Sistema Socio Sanitario
Regione Lombardia
ASST Santi Paolo e Carlo

Prevenzione di Covid-19: dai vaccini alla profilassi

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SARS-CoV-2: first report

The NEW ENGLAND JOURNAL of MEDICINE

BRIEF REPORT

A Novel Coronavirus from Patients with Pneumonia in China, 2019

Na Zhu, Ph.D., Dingyu Zhang, M.D., Wenling Wang, Ph.D., Xingwang Li, M.D., Bo Yang, M.S., Jingdong Song, Ph.D., Xiang Zhao, Ph.D., Baoying Huang, Ph.D., Weifeng Shi, Ph.D., Roujian Lu, M.D., Peihua Niu, Ph.D., Faxian Zhan, Ph.D., Xuejun Ma, Ph.D., Dayan Wang, Ph.D., Wenbo Xu, M.D., Guizhen Wu, M.D., George F. Gao, D.Phil., and Wenjie Tan, M.D., Ph.D., for the China Novel Coronavirus Investigating and Research Team

NEJM, Feb 2020

World Health Organization

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Covid-19 Response Fund

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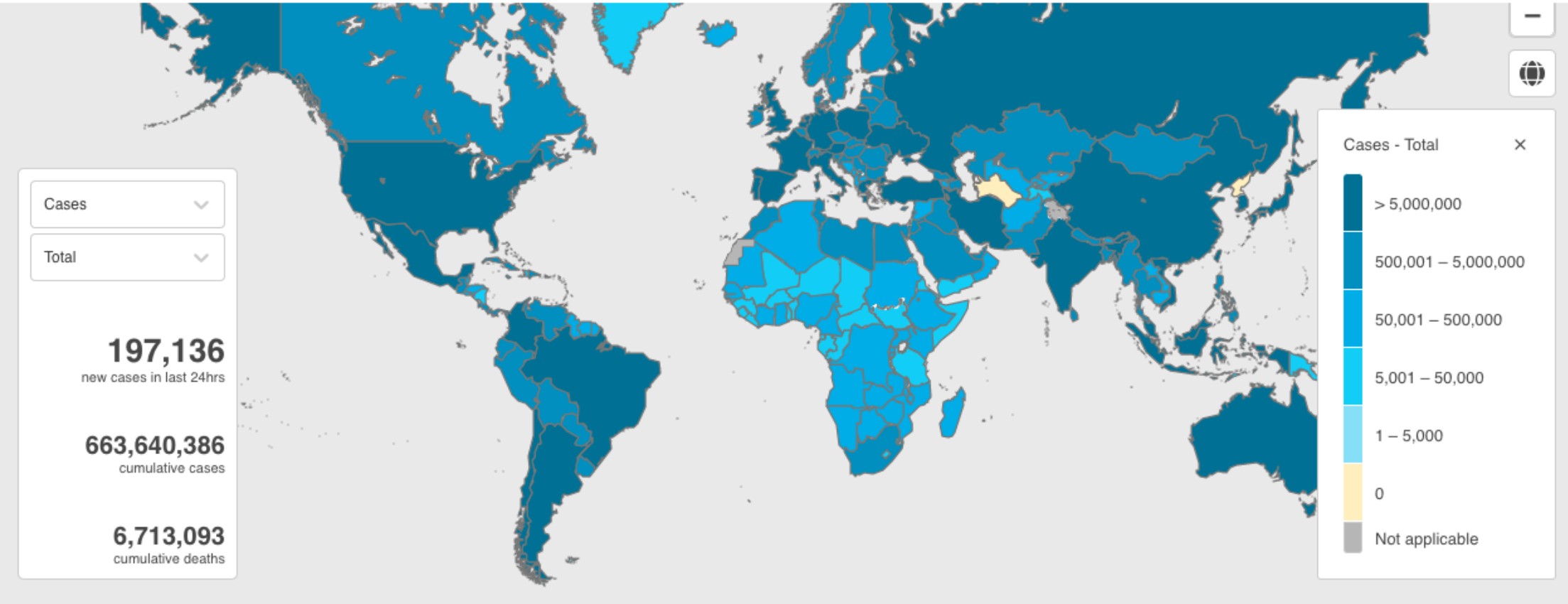
WHO Coronavirus (COVID-19) Dashboard

Overview | Measures | Table View | Data | More Resources



Globally, as of **5:17pm CET, 20 January 2023**, there have been **663,640,386 confirmed cases** of COVID-19, including **6,713,093 deaths**, reported to WHO. As of **17 January 2023**, a total of **13,131,550,798 vaccine doses** have been administered.

DRAFT landscape of COVID-19 candidate vaccines – 12 November 2020

48 candidate vaccines in clinical evaluation

COVID-19 Vaccine developer/manufacturer	Vaccine platform	Type of candidate vaccine	Number of doses	Timing of doses	Route of Administration	Clinical Stage			
						Phase 1	Phase 1/2	Phase 2	Phase 3
Sinovac	Inactivated	Inactivated	2	0,14 days	IM		NCT04383574 NCT04352608 NCT04551547		NCT04456595 669/UN6.KEP/EC/2020 NCT04582344 NCT04617483
Wuhan Institute of Biological Products/Sinopharm	Inactivated	Inactivated	2	0,21 days	IM		ChiCTR2000031809 Interim Report		ChiCTR2000034780 ChiCTR2000039000 NCT04612972
Beijing Institute of Biological Products/Sinopharm	Inactivated	Inactivated	2	0,21 days	IM		ChiCTR2000032459 Study Report		ChiCTR2000034780 NCT04560881
Bharat Biotech	Inactivated	Whole-Virion Inactivated	2	0, 28 days	IM		CTRI/2020/07/026300 CTRI/2020/09/027674		CTRI/2020/11/028976
University of Oxford/AstraZeneca	Non-Replicating Viral Vector	ChAdOx1-S	2	0,28 days	IM		PACTR202006922165132 2020-001072-15 NCT04568031 Interim Report	2020-001228-32	ISRCTN89951424 NCT04516746 NCT04540393 CTRI/2020/08/027170
CanSino Biological Inc./Beijing Institute of Biotechnology	Non-Replicating Viral Vector	Adenovirus Type 5 Vector	1		IM	ChiCTR2000030906 NCT04568811 Study Report		ChiCTR2000031781 NCT04566770 Study Report	NCT04526990 NCT04540419

164 candidate vaccines in preclinical evaluation

Platform	Type of candidate vaccine	Developer	Coronavirus target	Current stage of clinical evaluation/regulatory status- Coronavirus candidate	Same platform for non-Coronavirus candidates
DNA	DNA plasmids containing S-gene	Biosun Pharmed	SARS-CoV2	Pre-Clinical	
DNA	DNA plasmid vaccine	Globe Biotech Limited, Bangladesh	SARS-CoV2	Pre-Clinical	
DNA	Plasmid DNA, nanostructured RBD	National institute of Chemistry, Slovenia	SARS-CoV2	Pre-Clinical	
DNA	DNA, engineered vaccine inserts compatible with multiple delivery systems	DIOSynVax Ltd / University of Cambridge	SARS-CoV-2 and Sarbeco-CoV	Pre-Clinical	
DNA	DNA vaccine	Ege University	SARS-CoV2	Pre-Clinical	
DNA	DNA plasmid vaccine RBD&N	Scancell/University of Nottingham/ Nottingham Trent University	SARS-CoV2	Pre-Clinical	
DNA	DNA plasmid vaccine S,S1,S2,RBD &N	National Research Centre, Egypt	SARS-CoV2	Pre-Clinical	
DNA	DNA with electroporation	Karolinska Institute / Cobra Biologics (OPENCORONA Project)	SARS-CoV2	Pre-Clinical	
DNA	DNA with electroporation	Chula Vaccine Research Center	SARS-CoV2	Pre-Clinical	
DNA	DNA	Takis/Applied DNA Sciences/Evvivax	SARS-CoV2	Pre-Clinical	
DNA	Plasmid DNA, Needle-Free Delivery	Immunomic Therapeutics, Inc./EpiVax, Inc./PharmaJet	SARS-CoV2	Pre-Clinical	SARS
DNA	DNA vaccine	BioNet Asia	SARS-CoV2	Pre-Clinical	
DNA	msDNA vaccine	Mediphage Bioceuticals/University of Waterloo	SARS-CoV2	Pre-Clinical	
DNA	DNA vaccine	Entos Pharmaceuticals	SARS-CoV2	Pre-Clinical	
Inactivated	Inactivated + Alum	Shifa Pharmed	SARS-CoV2	Pre-Clinical	
Inactivated	Inactivated	Milad Pharmaceutics Co.	SARS-CoV2	Pre-Clinical	MMR, IPV
Inactivated	Inactivated	Zista Kian Azma Co.	SARS-CoV2	Pre-Clinical	MMR, IPV
Inactivated	Inactivated	Kocak Farma Ilac ve Kimya San. A.S.	SARS-CoV2	Pre-Clinical	

State of the Art on SARS-CoV-2 Vaccines

The New York Times

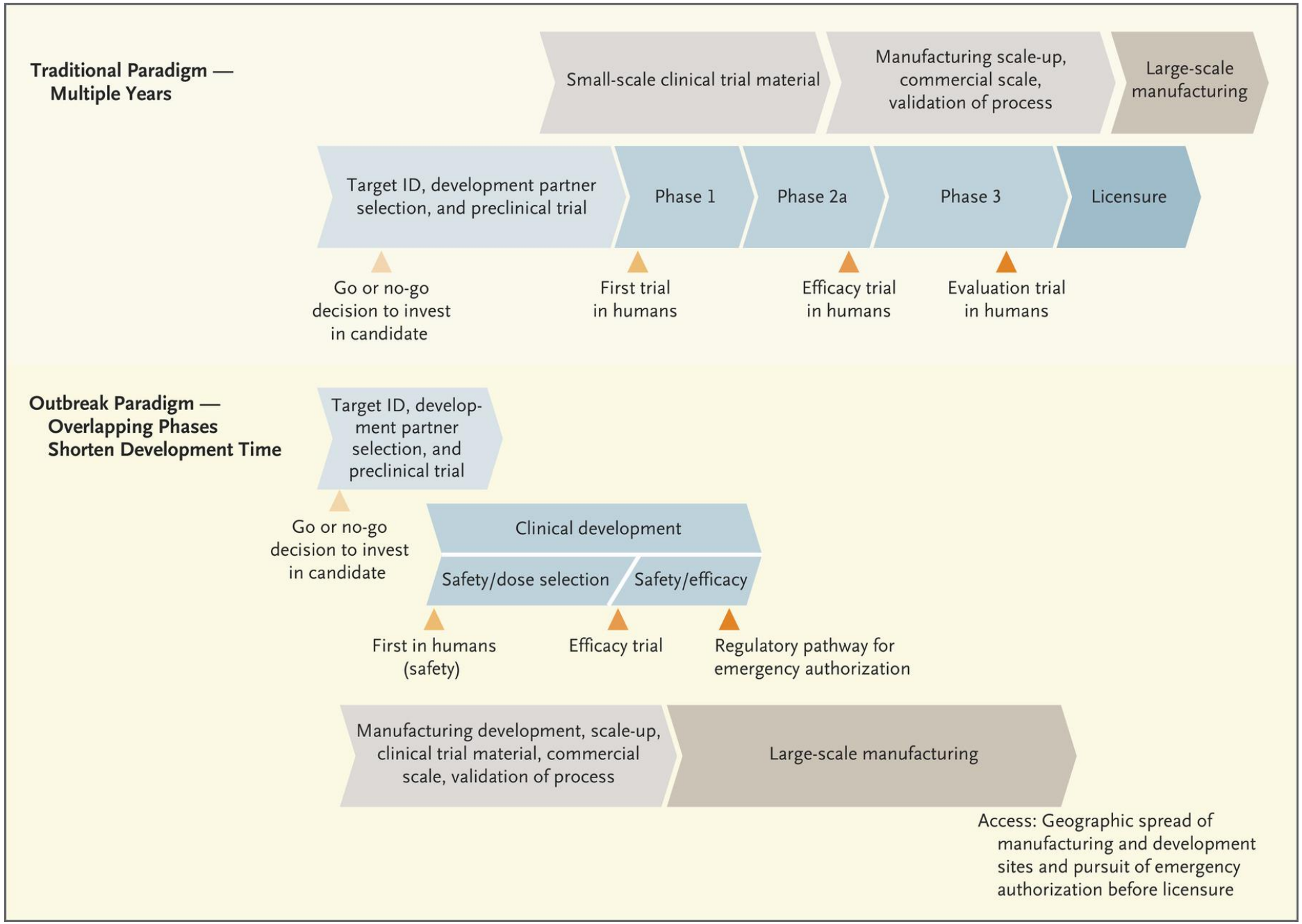
As U.K. Begins Vaccinations, a Glimpse of Life After Covid

A 90-year-old former jewelry shop assistant was the first to get a shot, followed, appropriately enough, by a man named William Shakespeare.

By Benjamin Mueller

Dec. 8, 2020

In Cardiff, Wales, a former gymnasium was turned into a vaccination site on Tuesday. Andrew Testa for The New York Times



Lurie, NEJM, 2020

State of the Art on SARS-CoV-2 Vaccines

Platform	Vaccine	Commercial Name/Producer	Indication
mRNA	mRNABNT162b2	Comirnaty/Pfizer	Primary and booster/additional doses
mRNA	mRNA -1273	Spikevax/Moderna	Primary and booster/additional doses
Viral vector	*ChAdOx1-S*	Vaxzveria/AstraZeneca	Primary and booster/additional doses
Viral vector	*Ad26.COV2-S*	Jcovden/Janssen	Primary and booster/additional doses
Protein subunit	NVX-CoV2373	Nuvaxovid/Novovax	Primary and booster/additional doses
Protein subunit		VidPrevtyn Beta/Sanofi	Booster
Inactivated virus	VLA2001	Valneva	Primary

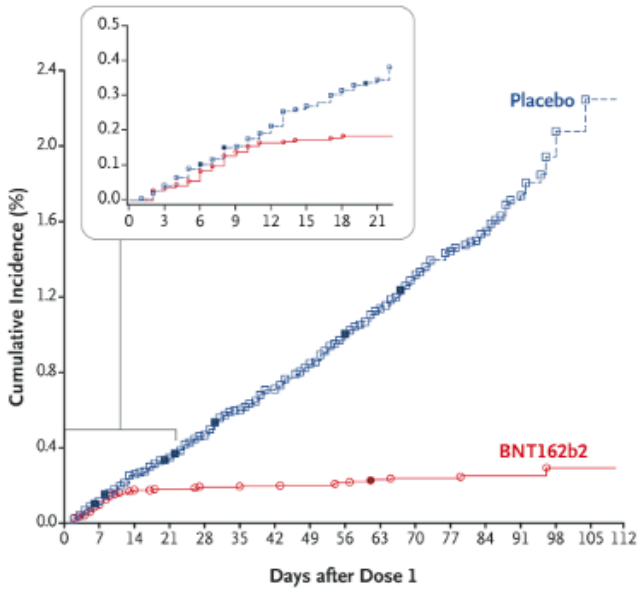
Vaccine-Induced Immunity

Vaccine efficacy in trials: protection against symptomatic Covid-19

RESEARCH SUMMARY

Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine

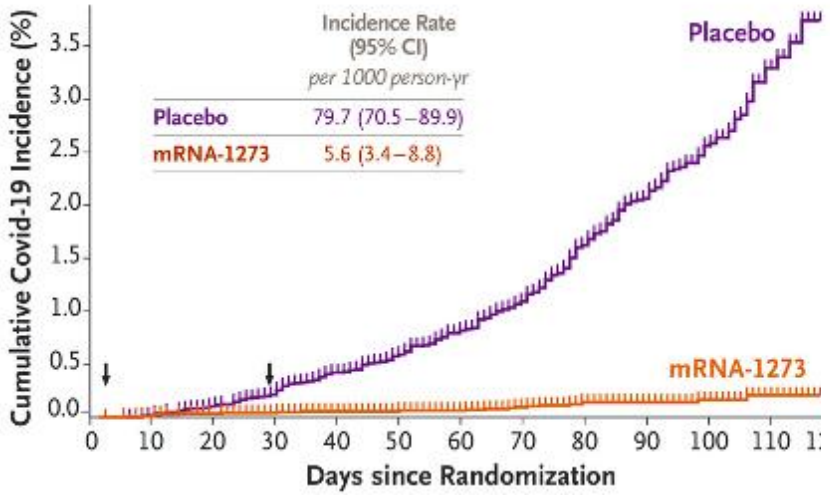
F.P. Polack, et al. DOI: 10.1056/NEJMoa2034577



RESEARCH SUMMARY

Efficacy and Safety of mRNA-1273 SARS-CoV-2 Vaccine

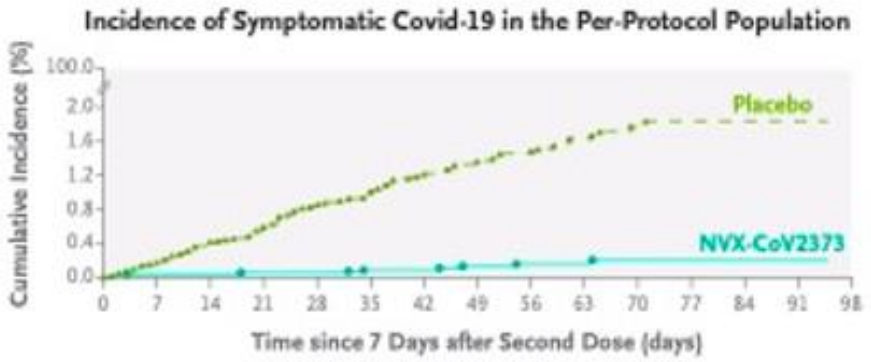
L.R. Baden, et al. DOI: 10.1056/NEJMoa2035389



RESEARCH SUMMARY

Safety and Efficacy of NVX-CoV2373 Covid-19 Vaccine

Heath PT et al. DOI: 10.1056/NEJMoa2107659



The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Phase 3 Safety and Efficacy of AZD1222 (ChAdOx1 nCoV-19) Covid-19 Vaccine

Efficacy End Point	AZD1222	Placebo	Vaccine Efficacy	P Value
	no. of events/total no. (%)		*% (95% or 97.5% CI)*	
Primary: symptomatic Covid-19				
Overall	73/17,662 (0.4)	130/8550 (1.5)	74.0 (65.3 to 80.5)	<0.001
Age				
≥18 to 64 yr	68/13,966 (0.5)	116/6738 (1.7)	72.8 (63.4 to 79.9)	NA
≥65 yr	5/3696 (0.1)	14/1812 (0.8)	83.5 (54.2 to 94.1)	NA
Race or ethnic group				

Reinfections and breakthrough infections

Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

Reinfections and COVID-19

Updated Sept. 9, 2022 Languages Print

Reinfection with the virus that causes COVID-19 means a person was infected, recovered, and then later became infected again. After recovering from COVID-19, most individuals will have some protection from repeat infections. However, reinfections do occur after COVID-19. We are still learning more about these reinfections. Ongoing studies of COVID-19 are helping us understand:

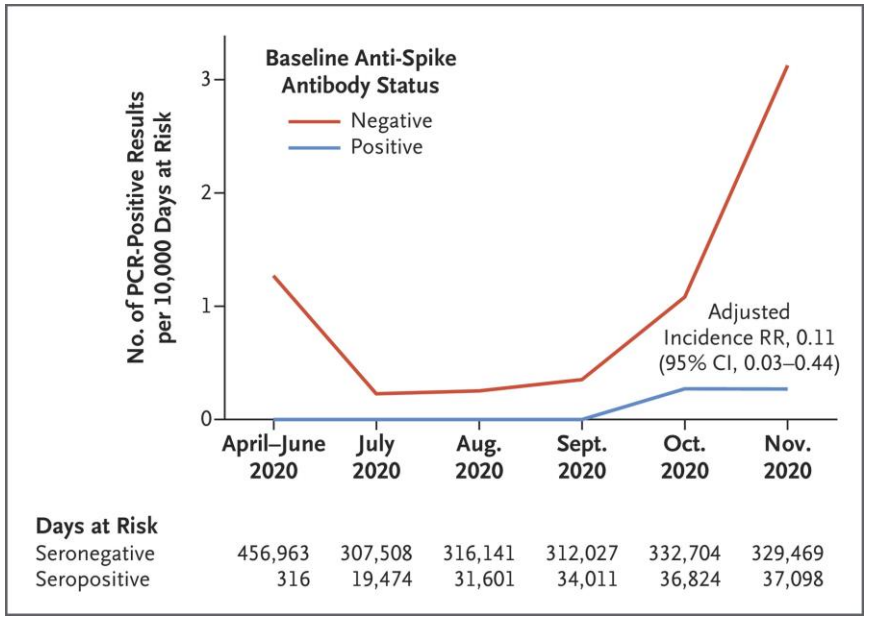
- How often reinfections occur
- Who is at higher risk of reinfection
- How soon reinfections take place after a previous infection
- The severity (how serious the infection is) of reinfections compared with initial (the first) infections
- The risk of transmission to others after reinfection

NATURE REVIEWS | IMMUNOLOGY VOLUME 22 | JANUARY 2022 |

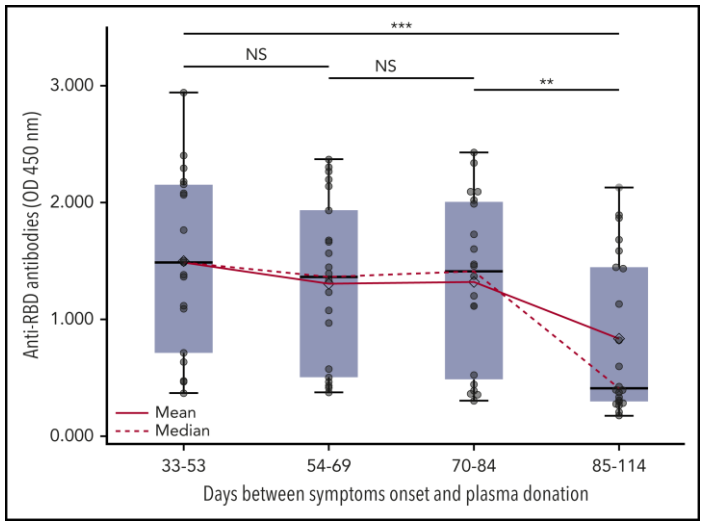
SARS-CoV-2 breakthrough infections in vaccinated individuals: measurement, causes and impact

Marc Lipsitch, Florian Krammer, Gili Regev-Yochay, Yaniv Lustig and Ran D. Balicer

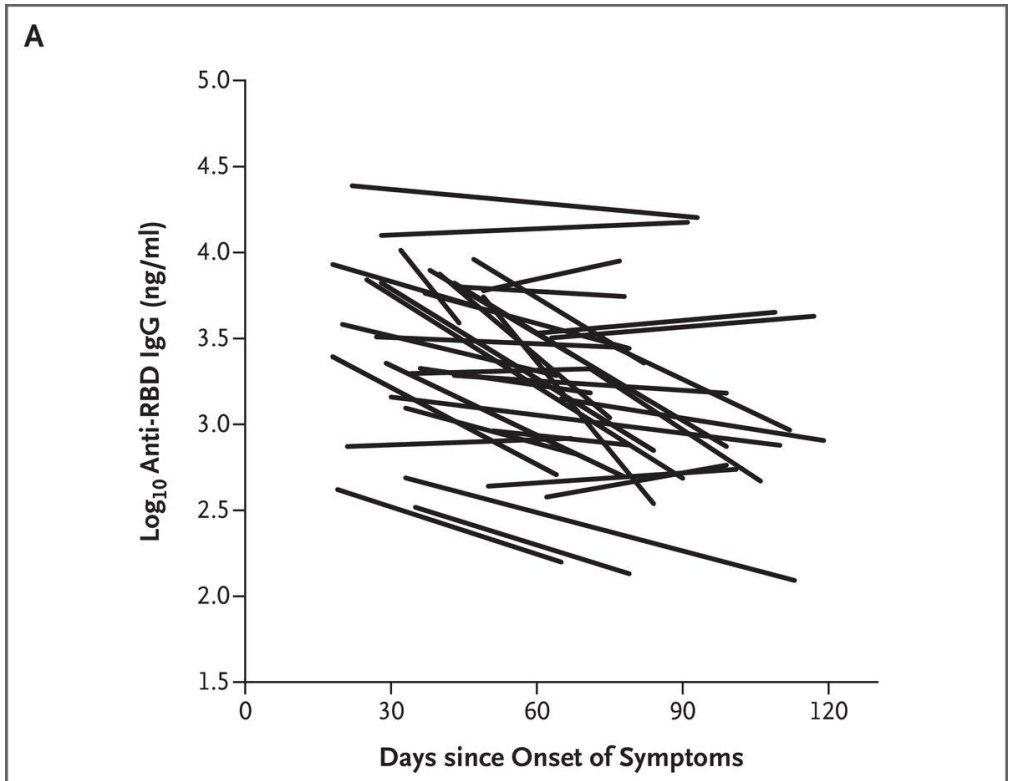
Reinfections and breakthrough infections : the role of immunity



Lumley, NEJM, 2021



Perreault Blood, 2020

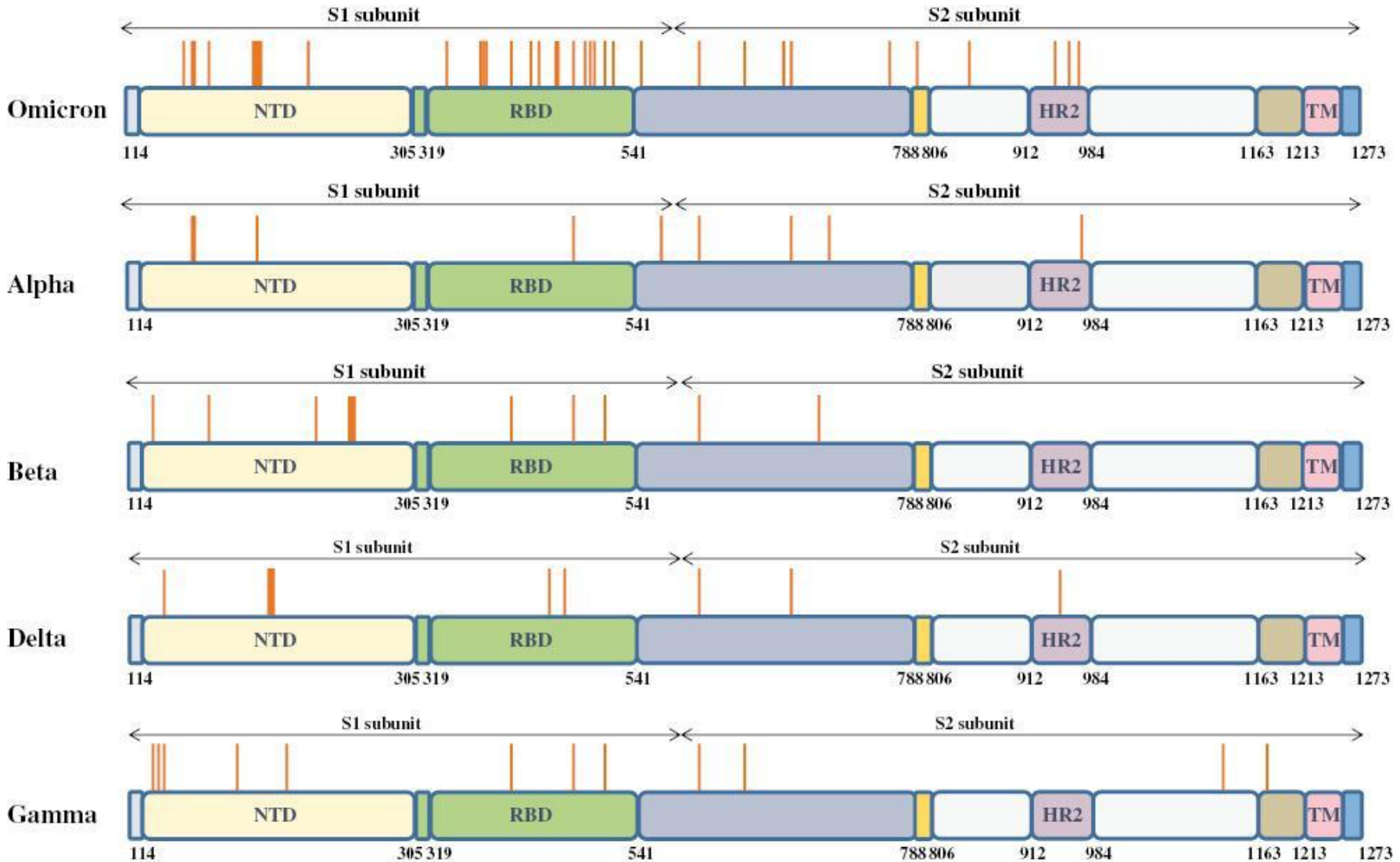


B

Predictor	Slope Estimate	Standard Error	95% CI
Intercept	–0.0083	0.0016	–0.0115 to –0.0050
Age (per 10-yr change)	0.0026	0.0012	–0.0001 to 0.0051
Sex (female reference)	0.0010	0.0034	–0.0059 to 0.0079
First antibody level (log_{10} ng/ml)	–0.0049	0.0032	–0.0114 to 0.0016
Per 10 days since symptom onset	0.0016	0.0012	–0.0010 to 0.0041

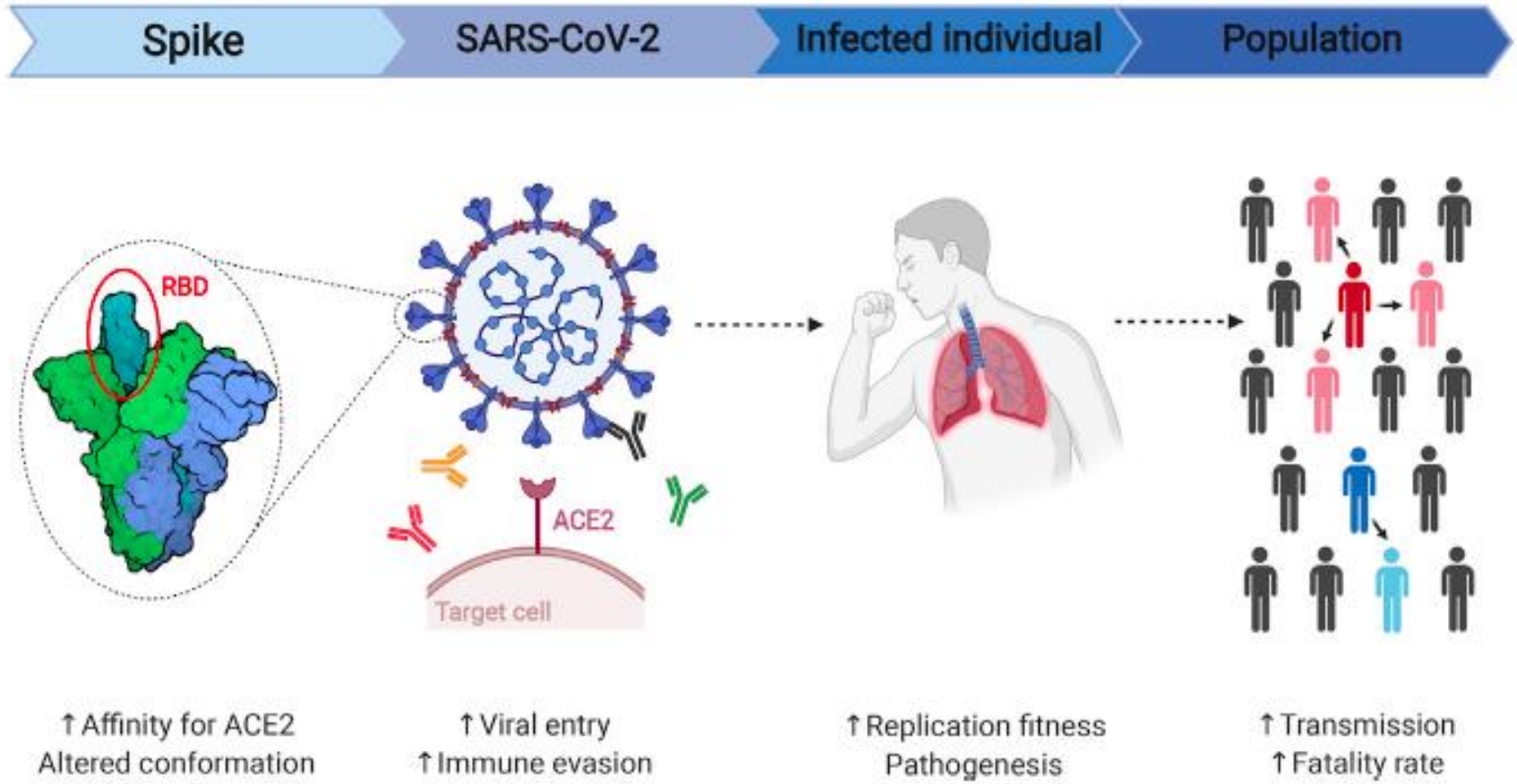
Ibarrondo, NEJM, 2020

Infections and reinfections and breakthrough: the role of VoCs

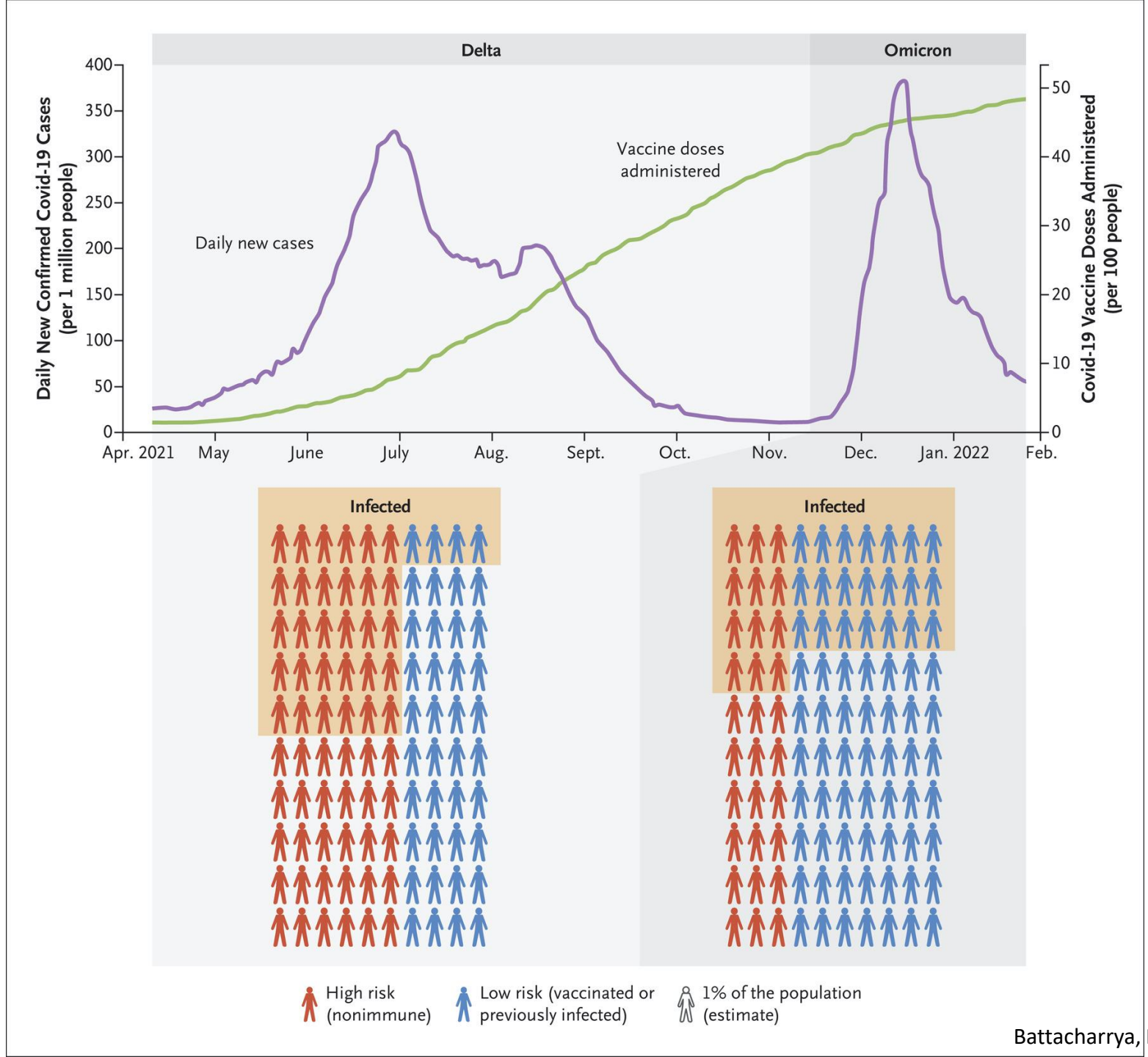


Qin et al, 2021

Cell Host & Microbe
Previews

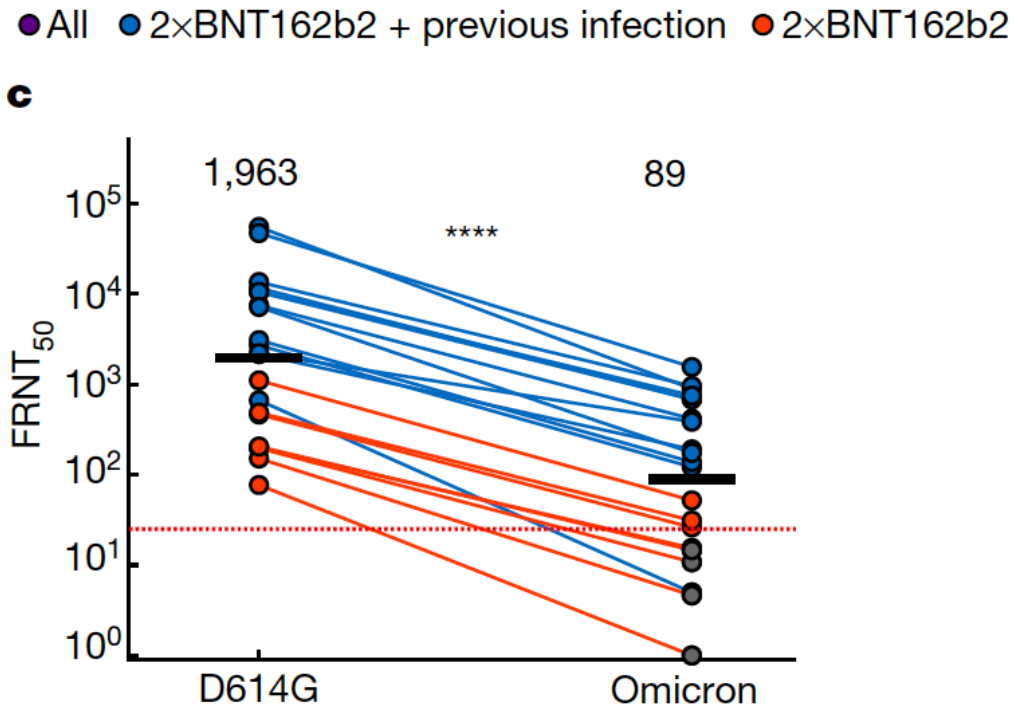


Finzi, 2021



Battacharrya, NEJM 2022

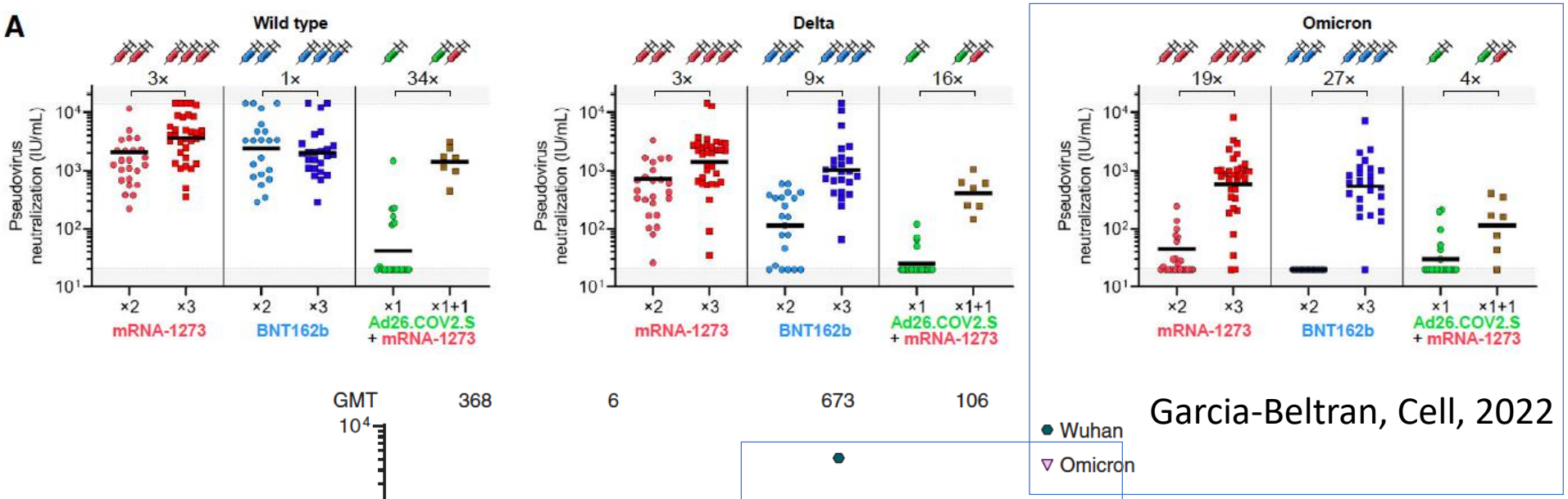
22-fold reduction in vaccine-elicited neutralization by Omicron (vs ancestral strain) in infected + vaccinated and vaccinated only, yet higher plasma neutralization of Omicron in the former, exhibiting residual neutralization of Omicron similar to the level of neutralization of the ancestral virus observed in the vaccination-only group



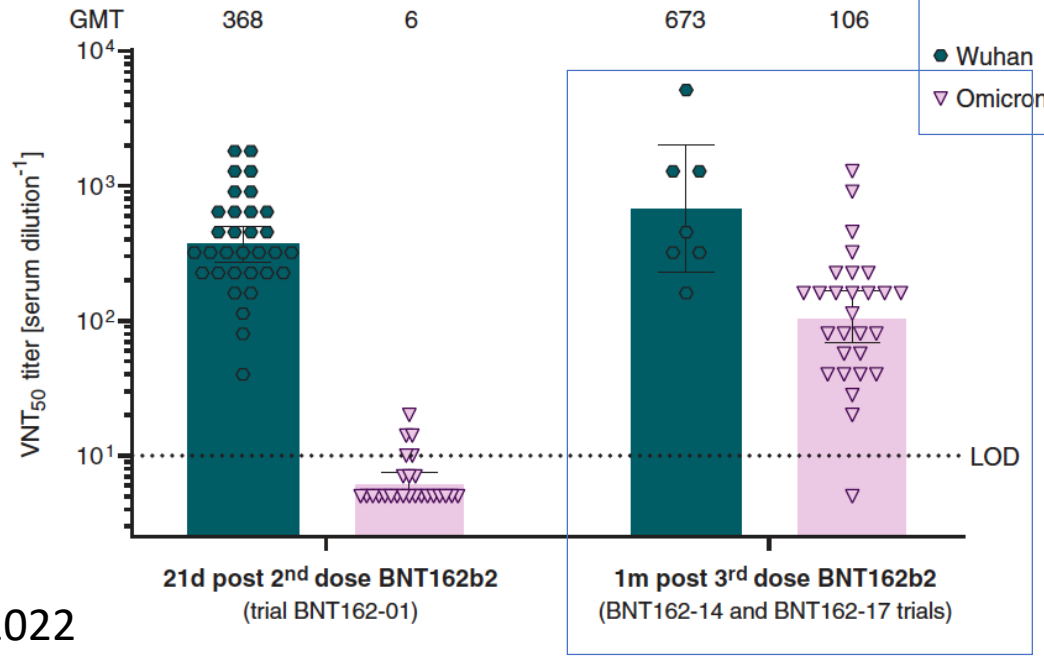
Reasonable protection against Omicron (symptomatic infection) may be maintained using vaccination approaches

Cele, Nature 2022

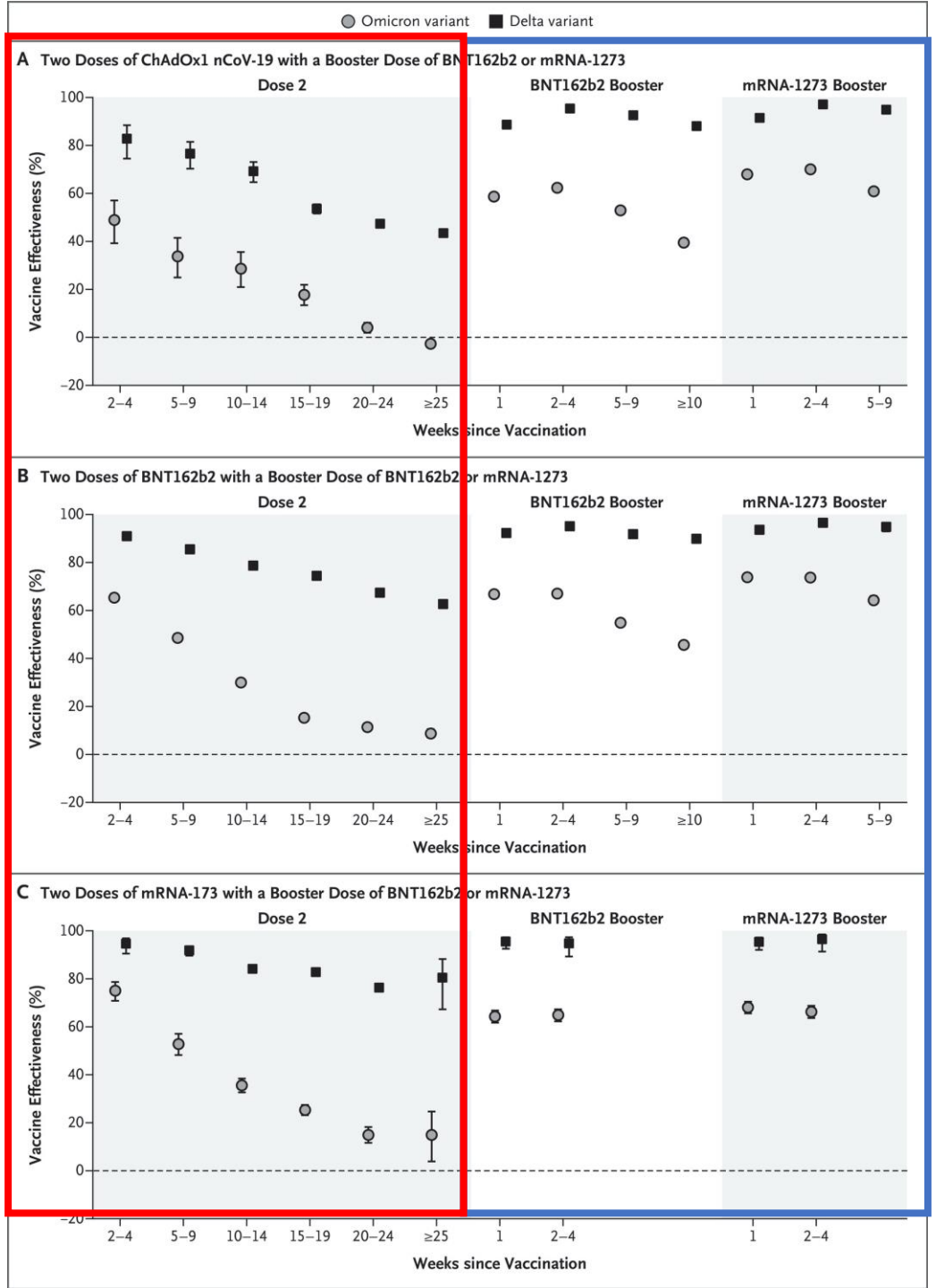
Three vaccine doses likely protect against Omicron-mediated COVID-19



Garcia-Beltran, Cell, 2022



Muik, Science 2022



Test-negative case–control design:

- 886,774 infected with the omicron variant
- 204,154 infected with the
- delta variant
- 1,572,621 eligible test-negative controls

Primary immunization with two doses of ChAdOx1 nCoV-19 or BNT162b2 vaccine provided limited protection against **symptomatic disease** caused by the omicron variant. A BNT162b2 or mRNA-1273 booster after either the ChAdOx1 nCoV-19 or BNT162b2 primary course substantially increased protection, but that protection waned over time.

Andrews et al., NEJM 2022
See also: Proce et al NEJM 2022

ORIGINAL ARTICLE

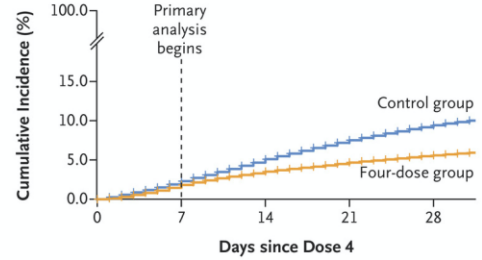
Fourth Dose of BNT162b2 mRNA Covid-19 Vaccine in a Nationwide Setting

Ori Magen, M.D., Jacob G. Waxman, M.D., Maya Makov-Assif, M.D., Roni Vered, M.D., Dror Dicker, M.D., Miguel A. Hernán, M.D., Marc Lipsitch, D.Phil., Ben Y. Reis, Ph.D., Ran D. Balicer, M.D., and Noa Dagan, M.D.

CONCLUSIONS

A fourth dose of the BNT162b2 vaccine was effective in reducing the short-term risk of Covid-19–related outcomes among persons who had received a third dose at least 4 months earlier. (Funded by the Ivan and Francesca Berkowitz Family Living Laboratory Collaboration at Harvard Medical School and Clalit Research Institute.)

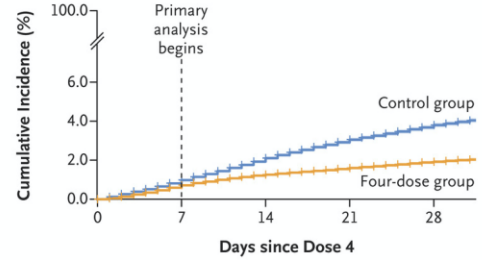
A Documented PCR-Confirmed SARS-CoV-2 Infection



No. at Risk					
Control group	182,122	138,003	113,810	99,706	87,330
Four-dose group	182,122	138,931	116,323	103,937	92,513

Cumulative No. of Events					
Control group	0	3,643	7,192	9,902	11,836
Four-dose group	0	2,838	5,008	6,323	7,269

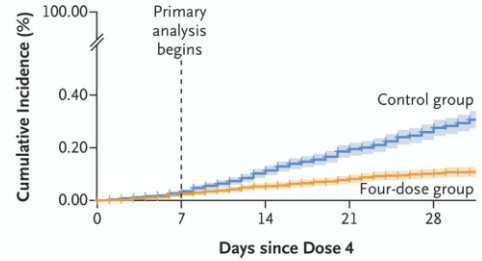
B Symptomatic SARS-CoV-2 Infection



No. at Risk					
Control group	182,122	139,703	117,609	105,122	93,690
Four-dose group	182,122	140,200	118,922	107,295	96,272

Cumulative No. of Events					
Control group	0	1,563	3,006	4,083	4,855
Four-dose group	0	1,126	1,831	2,223	2,557

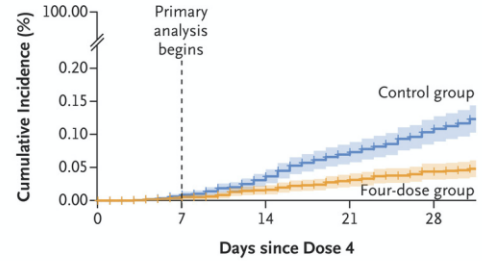
C Covid-19–Related Hospitalization



No. at Risk					
Control group	182,122	140,977	120,216	108,730	97,820
Four-dose group	182,122	141,021	120,360	108,966	98,125

Cumulative No. of Events					
Control group	0	53	154	246	328
Four-dose group	0	38	76	107	129

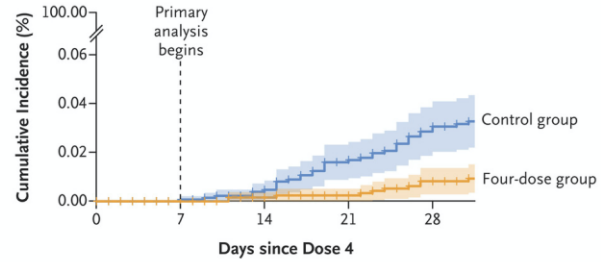
D Severe Covid-19



No. at Risk					
Control group	182,122	141,010	120,315	108,871	97,998
Four-dose group	182,122	141,044	120,406	109,019	98,180

Cumulative No. of Events					
Control group	0	13	48	90	126
Four-dose group	0	8	22	39	52

E Death from Covid-19



No. at Risk					
Control group	182,122	141,019	120,349	108,935	98,079
Four-dose group	182,122	141,050	120,421	109,049	98,217

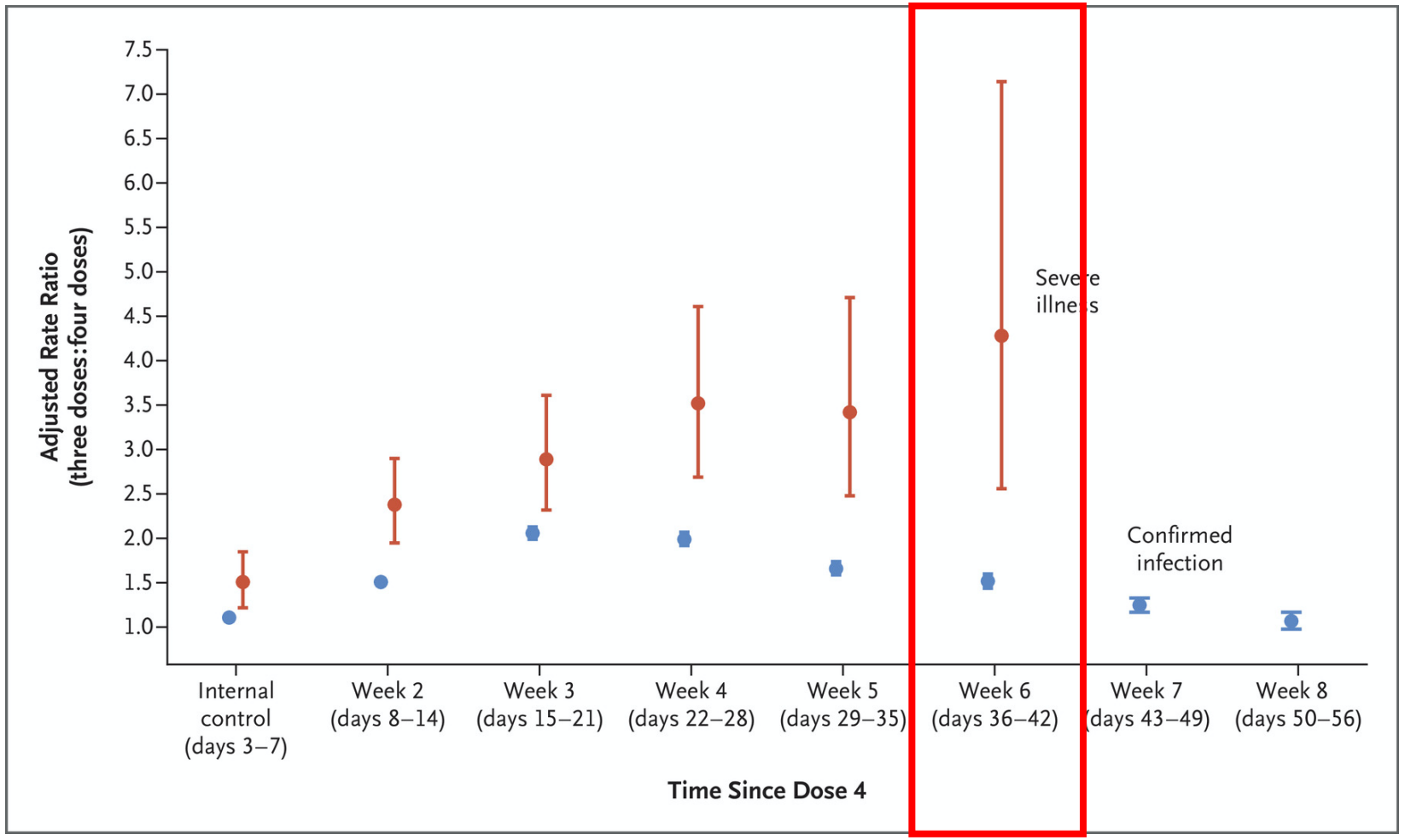
Cumulative No. of Events					
Control group	0	1	6	20	34
Four-dose group	0	0	2	3	9

ORIGINAL ARTICLE

Protection by a Fourth Dose of BNT162b2 against Omicron in Israel

Yinon M. Bar-On, M.Sc., Yair Goldberg, Ph.D., Micha Mandel, Ph.D., Omri Bodenheimer, M.Sc., Ofra Amir, Ph.D., Laurence Freedman, Ph.D., Sharon Alroy-Preis, M.D., Nachman Ash, M.D., Amit Huppert, Ph.D., and Ron Milo, Ph.D.

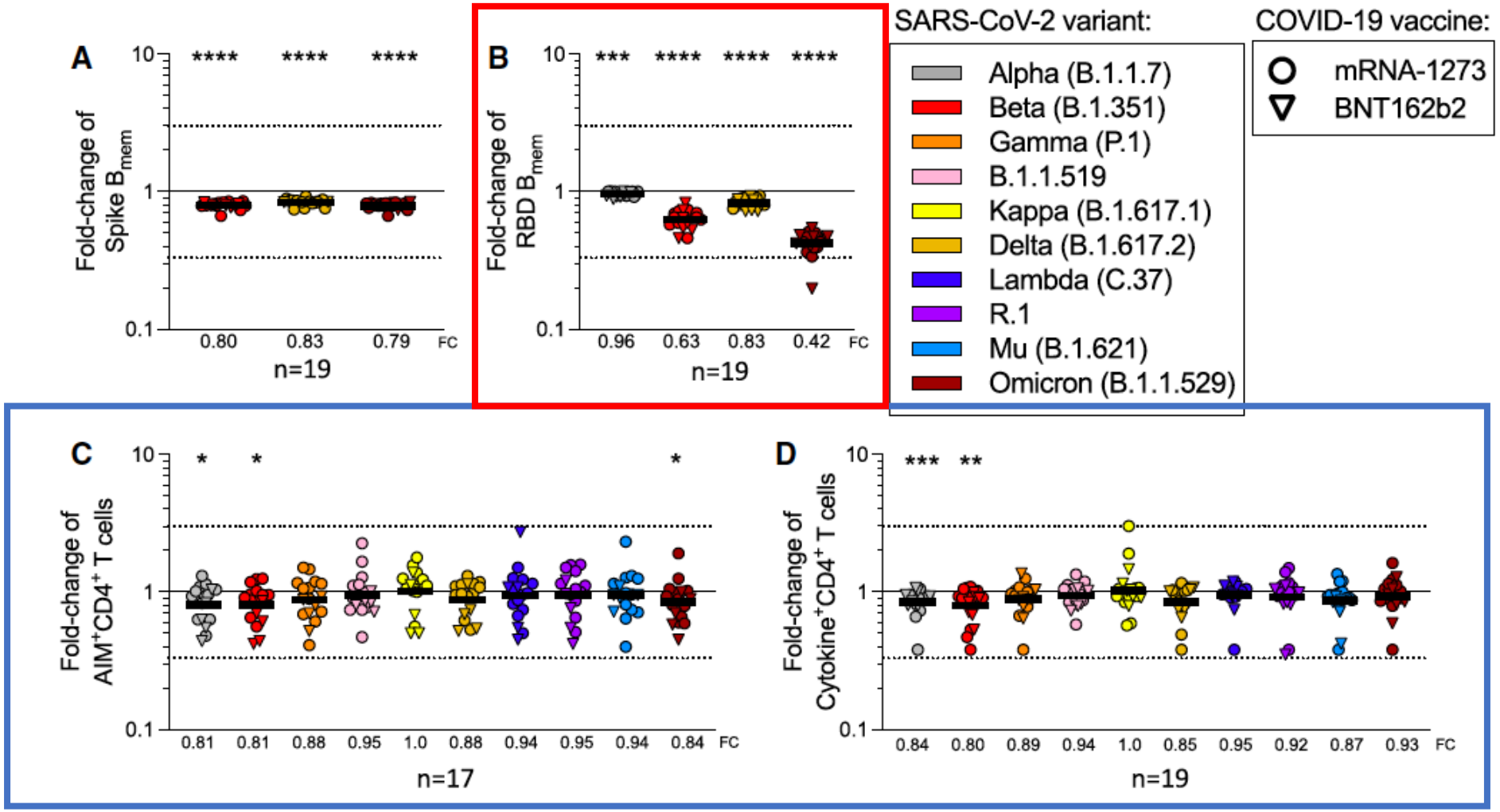
Shown are adjusted rate ratios for confirmed SARS-CoV-2 infection and severe Covid-19 in the group of persons eligible for a fourth dose who had not yet received it (three-dose group) as compared with those who had received a fourth dose, as a function of time since the fourth dose (**the higher the rate ratio, the greater the protection conferred by the fourth dose of vaccine**).



CONCLUSIONS

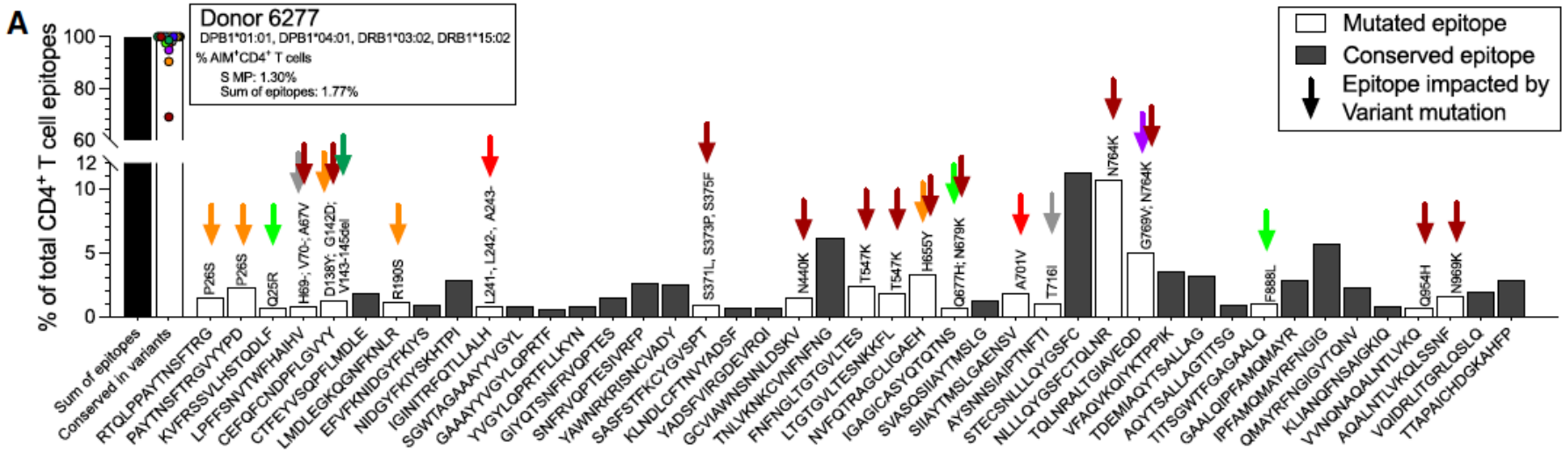
Rates of confirmed SARS-CoV-2 infection and severe Covid-19 were lower after a fourth dose of BNT162b2 vaccine than after only three doses. Protection against confirmed infection appeared short-lived, whereas protection against severe illness did not wane during the study period.

RBD memory B cells' recognition of Omicron is reduced, yet T-cell memory is preserved



Tarke, Cell 2022

Approximately 80% of the CD4+ T cell response associates with epitopes fully conserved in Omicron



T cell epitope repertoire analysis revealed a median of 11 and 10 spike epitopes recognized by CD4+ and CD8+ T cells

Tarke et al, Cell, 2022

Booster doses with bivalent vaccines

Home / Campagna di vaccinazione anti Covid-19

Campagna di vaccinazione anti Covid-19

Vaccinazione di richiamo con i vaccini bivalenti COVID-19

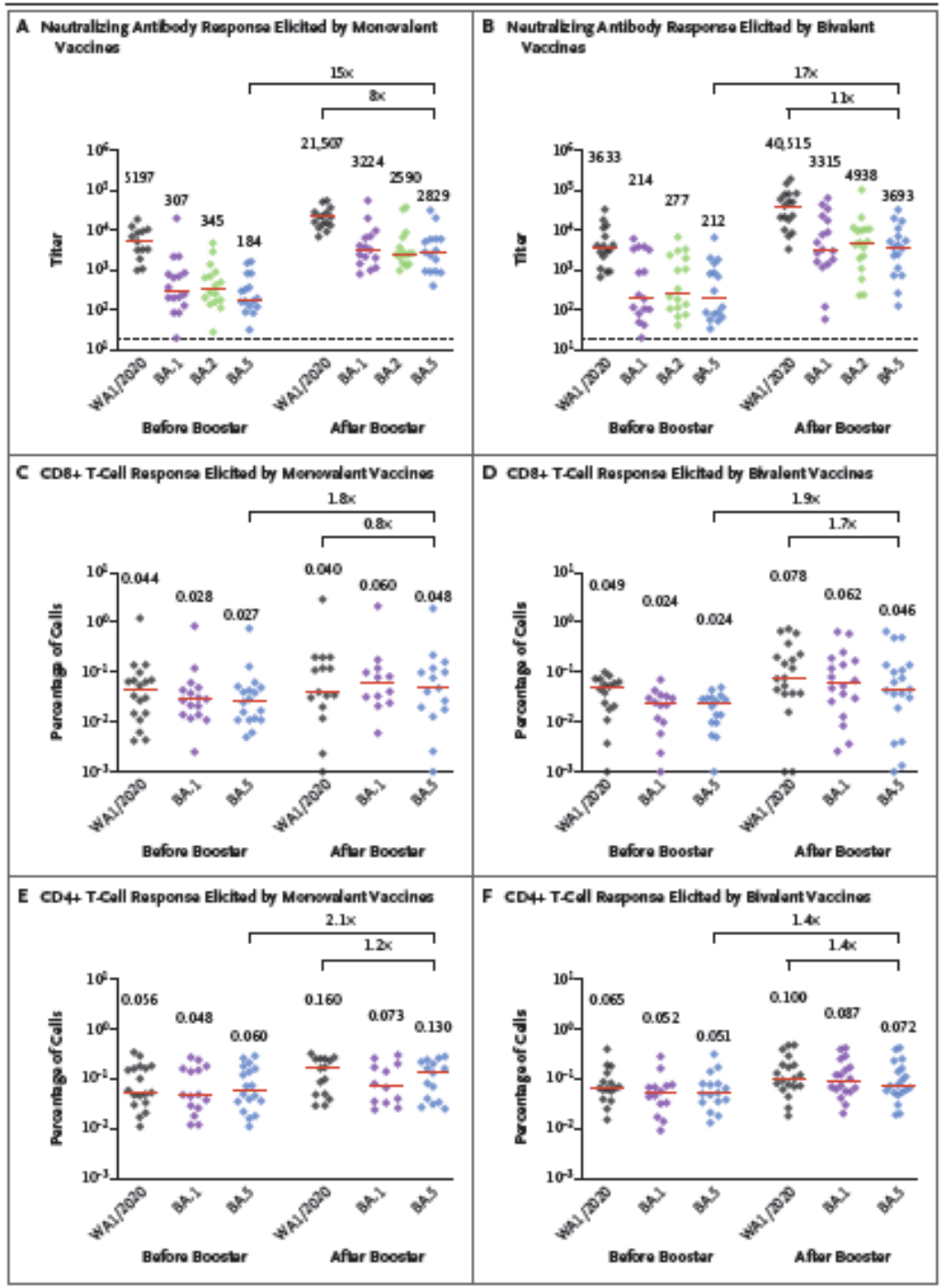
A seguito dell'autorizzazione da parte di EMA e AIFA della formulazione bivalente original/BA.4-5 del vaccino Comirnaty, sono ora disponibili, nell'ambito della campagna di vaccinazione anti SARSCoV-2/COVID-19, **due formulazioni bivalenti** di vaccini a m-RNA (original/omicron BA.1 e original/BA.4-5 di Spikevax e Comirnaty).

Tali vaccini, ha motivato la Commissione Tecnico Scientifica (CTS) dell'AIFA, hanno mostrato la capacità di indurre una risposta anticorpale maggiore di quella del vaccino monovalente originario sia nei confronti della variante Omicron BA.1 che delle varianti BA.4 e BA.5.
Sul piano della sicurezza i dati disponibili non mostrano differenze rispetto al vaccino monovalente originario.

Immunogenicity of the BA.5-containing bivalent mRNA boosters

- 15 participants who had received the original monovalent mRNA boosters
- 18 participants who had received the bivalent mRNA boosters (expressing the spike protein of the B.1.1.529 (omicron) BA.5 sublineage and the ancestral WA1/2020)

- BA.5 neutralizing-antibody titers were comparable following monovalent and bivalent mRNA boosters
- no appreciable differences in CD4+ or CD8+ T-cell responses between groups



Collier et al, NEJM, 18th Jan 2023

See also: Wang Q, et al. Antibody responses to omicron BA.4/BA.5 bivalent mRNA vaccine booster shot; biorxiv; 2022

The NEW ENGLAND JOURNAL of MEDICINE

Bivalent Covid-19 Vaccines — A Cautionary Tale

Perspective

Paul A. Offit, M.D.

For vaccines against SARS-CoV-2, a mucosal infection with a short incubation period, **protection from severe disease is the only reasonable and attainable goal**. Fortunately, SARS-CoV-2 variants haven't evolved to resist the protection against severe disease offered by vaccination or previous infection. If that happens, we will need to create a variant-specific vaccine. **Although boosting with a bivalent vaccine is likely to have a similar effect as boosting with a monovalent vaccine, booster dosing is probably best reserved for the people most likely to need protection against severe disease- specifically, older adults, people with multiple coexisting conditions that put them at high risk for serious illness, and those who are immunocompromised. In the meantime, I believe we should stop trying to prevent all symptomatic infections in healthy, young people by boosting them with vaccines containing mRNA from strains that might disappear a few months later.**

Covid-19 Vaccination Coverage in Italy

Ministero della Salute

DIREZIONE GENERALE DELLA PREVENZIONE SANITARIA

DIREZIONE GENERALE DELLA PROGRAMMAZIONE SANITARIA

Vaccinazione per COVID-19 e anti-influenzale

Nella stagione invernale 2022-2023, l'obiettivo della campagna vaccinale sarà quello di continuare a mettere in sicurezza prioritariamente anziani e fragili, proteggendoli dalla malattia grave e dalla ospedalizzazione.

Le priorità e i fattori da considerare nella preparazione e nell'attuazione delle nuove strategie vaccinali[1], includono:

- la prosecuzione della campagna vaccinale in corso, colmando le lacune nella copertura vaccinale del ciclo primario e dei booster raccomandati e mantenendo una sufficiente capacità di vaccinazione;
- la possibilità di combinare le campagne di vaccinazione contro COVID-19 e influenza;
- lo sviluppo di programmi di vaccinazione con vaccini adattati, identificando gruppi di popolazione prioritari ed assicurando che ci sia una disponibilità sufficiente di dosi;
- il monitoraggio dell'efficacia e la sicurezza dei vaccini adattati una volta iniziata la diffusione su larga scala;
- l'implementazione di strategie di comunicazione efficaci per promuovere l'assunzione di dosi di richiamo, il completamento della serie primaria e la campagna sui nuovi vaccini e adattati e sui vaccini proteici. Al tempo stesso, le campagne informative dovrebbero essere indirizzate anche a incentivare l'uso dei vaccini anti-influenzali per le persone a rischio.

Queste raccomandazioni si basano sulla dichiarazione congiunta dell'ECDC e dell'Agenzia Europea dei Medicinali (EMA) sulla somministrazione di una quarta dose di vaccini a mRNA del 6 aprile 2022, nonché su considerazioni preliminari di salute pubblica per le strategie di vaccinazione contro il COVID-19 nella seconda metà del 2022, pubblicate dall'ECDC il 18 luglio 2022.

Report Vaccini Anti COVID-19

Report aggiornato al: 23-01-2023 08:14

144.017.279

Totale somministrazioni

Ciclo Vaccinale Primario

Con almeno una dose

49.454.588

91,59 % della popolazione over 12

(persone con almeno una somministrazione)

Ciclo vaccinale

48.708.464

90,21 % della popolazione over 12

(persone che hanno completato il ciclo vaccinale)

Guariti

396.663

0,73 % della popolazione over 12

guarita da al massimo 6 mesi senza alcuna somministrazione

Totale

49.851.251

92,33 % della popolazione over 12

Dose Addizionale/Booster

Dose addizionale/richiamo (booster)

40.445.552

84,79 % della popolazione potenzialmente oggetto di dose addizionale o booster che ha ultimato il ciclo vaccinale da almeno 4 mesi

Guariti post 2ª dose/unica dose

1.474.203

3,09 % della popolazione potenzialmente oggetto di dose addizionale o booster guarita post 2ª dose/unica dose da al massimo 4 mesi

Totale

41.919.755

87,88 % della platea dose booster

Seconda dose booster

Booster immuno / 2ª dose booster

5.835.144

30,52 % della popolazione potenzialmente oggetto di dose booster/2ª booster cha ha ultimato il ciclo vaccinale da almeno 4 mesi

Guariti post 1ª dose booster

1.464.434

7,66 % della popolazione potenzialmente oggetto di 2ª dose booster guarita post 1ª dose booster da al massimo 6 mesi

Totale

7.299.578

38,18 % della platea 2ª dose booster

*Dati relativi alla popolazione appartenente alle categorie prevalenti oggetto prioritariamente di 2ª dose booster

Terza dose booster

3ª dose booster

412.352

13,11 % della popolazione potenzialmente oggetto di 3ª dose booster cha ha ultimato il ciclo vaccinale da almeno 4 mesi

Guariti post 2ª dose booster

241.135

7,66 % della popolazione potenzialmente oggetto di 3ª dose booster guarita post 2ª dose booster da al massimo 6 mesi

Totale

653.487

20,77 % della platea 3ª dose booster

*Dati relativi alla popolazione appartenente alle categorie prevalenti oggetto prioritariamente di 3ª dose booster

Copertura vaccinale Covid-19
Over 60

Somministrazioni
2.845.791
15,68 % della popolazione over 60
oggetto di somministrazione anti Covid-19
da al massimo 4 mesi

Guarigioni
1.135.770
6,26 % della popolazione over 60
guarita dall'infezione
da al massimo 4 mesi

Totale
3.981.561
21,94 % della popolazione over 60

Somministrazione platea 5-11 anni

Con almeno una dose
1.409.316
38,55 % della popolazione 5-11
(persone con almeno una somministrazione)

Ciclo vaccinale
1.291.163
35,32 % della popolazione 5-11
(persone che hanno completato il ciclo vaccinale)

Guariti
106.391
2,91 % della popolazione 5-11
guarita da al massimo 6 mesi senza alcuna somministrazione

Totale
1.515.707
41,46 % della popolazione 5-11

Covid-19 in fragile children (6 months-4 years)

OGGETTO: Estensione di indicazione di utilizzo del vaccino Comirnaty (BioNTech/Pfizer) per la fascia di età 6 mesi - 4 anni (compresi).

0049730-09/12/2022-DGPRE-

Ministero della Salute

DIREZIONE GENERALE DELLA PREVENZIONE SANITARIA
Ufficio 5 - Prevenzione malattie trasmissibili e profilassi internazionale

In data 24/10/2022 la Commissione Tecnico Scientifica di AIFA, accogliendo il parere espresso dall'Agenzia Europea dei Medicinali (EMA), ha approvato l'estensione di indicazione di utilizzo del vaccino Comirnaty (BioNTech/Pfizer), nella specifica formulazione da 3 microgrammi/dose, per la fascia di età 6 mesi - 4 anni (compresi). Tenuto conto del parere espresso dal Gruppo di Lavoro

2/COVID-19 ai bambini nella fascia di età 6 mesi – 4 anni (compresi) che presentino condizioni di fragilità, tali da esporli allo sviluppo di forme più severe di infezione da SARS-Cov2, e nello specifico le seguenti:

Comirnaty 3 microgrammi/dose viene somministrato per via intramuscolare dopo diluizione come **ciclo primario** di **3 dosi** (da **0,2 mL** ciascuna) con la seconda dose a 3 settimane dalla prima dose, e la terza dose almeno 8 settimane dopo la seconda. Se il bambino compie 5 anni tra una dose e l'altra

Covid-19 vaccines in children (5-11 years)

0001398-13/01/2023-DGPRE-DGPRE-P

Ministero della Salute

DIREZIONE GENERALE DELLA PREVENZIONE SANITARIA
Ufficio 5 - Prevenzione malattie trasmissibili e profilassi internazionale

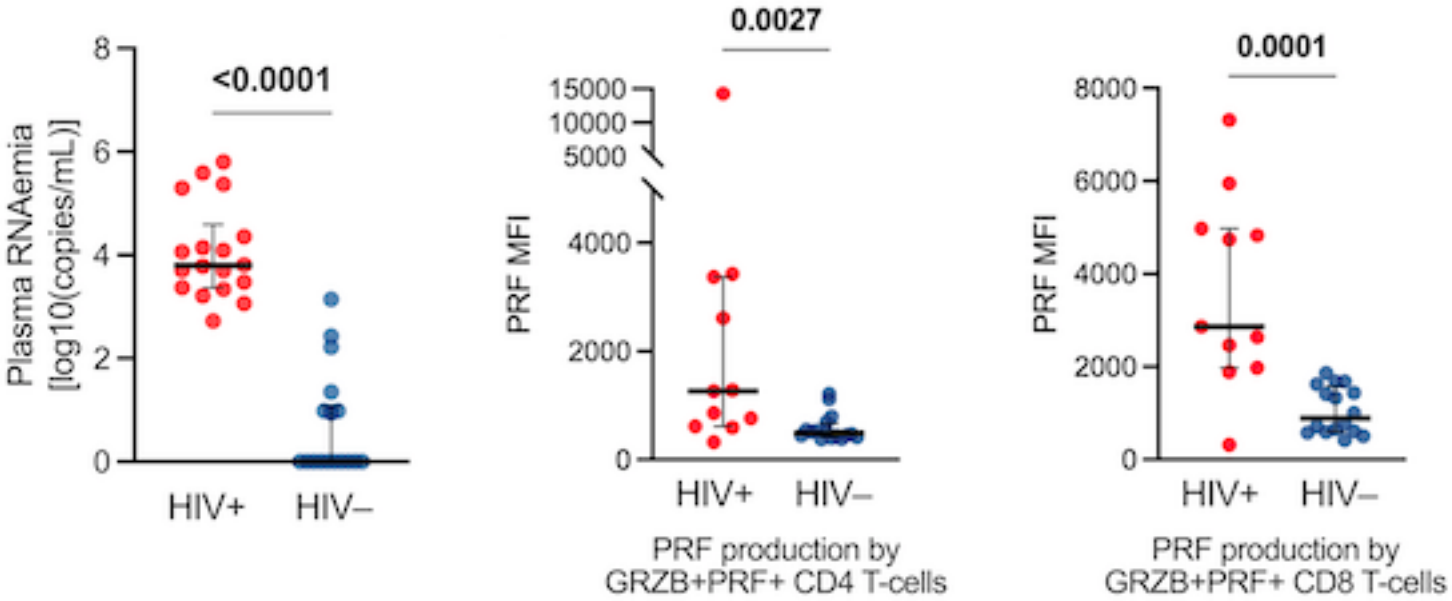
OGGETTO: indicazioni sulla dose di richiamo per la fascia di età 5-11 anni nell'ambito della campagna di vaccinazione anti SARS-CoV-2/COVID-19.

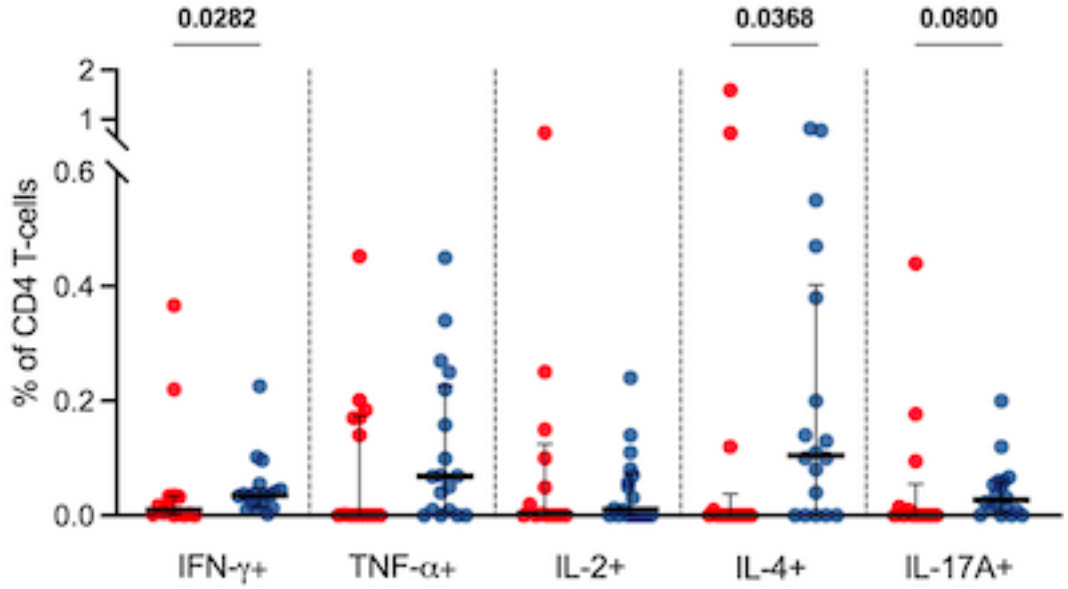
La Commissione Tecnico Scientifica di AIFA, nella seduta del 5 dicembre 2022, accogliendo il parere espresso dall'Agenzia Europea dei Medicinali (EMA) ha autorizzato la formulazione Original/Omicron BA.4-5 (5/5 microgrammi) del vaccino Comirnaty con l'indicazione di utilizzo come dose di richiamo per la fascia di età 5-11 anni. Pertanto, si estende la raccomandazione della dose di richiamo ai bambini nella fascia di età 5-11 anni (compresi), che presentino condizioni di fragilità tali da esporli allo sviluppo di forme più severe di infezione da SARS-CoV-2 (cfr. circolari prot. n° 40319-23/09/2022-DGPRE e prot. n° 49730-09/12/2022-DGPRE).

Inoltre, tenuto conto dell'indicazione di utilizzo autorizzata da EMA e AIFA, tale formulazione potrà essere resa disponibile anche per il richiamo dei bambini, nella fascia di età 5-11 anni (compresi), che non presentino tali condizioni, su richiesta del genitore o di chi ne ha la potestà genitoriale.

Covid-19 and Vaccines in Immune-suppressed Individuals

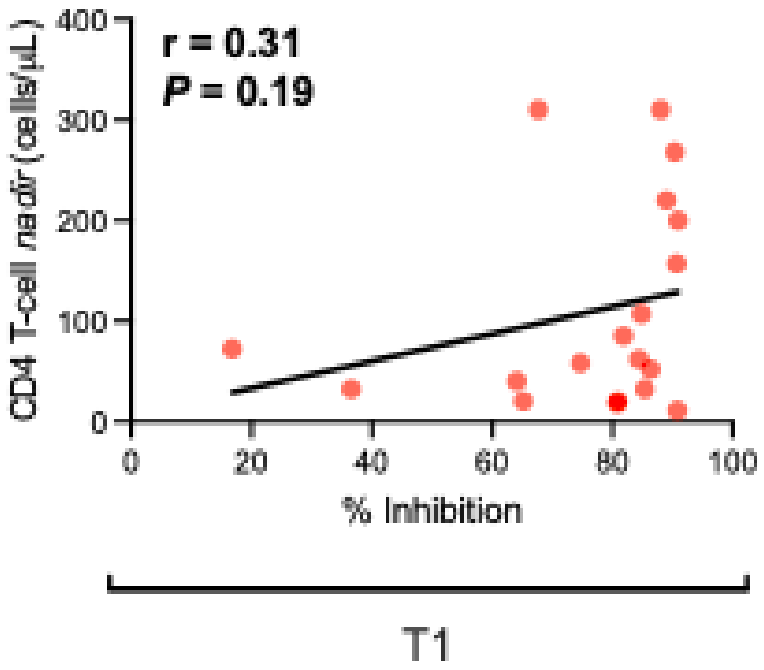
Higher viremia and skewed SARS-CoV-2 responses in HIV-infected individuals

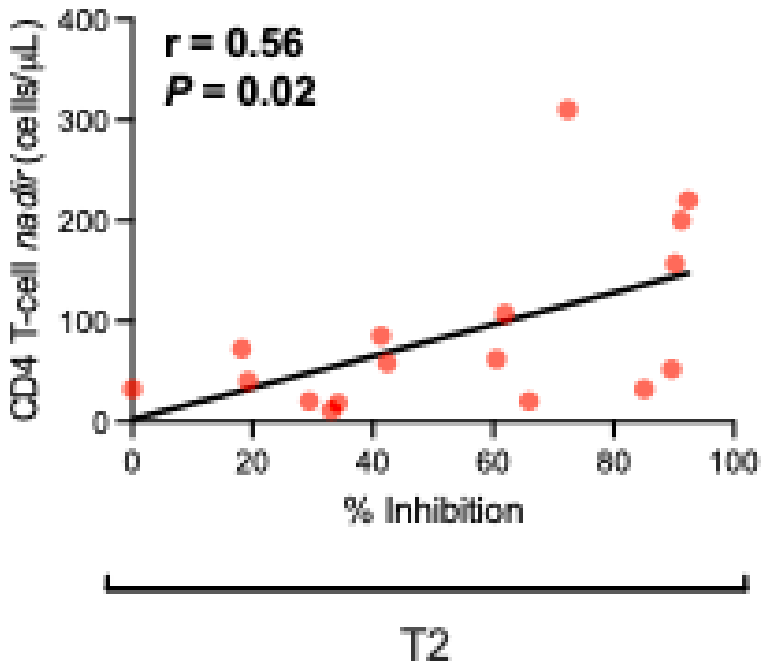




Augello et al, CROI 2023, Seattle, USA

Lower nadir linked to lower Spike-ACE2 binding inhibition activity (neutralization)





Augello et al., AIDS, under review

Low immunogenicity of COVID-19 vaccines in immunocompromised populations (SOT and patients with haematological malignancy)

- Metanalysis on 5917 results, included 162 studies
- Proportion of non-responders

- higher among solid organ transplant recipients (range 18-100%) and patients with haematological malignancy (range 14-61%)
- lower in patients with cancer (range 2-36%) and patients on dialysis (range 2-30%)

- Risk factors for non-response: older age, use of corticosteroids, immunosuppressive or anti-CD20 agent

Galmiche et al. Clin Microbiol Infect 2022

SARS-CoV-2 Prophylaxis

Pre-Exposure Prophylaxis (PrEP) with Anti-SARS-CoV-2 Monoclonal Antibodies

- Vaccination remains the most effective way to prevent SARS-CoV-2 infection and should be considered the first line of prevention
- However, some individuals cannot or may not mount an adequate protective response to COVID-19 vaccines

The NEW ENGLAND JOURNAL of MEDICINE

RESEARCH SUMMARY

Intramuscular AZD7442 (Tixagevimab–Cilgavimab) for Prevention of Covid-19

Levin MJ et al. DOI: 10.1056/NEJMoa2116620

N=5197, randomly assigned (2:1) to:
- receive 300mg i.m. AZD7442
- placebo

Risk factors for an inadequate response to Covid-19 vaccination

- Age ≥60 years
- Obesity
- Immunocompromised status
- Inability to receive vaccines without adverse effects
- Congestive heart failure
- Chronic obstructive pulmonary disease
- Chronic kidney disease
- Chronic liver disease

Persons at increased risk for SARS-CoV-2 exposure

- Health care workers (including staff working in long-term care facilities)
- Workers in industrial settings shown to increase risk of SARS-CoV-2 transmission
- Military personnel
- Students living in dormitories
- Others living together in close or high-density proximity

Tixagevimab plus cilgavimab (Evusheld) as PrEP

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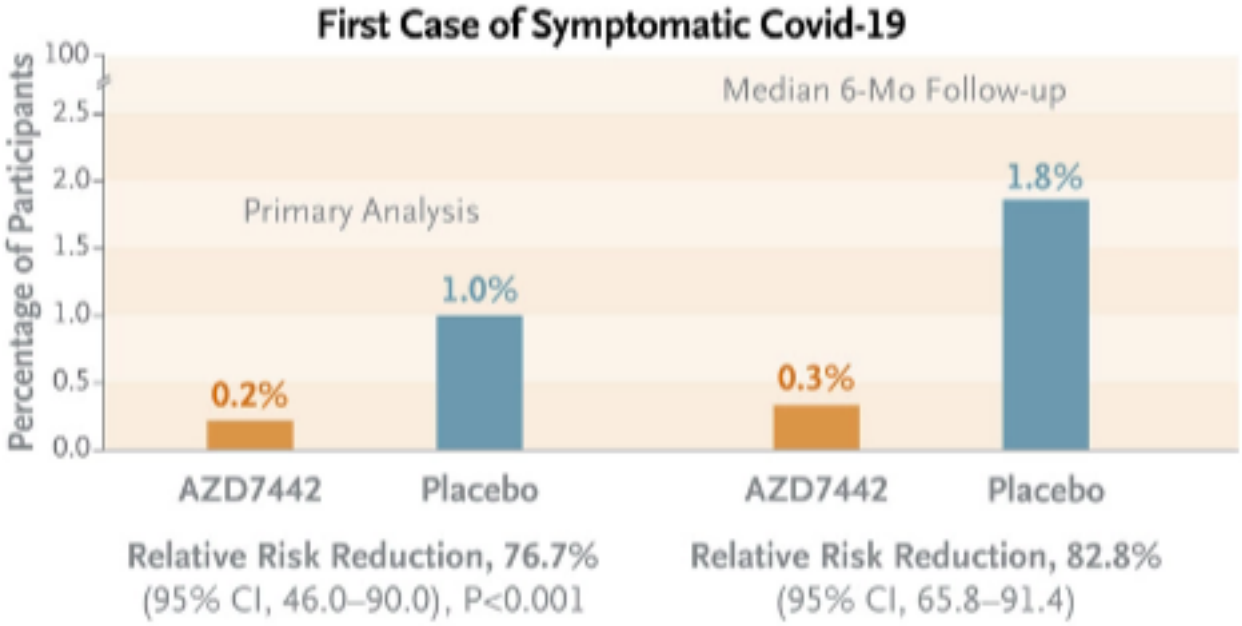

SIMIT
Società Italiana di Malattie Infettive e Tropicali

Indicazione AIFA sull'utilizzo di EVUSHELD (Determina n. DG/87/2022A - GU n. 42 del 19.02.2022)

Profilassi pre-esposizione dell'infezione da SARS-CoV-2 in soggetti adulti ed adolescenti di età pari o superiore a 12 anni e con peso corporeo di almeno 40kg, con un controllo sierologico negativo (anticorpi IgG anti-Spike negativi), e che presentano almeno uno dei fattori di rischio di seguito elencati:

- Pazienti che abbiano assunto nell'ultimo anno terapie che comportano deplezione dei linfociti B (ad es. rituximab, ocrelizumab, ofatumumab, alemtuzumab)
- Pazienti in trattamento con inibitori della tirosin-chinasi Bruton
- Pazienti trattati con CarT
- Pazienti trapiantati di cellule ematopoietiche che hanno una malattia di rigetto o che stanno assumendo farmaci immunosoppressori
- Pazienti con malattia onco-ematologica in fase attiva
- Pazienti trapiantati di polmone
- Pazienti trapiantati di organo solido (diverso dal trapianto di polmone) entro 1 anno dal trapianto
- Pazienti trapiantati di organi solidi con recente trattamento per rigetto acuto con agenti che riducono le cellule T o B
- Pazienti con immunodeficienze combinate gravi
- Pazienti con infezione da HIV non in trattamento e una conta dei linfociti T CD4 <50 cellule/mm^3
- Pazienti con altra compromissione del sistema immunitario che ha determinato mancata sieroconversione.

Other preventive measures against SARS-CoV-2

SARS-CoV-2: General Prevention Measures

- The risk of SARS-CoV-2 transmission can be reduced by covering coughs and sneezes and maintaining a distance of at least 6 feet from others.
- When consistent distancing is not possible, face coverings may reduce the spread of infectious droplets from individuals with SARS-CoV-2 infection to others.
- Frequent handwashing also effectively reduces the risk of infection.
- Health care providers should follow the Centers for Disease Control and Prevention (CDC) recommendations for infection control and the appropriate use of personal protective equipment.

NIH guidelines, 2022

Conclusions

- Vaccination is the most effective preventive measure against SARS-CoV-2
- Vaccination induces:
- antibody responses; inefficient protection against infection (variants)
- T-cell responses, which confer protection against severe disease despite viral variants
- Correlate of protection still unknown:
- number of booster doses? Likely to be different according to age and risk factors
- effect of bivalent vaccines against “disappearing” variants
- Low coverage in older adults
- Prophylaxis for high-risk groups
- Other preventive measures (masking, hand-washing, distancing) should be used for all respiratory symptoms, regardless SARS-CoV-2 diagnosis

Acknowledgements

- Clinica di Malattie Infettive, ASST Santi Paolo e Carlo, Presidio San Paolo
- Personale medico
- Personale infermieristico e di supporto
- Laboratorio di Malattie infettive, DISS, Unimi
- Roberta Rovito
- Matteo Augello
- Valeria Bono
- Ylenia d'Errico
- Elisa Santoro
- Giulia Marchetti
- Laboratorio di Microbiologia, DISS, Unimi
- Elisa Borghi
- Silvia Bianchi

- UO Mal Infettive, H. Papa Giovanni XXIII, Bergamo
- Franco Maggiolo

- Centre de recherche du CHUM (CRCHUM), Universitè de Montreal
- Andres Finzi

- UO Mal Infettive, H. San Martino, UniGe
- Antonio Di Biagio
- Lucia Taramasso

- Dipartimento di Biotecnologie Mediche e Medicina Traslazionale, Unimi
- Domenico Mavilio