on the plunger of the syringe *before injecting* the filler. This simple, yet vital ...

To aspirate or not: An integrative review of the evidence

Lippincott

https://journals.lww.com › Fulltext › To_aspirat...

EPUB

Reduced *injection* time, decreased *injection* pain, and increased immunization acceptance are particularly *important* in nursing care of children, who receive the ...

Fine-needle *aspiration* (FNA) uses a needle and syringe to get a tissue or fluid sample from a suspicious mass in your body. Healthcare providers use it to ...

Aspirating a Needle Before Injection

YouTube · Vitamin B12 Online

30,4K+ views · 8 years ago

Aspirating a Needle *Before Injection*. 30K views · 8 years ago ... What is *aspiration*? Davis Phinney Foundation for Parkinson's•24K ...

Vaccine Administration:Intramuscular (IM) Injection Infants ...

Centers for Disease Control and Prevention | CDC (.gov)

https://www.cdc.gov › hcp › admin › downloads

PDF

19 Jan 2022 — To ensure vaccines are safe and effective, it's *important* to prepare and administer them correctly: ... ▫ *Aspiration* (i.e., pulling back on the

Aspiration, more information

YouTube · Dr. John Campbell

255,4K+ views · 3 years ago

... *before* but it confirmed the *importance of aspiration*. JH hospital corpsman in the Navy, I gave thousands of *shots* over the 4+ years of duty ...

POST 00537E : ASPIRATION BEFORE INJECTION

TechNet-21

https://www.technet-21.org › community › discussions

No, doctors don't need to aspirate the injection when giving ...

YouTube · WBNS 10TV

25,2K+ views · 3 years ago

Platelet-rich plasma consists of two elements: plasma, or the liquid portion of blood, and platelets, a type of blood cell that plays an *important* role in ...

TO ASPIRATE OR NOT TO ASPIRATE?

https://www.bulksyringes.com/how-to-aspirate-a-needle-properly/

https://www.youtube.com/watch?v=lymvXYYPamM

This video also demonstrates aspirating - pulling back on the plunger to see whether the tip of the needle is in the blood vessel.
a little volume, a little hydration ..

https://www.youtube.com/watch?v=0TuO5yQjIHs

The ongoing debate on *aspiration*! While I usually *aspirate* when *injecting*, some argue that excessive needle movement can reduce control.

Needle Aspiration | Totality of Evidence

TE

totalityofevidence.com

https://totalityofevidence.com › aspiration-of-syringe-b...

23 Jun 2022 — Following are links surrounding the debate as to whether to *aspirate* the syringe *before injecting* a vaccine, especially the COVID-19 ...

Aspiration not required.

LinkedIn · Monica Williams DNP, MNSc, BSN, APRN, FNP-C

1 reaction · 5 years ago

The long-standing argument has consistently been, in order to make sure that you are not *injecting* the serum into a blood vessel or an artery by .

Need for vaccine aspiration confirmed, why is this not ...

YouTube · Dr. John Campbell

1M+ views · 3 years ago

Reason given was that *aspiration* would waste a vaccin dose in case it was found the *injection* was not done in muscle. This was in The ...

Aspiration before intramuscular vaccines injection, should ...

National Institutes of Health (NIH) (.gov)

https://pmc.ncbi.nlm.nih.gov › articles › PMC8783631

by Á Herraiz-Adillo · 2022 · Cited by 4 — Indeed, several randomised controlled studies have found that aspiration prior to *intramuscular injection* can lead to increased pain in children. However, this ...

What happens if you don't aspirate when giving an IM ...

Quora

https://www.quora.com › What-happens-if-you-dont-as...

The purpose of *aspirating* is to check *if you* have the tip of the needle in a blood vessel. *If you*

PDF

This is often necessary when giving children injections. -Aspiration has the potential to cause tissue damage (McGrath, 2005). It is important to continue to ...

How to Aspirate a Needle Before an Injection (And Why It's ...

CIA

CIA Medical

https://www.ciamedical.com › Medical Resources

26 Oct 2022 — *If you* do not *aspirate* a needle and proceed with an *injection* in an area where major blood vessels are present, there's a risk that you could ...

Aspirating during the intramuscular injection procedure

National Institutes of Health (NIH) (.gov)

https://pubmed.ncbi.nlm.nih.gov › ...

by H Sisson · 2015 · Cited by 63 — The majority of health professionals do not aspirate for the recommended 5-10 seconds. Administering an injection faster without aspiration is less *painful*.

Vaccine administration practices: Canadian Immunization ...

Canada.ca

https://www.canada.ca › publications › healthy-living

5 Sept 2024 — *Injection* without aspiration. Aspiration prior to *injection* of vaccine is not recommended, as there are no large blood vessels at the ...

Injection Techniques Clinical Skills Guidance

University of Glasgow

https://www.gla.ac.uk › Media_678206_smxx

PDF

For deep *IM injection aspirate*, *if* blood appears withdraw needle, replace and start again ... • Do not *aspirate if giving* a preloaded vaccine. Page 9 ...

Administration of vaccines | The Australian Immunisation ...

Australian Government Department of Health and Aged Care

https://immunisationhandbook.health.gov.au › contents

Intramuscular injection. *If* an intramuscular vaccine is inadvertently given subcutaneously, see Vaccine injection techniques for advice on revaccinating.

Aspiration, more information

YouTube · Dr. John Campbell

255,4K+ views · 3 years ago

However, *if you* have done this and a flash of blood appears in the needle hub, withdraw the needle and select a new site for *injection*.

by J RUSHING · 2004 · Cited by 21 — *Don't aspirate after inserting the needle* (to prevent tissue damage, hematoma formation, and bruising). The likelihood of injecting into a blood vessel is small ...

Intramuscular Injection in Deltoid Muscle with Z-Track ...

YouTube · RegisteredNurseRN

5,2M+ views · 6 years ago

In this video I'm going to demonstrate how to give an intramuscular injection in the deltoid before ever administering any type of medication.

Missing: don't | Show results with: don't

SESLHDGL/076 - Intramuscular Injection in Mental Health

South Eastern Sydney Local Health District

https://www.seslhd.health.nsw.gov.au › documents

PDF

Insert the needle into the site at a 90˚ angle, *aspirate* and *if* safe continue to *inject* slowly. 1 mL per 10 seconds. 3. Wait 10 seconds then withdraw the needle ...

To aspirate or not: An integrative review of the evidence

Littleton Regional Healthcare

https://littletonhealthcare.org › NursesPages › files

PDF

Using this sci- ence, *we* can answer the deceptively simple question, "Do *we* still need to teach aspiration for blood when *giving an I.M.* or subcutaneous injec-.

How to Give an Intramuscular Shot: Care Instructions

MyHealth Alberta

https://myhealth.alberta.ca › Health › pages › conditions

If it is sore, *you* could have pain in the area *after giving* the shot. *If* the muscle is sore, pick a new area for the shot. Use alcohol to clean the skin ...

Ask the Experts: Administering Vaccines

Immunize.org

https://www.immunize.org › Ask the Experts

27 Jan 2025 — Although aspiration is not recommended, *if you* do *aspirate* ... What should we do *if we* give an *injection* by the wrong route (SC instead of *IM*)?.

Immunisation procedures

GOV.UK

https://assets.publishing.service.gov.uk › media

PDF

It is not necessary to aspirate the syringe after the needle is introduced into the muscle (WHO, 2004; Plotkin and Orenstein, 2004). The BCG technique is ...

When administering vaccines, there is *no need to aspirate* after injecting needle. Wait 10 seconds once medication is injected and then smoothly and steadily ...

Managing pain during vaccine administration

World Health Organization (WHO)

https://cdn.who.int › docs › multiple-injections › t...

PDF

Be safe *but* quick. • Do NOT *aspirate*, i.e. do not pull back on the syringe *after* inserting in the *injection* site as it increases the pain:.

Drawing Up (Preparing) The Medication - Intramuscular ...

University of Nottingham

https://www.nottingham.ac.uk › imscinjection › drawup

The general advise it *DON'T*. However *if* undertaken, *you* MUST NOT hold the needle cover whilst inserting the needle. When appropriate the scooping technique may ...

What Happens If An Injection Missed The Muscle?

vaccineinjuryteam.com

https://www.vaccineinjuryteam.com › what-happens-if-...

When a vaccine shot misses the muscle, it might lead to *pain*, *bruising*, *swelling*, *and infection*. If you experienced complications after a missed muscle ...

Missing: aspirate | Show results with: aspirate

The Injection Technique Factor: What You Don't Know or ...

diabetesjournals.org

https://diabetesjournals.org › clinical › article › The-Inj...

1 Jul 2019 — Blood can be *aspirated* back into the pen cartridge even *after* one *injection*, and this could possibly transmit a blood-borne disease such as ...

How to Do Intramuscular Injections Like a Pro

Berry Fertility

https://www.berryfertility.com › articles › how-to-do-intr...

After you complete the *injection*, hold pressure on the site with gauze. Some people like to gently massage the area. This can be especially helpful with the oil ...

Administering intramuscular injections to children

ResearchGate

https://www.researchgate.net › publication › links

PDF

They found that the WHO technique for *intramuscular injection* into the vastus lateralis site resulted in less irritability in infants and toddlers than the US ...

Critical Thinking Meets the Aspiration Debate

Allnurses.com

https://allnurses.com › ... › Patient Safety Issues Forums

11 Feb 2023 — CDC permitting not *aspirating* prior to injecting vaccines should not be interpreted as applying to all *intramuscular injections*. Not *aspirating* ...

Intramuscular injection: exploring the evidence on effective ...

RCNi

RCNi

https://journals.rcni.com › evidence-and-practice › intra...

26 Jun 2023 — Aspiration of the syringe is not required *after* inserting the needle into the chosen muscle (Sisson 2015, WHO 2015, DHSC 2020, Centers for ...

9 Jan 2024 — Before *you inject*, the entire needle will be in the skin and the muscle – *you* won't be able to see any of the metal needle. Many people worry ...

Ask the Experts: Administering Vaccines: General Issues

Immunize.org

https://www.immunize.org › ... › Administering Vaccines

27 Jan 2025 — *If I* need to give more than 1 *injection* in a muscle, are certain vaccines best given at different anatomic sites?

[What is the problem of an IM injection given in IV?]

[Quora]

https://www.quora.com › What-is-the-problem-of-an-I...

IM injections are calibrated to release slowly. The same amount of active ingredient injected I.V could be fatal, because it would take effect ...

[Intramuscular Injection: Are You Getting It Right?]

[LinkedIn · Kaye Hipperson]

10+ reactions · 9 years ago

If the needle is not long enough, there is a chance that *injection* may be subcutaneous; this is also the layer of tissue where the pain ...

[Giving an IM (intramuscular) injection Information]

[Mount Sinai]

https://www.mountsinai.org › selfcare-instructions › giv...

The medicine needs to go into a muscle. *You* do not want to hit a nerve or a blood vessel. So show *your* health care provider how *you* will choose where *you* will ...

[Aspiration Before Im Injection]

[Practo](https://www.practo.com)

https://www.practo.com › consult › aspiration-before-i...

13 Oct 2022 — Is aspiration required nowadys before *giving* any *IM injection* ? Does it cause more pain *if we aspirate* ? Let's say, I have identified the ...

Intradermal, Subcutaneous, & Intramuscular Injections

LevelUpRN

https://leveluprn.com › blogs › clinical-nursing-skills › 2...

14 Mar 2022 — Note that *we* do not massage the site *after* removing the needle. Subcutaneous *injections*. A subcutaneous *injection* is a type of *injection*, using ...

Could you tell me why we teach not to aspirate after ...

Children with Diabetes

https://childrenwithdiabetes.com › Questions

26 Jan 2025 — A subcutaneous *injection* should not result in *injection* into a big blood vessel. Some bleeding that may occur at the *injection* site would be ...

Hey guys, quick question. I don't aspirate? Should i?

HealthUnlocked

https://healthunlocked.com › pasoc › posts › hey-guys-...

20 Jun 2016 — *if you* do this in one quick motion then slowly *inject* the contents of the syringe and withdraw the needle quickly you should not have a problem.

How To Do An IM (Intramuscular) Injection | Nursing ...

YouTube · Lecturio Nursing

292,4K+ views · 2 years ago

What about aspiration? Always *aspirate* to be sure there is no inadvertent intravascular administration of substances.

Question to the RN's about IM deltoid injections

sdn

Student Doctor Network

https://forums.studentdoctor.net › threads › question-to-...

10 May 2011 — Relax. Like chim said you have little to worry about. My biggest fear when doing IMs was putting into a vessel, *but you aspirated* so that ...

How To Aspirate Without Causing Trauma

YouTube · Dr Tim Pearce

51,6K+ views · 4 years ago

if you don't know how to *aspirate* well. In this video, I share ... *Intramuscular Injection* in Deltoid Muscle with Z-Track Technique.

Giving injections wrongly

YouTube · Dr. John Campbell

595,3K+ views · 3 years ago

My advice as a retired nurse is, *if* the person *giving your* vaccionation will not aspriate then use that as *your* reason to refuse have an injection.

Intramuscular (IM) Injection Technique | Nurse Skill Demo

YouTube · Nursing and NCLEX Mastery

445,1K+ views · 3 years ago

5:44

Use landmarks to find the appropriate locations for **IM injections**, understand the types of injections **you**

medicine. Step 4: *After* he ...

Vial Medication Administration: How to Withdraw Vial ...

[YouTube · RegisteredNurseRN]

[1,3M+ views · 4 years ago]

[9:29]

While **I'm** not a nurse, nor am **I** studying to become one personally, **I** give myself weekly HRT **injections**. This has helped me figure out how to ...

6 key moments in this video

[Intramuscular and Subcutaneous Injections - Clinical Skills]

[YouTube · Oxford Medical Education]

[1,6M+ views · 12 years ago]

I cannot believe *they* just said that *you don't* have to clean with an alcohol swab. Always, always, always clean the area first to reduce ...

Το παρόν παράρτημα βιβλιογραφίας επισυνάπτεπται στην ανοικτή επιστολή της ομάδας «Σκεπτόμενοι Γονείς και Ενεργοί Πολίτες»

20 Φεβρουαρίου 2025

Ιατρός Ελένη Χασαποπούλου-Ματάμη