Point sur la vaccination Covid 19

Odile Launay

16 juin 2021

Rencontre annuelle de prévention des infections associées aux soins

Liens d’intérêt

- Recherches/essais cliniques : MSD, GSK bio, spmsd, Sanofi Pasteur, Janssen, Pfizer
- Aides pour des recherches : MSD, GSK bio, spmsd, Sanofi Pasteur, Janssen, Pfizer
- Advisory Boards/DSMB : spmsd, Sanofi Pasteur, Janssen, Pfizer
- Cours, formations : Pfizer, MSD, Sanofi Pasteur

Vaccins COVID 19 en Europe
AMM et vaccins en cours d'évaluation

Currently under rolling review

- CVnCoV
- NVX-CoV2373
- Sputnik V (Gam-COVID-Vac)

Marketing authorisation application submitted

No marketing authorisation applications currently under evaluation

Authorised for use in the European Union

- Comirnaty
- COVID-19 Vaccine Moderna
- Vaxzevria (previously COVID-19 Vaccine AstraZeneca)
- COVID-19 Vaccine Janssen

Dates d'obtention d'AMM

21/12/2020

6/01/2021

29/01/2021

11/03/2021

Vaccins Covid 19
Données des essais de phase 3

- Efficacité précoce :
  - **> 90% pour les vaccins ARNm** :
    - 95% (Comirnaty, vaccine Pfizer Biontech),
    - 94.1% (vaccin Covid 19 Moderna),
  - **environ 60% pour les vaccins vectorises adénovirus :**
    - **60%** (Vaxzevria, vaccin Astra Zeneca),
    - **67%** (vaccin Covid 19 Janssen**, une dose**)
  - **De l'ordre de 50% pour les vaccins inactivés**
  - **vaccin sous unitaire (Novavax): 90%**

- Pas de signal majeur en terme de sécurité au cours des essais cliniques

Vaccins Covid 19
Données d'efficacité disponibles depuis la mise en route de la vaccination?

- Efficacité en vie réelle après une et deux doses
- Vaccination des populations particulières : immunodéprimées, personnes agées
- Efficacité des vaccins contre la transmission
- Efficacité des vaccins contre les variants

Efficacité vaccinale en vie réelle après 2 doses

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

BNT162b2 mRNA Covid-19 Vaccine in a Nationwide Mass Vaccination Setting

Noa Dagan, M.D., Noam Barda, M.D., Eldad Kepten, Ph.D., Oren Miron, M.A., Shay Perchik, M.A., Mark A. Katz, M.D., Miguel A. Hernán, M.D., Marc Lipsitch, D.Phil., Ben Reis, Ph.D., and Ran D. Balicer, M.D.

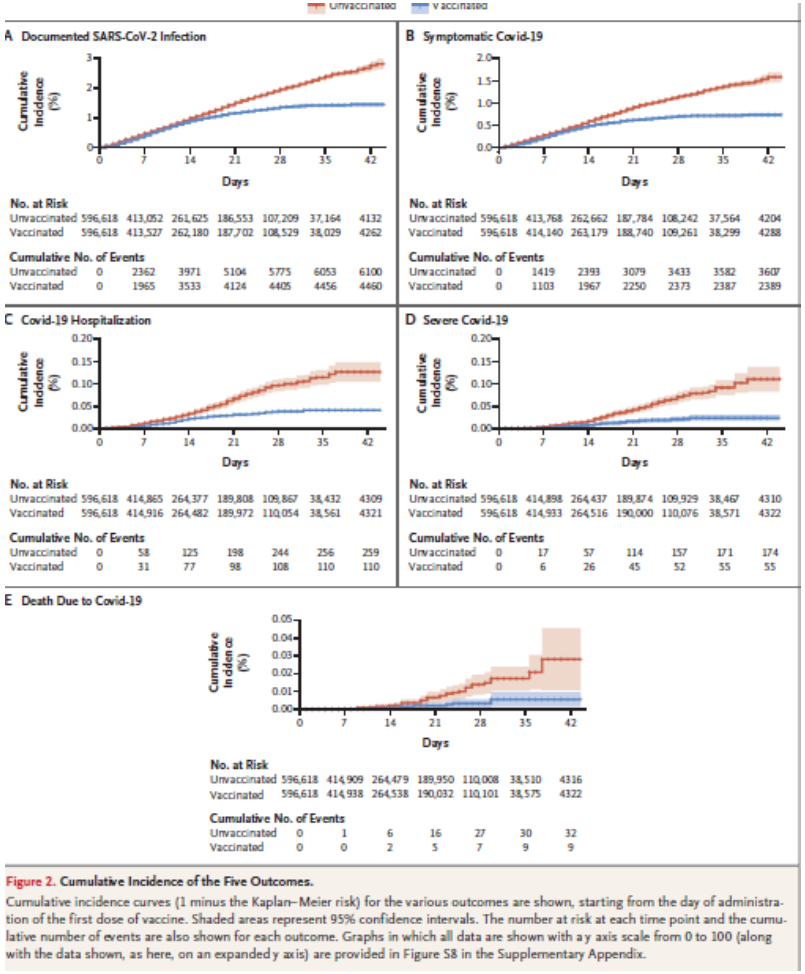


Figure 2. Cumulative Incidence of the Five Outcomes.

Cumulative incidence curves (1 minus the Kaplan–Meier risk) for the various outcomes are shown, starting from the day of administration of the first dose of vaccine. Shaded areas represent 95% confidence intervals. The number at risk at each time point and the cumulative number of events are also shown for each outcome. Graphs in which all data are shown with a y axis scale from 0 to 100 (along with the data shown, as here, on an expanded y axis) are provided in Figure S8 in the Supplementary Appendix.

- Etude conduite en Israel à partir d'une base de données regroupant 4,7 millions de personnes (53% de la population)
- Etude cas (vaccinés)/témoins (non vaccinés)
- 596 618 personnes dans chaque groupe

Table 1. Demographic and Clinical Characteristics of Vaccinated Persons and Unvaccinated Controls at Baseline.*

Characteristics	Unvaccinated Controls (N=596,618)	Vaccinated Persons (N=596,618)
Median age (IQR) — yr	45 (35–62)	45 (35–62)
Age group — no. (%)		
16 to 39 yr	213,090 (35.7)	213,090 (35.7)
40 to 49 yr	130,752 (21.9)	130,752 (21.9)
50 to 59 yr	85,609 (14.3)	85,609 (14.3)
60 to 69 yr	88,153 (14.8)	88,153 (14.8)
70 to 79 yr	56,946 (9.5)	56,946 (9.5)
≥80 yr	22,068 (3.7)	22,068 (3.7)

N Engl J Med 2021;384:1412-23.
DOI: 10.1056/NEJMoa2101765

Efficacité vaccinale en vie réelle après 2 doses

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

BNT162b2 mRNA Covid-19 Vaccine in a Nationwide Mass Vaccination Setting

Noa Dagan, M.D., Noam Barda, M.D., Eldad Kepten, Ph.D., Oren Miron, M.A., Shay Perchik, M.A., Mark A. Katz, M.D., Miguel A. Hernán, M.D., Marc Lipsitch, D.Phil., Ben Reis, Ph.D., and Ran D. Balicer, M.D.

Table 2. Estimated Vaccine Effectiveness against Covid-19 Outcomes during Three Time Periods.*

Period	Documented Infection		Symptomatic Illness		Hospitalization		Severe Disease		Death	
	1–RR	Risk Difference	1–RR	Risk Difference	1–RR	Risk Difference	1–RR	Risk Difference	1–RR	Risk Difference
	% (95% CI)	no./1000 persons (95% CI)	% (95% CI)	no./1000 persons (95% CI)	% (95% CI)	no./1000 persons (95% CI)	% (95% CI)	no./1000 persons (95% CI)	% (95% CI)	no./1000 persons (95% CI)
14 to 20 days after first dose	46 (40–51)	2.06 (1.70–2.40)	57 (50–63)	1.54 (1.28–1.80)	74 (56–86)	0.21 (0.13–0.29)	62 (39–80)	0.14 (0.07–0.21)	72 (19–100)	0.03 (0.01–0.07)
21 to 27 days after first dose	60 (53–66)	2.31 (1.96–2.69)	66 (57–73)	1.34 (1.09–1.62)	78 (61–91)	0.22 (0.13–0.31)	80 (59–94)	0.18 (0.10–0.27)	84 (44–100)	0.06 (0.02–0.11)
7 days after second dose to end of follow-up	92 (88–95)	8.58 (6.22–11.18)	94 (87–98)	4.61 (3.29–6.53)	87 (55–100)	0.22 (0.08–0.39)	92 (75–100)	0.32 (0.13–0.52)	NA	NA

* Confidence intervals were estimated using the percentile bootstrap method with 500 repetitions. Estimates were calculated only for cells with more than 10 instances of an outcome across the two groups. NA denotes not available, and RR risk ratio.

- Efficacité vaccinale plus élevée après la 2e dose

N Engl J Med 2021;384:1412-23.
DOI: 10.1056/NEJMoa2101765

Efficacité vaccinale en vie réelle sur les formes asymptomatiques

Research

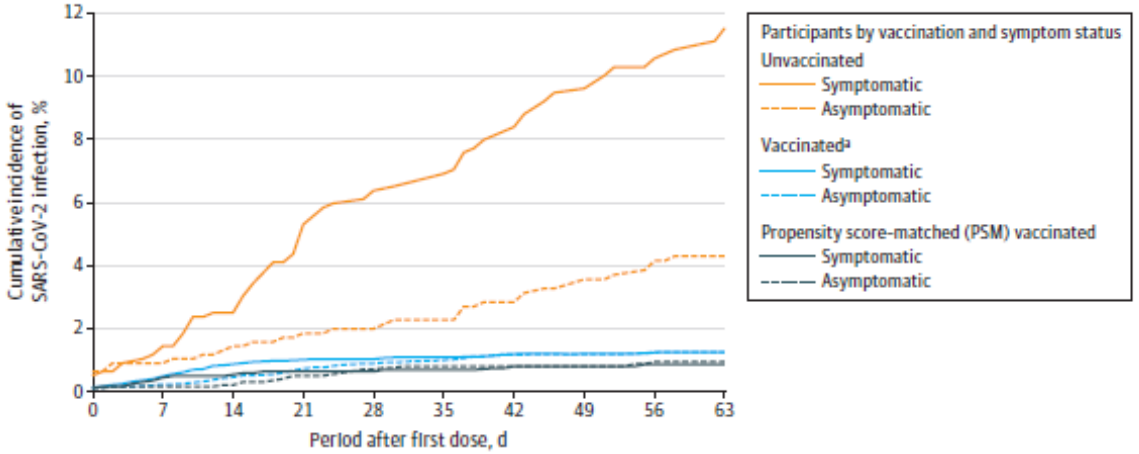
JAMA | Original Investigation

Association Between Vaccination With BNT162b2 and Incidence of Symptomatic and Asymptomatic SARS-CoV-2 Infections Among Health Care Workers

Yoel Angel, MD, MBA; Avishay Spitzer, MD; Oryan Henig, MD; Esther Saiag, MD, MHA; Eli Sprecher, MD, PhD, MBA; Hagit Padova, MD, MHA; Ronen Ben-Ami, MD

JAMA. doi:10.1001/jama.2021.7152
Published online May 6, 2021.

Figure 3. Cumulative Incidence of SARS-CoV-2 Infection Among Vaccinated, Propensity Score–Matched Vaccinated, and Unvaccinated Participants Screened for SARS-CoV-2 Infection



No. at risk

Unvaccinated	757	743	731	713	698	693	678	664	654	645
Vaccinated with first dose[a]	5953	5790	5640	766	79	28	21	12	8	4
Vaccinated with second dose[a]	0	0	0	4775	5370	5238	5093	4816	4322	3082
PSM vaccinated with first dose	2141	2098	2047	310	32	9	7	4	3	1
PSM vaccinated with second dose	0	0	0	1686	1926	1846	1777	1636	1425	970

- Etude de cohort monocentrique retrospective, centre medical tertiaire, Tel Aviv
- 6170 HCW :
  - 5953 vaccinés Pfizer au moins une dose, 5517 ont recu 2 doses
  - 757 non vaccinés
- Suivis median 63 jours

Immunogénicité vaccins ARNm et patients transplantés d'organe solide

Table. Demographic and Clinical Characteristics of Study Participants, Stratified by Immune Response to the First Dose of SARS-CoV-2 Messenger RNA Vaccine, and Associations With Developing an Antibody Response (N = 436)

	Antibody, No. (%)					
	Detectable (n = 76)	Undetectable (n = 360)	Bivariable IRR (95% CI)	*P* value	Adjusted multivariable IRR (95% CI)[a]	*P* value
Age group, y						
18-39	30 (39)	69 (19)				
40-59	18 (24)	132 (37)	0.81 (0.71-0.93)[b]	.003	0.83 (0.73-0.93)	.002
≥60	28 (37)	159 (44)				
Sex[c]						
Female	48 (64)	212 (59)	1.12 (0.73-1.73)[d]	.60		
Male	27 (36)	138 (41)				
Race[e,a]						
Non-White[f]	8 (11)	38 (11)	0.99 (0.51-1.94)[g]	.99		
White	67 (89)	312 (89)				
Type of organ transplant[h]						
Kidney	31 (41)	188 (53)	0.68 (0.45-1.04)[i]	.07		
Liver	28 (37)	50 (14)				
Heart	9 (12)	57 (16)				
Lung	4 (5)	45 (13)				
Pancreas	1 (1)	4 (1)				
Other (multiorgan)	2 (3)	12 (3)				
Time since transplant, y[j]						
<3	13 (17)	106 (30)				
3-6	12 (16)	77 (22)	1.88 (1.21-2.93)[k]	.005	1.45 (0.96-2.20)	.08
7-11	19 (25)	82 (23)				
≥12	31 (41)	89 (25)				
Type of regimen						
Includes anti-metabolite maintenance immunosuppression[l]	28 (37)	292 (81)	0.21 (0.14-0.32)[m]	<.001	0.22 (0.15-0.34)	<.001
Does not include anti-metabolite maintenance immunosuppression	48 (63)	68 (19)				
Vaccine[n]						
mRNA-1273 (Moderna)	52 (69)	152 (43)	2.14 (1.24-3.69)[o]	.006	2.15 (1.29-3.57)	.003
BNT162b2 (Pfizer-BioNTech)	23 (31)	200 (57)				
Enzyme immunoassay manufacturer[p]						
Roche Elecsys	64 (84)	266 (74)	1.71 (0.96-3.05)[q]	.07		
EUROIMMUN	12 (16)	94 (26)				

Letters

RESEARCH LETTER

Immunogenicity of a Single Dose of SARS-CoV-2 Messenger RNA Vaccine in Solid Organ Transplant Recipients

Immunocompromised individuals have been excluded from studies of SARS-CoV-2 messenger RNA (mRNA) vaccines. In such

RESEARCH LETTER

Antibody Response to 2-Dose SARS-CoV-2 mRNA Vaccine Series in Solid Organ Transplant Recipients

In contrast to immunocompetent participants in vaccine trials,[1,2] a low proportion (17%) of solid organ transplant re-

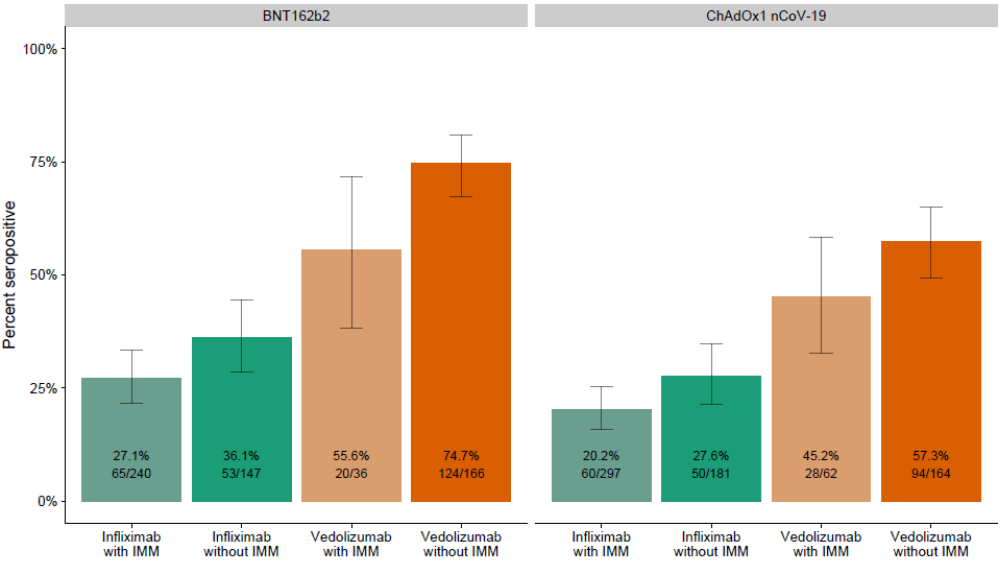
- 436 patients, 53% rein
- 658 patients dans la 2e publication
- Age moyen 55,9 ans, delai 6,2 ans
- 52% BNT162b2, 48% Moderna
- Réponse a 1 dose: 17%
- **Réponse après 2 doses: 54%**
- Facteurs associés négativement a la reponse:
  - ttt par antimetabolites,
  - Rein, délai par rapport a la greffe
  - âge,
  - vaccine BNT

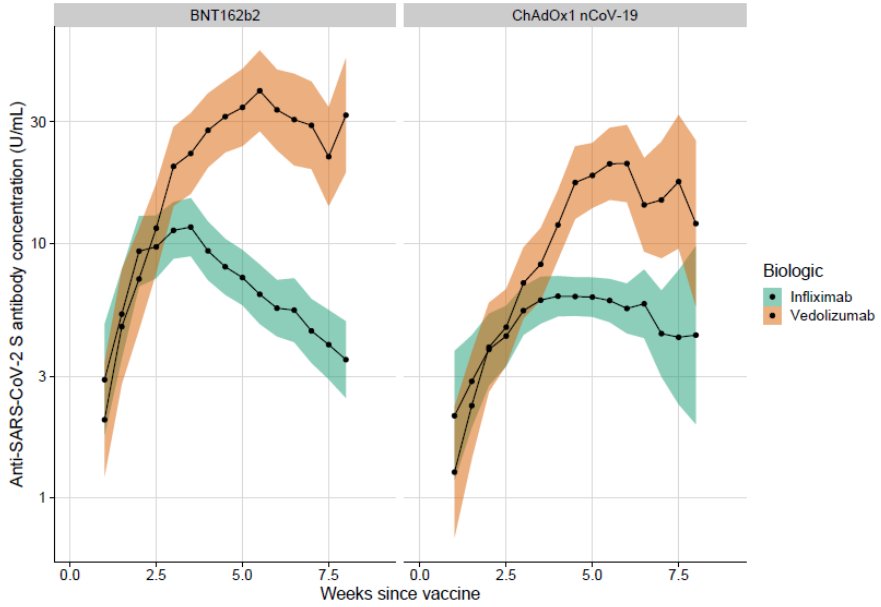
Immunogénicité vaccins COVID19 et IBD

Infliximab and immunomodulators reduce immunogenicity of a single-dose of SARS-CoV-2 vaccines

Title	**Infliximab is associated with attenuated immunogenicity to BNT162b2 and ChAdOx1 nCoV-19 SARS-CoV-2 vaccines**
Authors	Nicholas A Kennedy, PhD[1,2*], Simeng Lin, MBChB[1,2*], James R Goodhand,

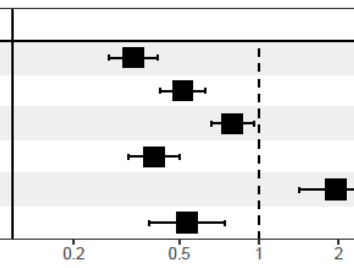
Infliximab: n= 865 vedolizumab: n= 428





All

Variable	N	Fold change (95% CI)	p
Infliximab (vs vedolizumab)	861/1284	0·34 (0·27, 0·41)	<0·0001
Immunomodulator	624/1284	0·51 (0·42, 0·62)	<0·0001
Crohn's disease (vs UC or IBDU)	736/1284	0·79 (0·66, 0·96)	0·015
Age ≥ 60	275/1284	0·40 (0·32, 0·50)	<0·0001
Non-white ethnicity	116/1284	1·95 (1·43, 2·67)	<0·0001
Current smoker	107/1284	0·53 (0·39, 0·74)	0·00016



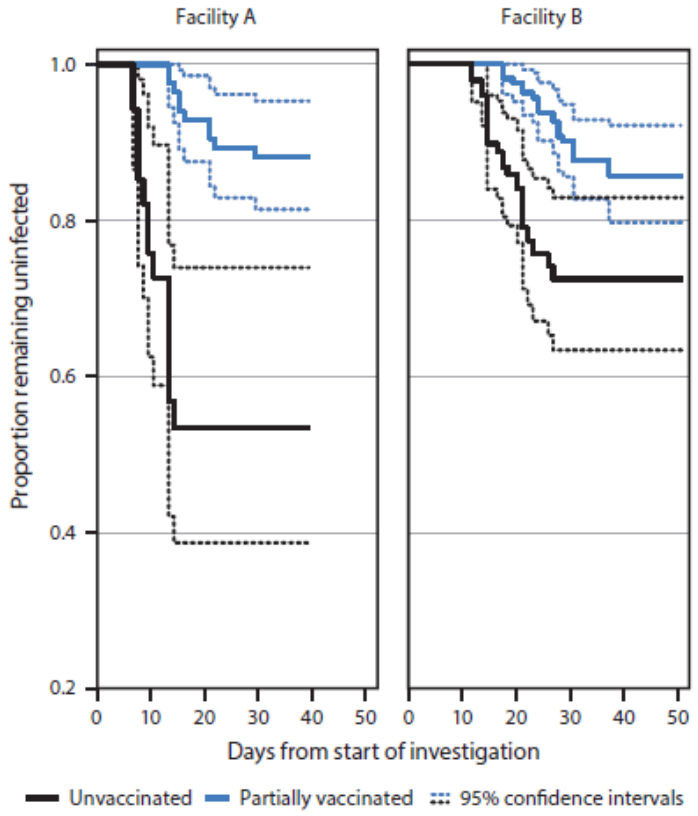
Vaccine effectiveness in elderly

Morbidity and Mortality Weekly Report

Effectiveness of the Pfizer-BioNTech COVID-19 Vaccine Among Residents of Two Skilled Nursing Facilities Experiencing COVID-19 Outbreaks — Connecticut, December 2020–February 2021

Amadea Britton, MD[1,2,*]; Kara M. Jacobs Slifka, MD[1,*]; Chris Edens, PhD[1,*]; Srinivas Acharya Nanduri, MD[1]; Stephen M. Bart, PhD[2,3]; Nong Shang, PhD[1]; Adora Harizaj, MPH[3]; Jillian Armstrong, MS[4]; Kerui Xu, PhD[1,2]; Hanna Y. Ehrlich, MPhil[4]; Elizabeth Soda, MD[1]; Gordana Derado, PhD[1]; Jennifer R. Verani, MD[1]; Stephanie J. Schrag, DPhil[1]; John A. Jernigan, MD[1]; Vivian H. Leung, MD[3,†]; Sunil Parikh, MD[4,†]

FIGURE 2. Proportion of skilled nursing facility residents who remained uninfected with SARS-CoV-2 during the investigation period,* by COVID-19 vaccination status† and facility — Connecticut, December 21, 2020–February 12, 2021



- Retrospective cohort analysis
- 2 Connecticut Skilled Nursing Facilities
- partial vaccination with ARNm COVID 19 vaccine (< 14days after dose 1 though 7 days after dose 2) :
  - 63% (95%CI:33%-79%) effective against SARS CoV2 infection

Efficacité vaccin ARNm et sujets âgés

The NEW ENGLAND JOURNAL of MEDICINE

CORRESPONDENCE

Incident SARS-CoV-2 Infection among mRNA-Vaccinated and Unvaccinated Nursing Home Residents

Table 1. Incident SARS-CoV-2 Infection among Nursing Home Residents According to Vaccination Status.*

Variable	Total	Asymptomatic SARS-CoV-2 Infection	Symptomatic SARS-CoV-2 Infection	Percent of Infected Residents Who Were Asymptomatic
Residents vaccinated with ≥1 dose				
No. of residents	18,242			
Positive test after receipt of first dose — no. (%)				
At 0–14 days	822 (4.5)	587 (3.2)	235 (1.3)	71.4
At 15–28 days	250 (1.4)	179 (1.0)	71 (0.4)	71.6
Residents vaccinated with 2 doses				
No. of residents	13,048			
Positive test after receipt of second dose — no. (%)				
At 0–14 days	130 (1.0)	110 (0.8)	20 (0.2)	84.6
At >14 days	38 (0.3)	29 (0.2)	9 (0.1)	76.3
Unvaccinated residents				
No. of residents	3,990			
Positive test after first vaccination clinic — no. (%)				
At 0–14 days	173 (4.3)	115 (2.9)	58 (1.5)	66.5
At 15–28 days	69 (1.7)	42 (1.1)	27 (0.7)	60.9
At 29–42 days	16 (0.4)	13 (0.3)	3 (0.1)	81.2
At >42 days	12 (0.3)	10 (0.3)	2 (0.1)	83.3

- Registre electronique
- 280 nursing homes, 21 états
- Résidents vaccinés (1 ou 2 doses) jusqu'au 15 fevrier 2021
- Résidents présents le jour de la vaccination et non vaccinés jusqu'à mars 2021
- PCR tous les 3-7 jours si cas dans l'entourage ou symptoms
- Exclusion en cas de COVD dans les 3 mois precedents
- 80,4% vaccines Pfizer

Vaccination et grossesse

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Preliminary Findings of mRNA Covid-19 Vaccine Safety in Pregnant Persons

Tom T. Shimabukuro, M.D., Shin Y. Kim, M.P.H., Tanya R. Myers, Ph.D.,
Pedro L. Moro, M.D., Titilope Oduyebo, M.D., Lakshmi Panagiotakopoulos, M.D.,

- 35 691 femmes enceintes à partir de 3 bases de données différentes: "V-safe after vaccination heath checker" surveillance system, v-safe pregnancy registery et le VAERS (Vaccine Adverse Event Reporting System)
- 16-54 ans
- Reactogénicité moindre sauf pour la douleur au point d'injection
- Pas d'augmentation du risque de FCS ou FC tardive
- Pas de difference en termes d'issue de grossesse (prematurité, petit poids de naissance, anomalies congenitales ou mort nés

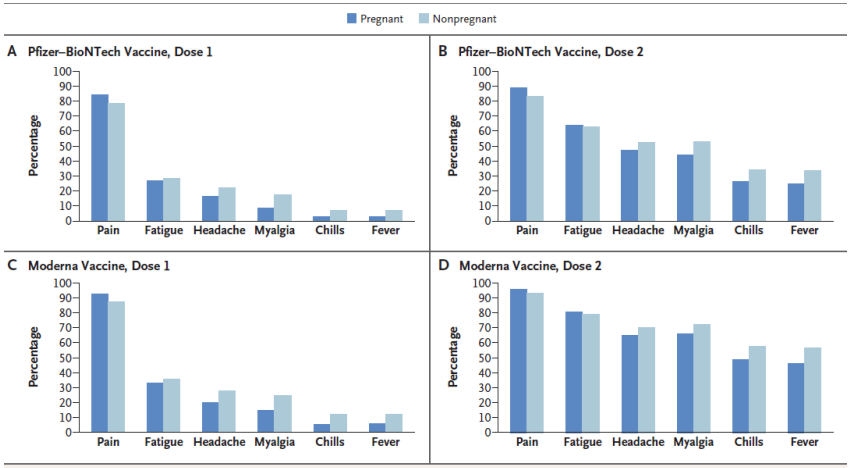


Figure 1. Most Frequent Local and Systemic Reactions Reported in the V-safe Surveillance System on the Day after mRNA Covid-19 Vaccination.

Table 4. Pregnancy Loss and Neonatal Outcomes in Published Studies and V-safe Pregnancy Registry Participants.

Participant-Reported Outcome	Published Incidence*	V-safe Pregnancy Registry†
	%	*no./total no. (%)*
Pregnancy loss among participants with a completed pregnancy		
Spontaneous abortion: <20 wk[15-17]	10–26	104/827 (12.6)‡
Stillbirth: ≥ 20 wk[18-20]	<1	1/725 (0.1)§
Neonatal outcome among live-born infants		
Preterm birth: <37 wk[21,22]	8–15	60/636 (9.4)¶
Small size for gestational age[23,24]‖	3.5	23/724 (3.2)
Congenital anomalies[25]**	3	16/724 (2.2)
Neonatal death[26]††	<1	0/724

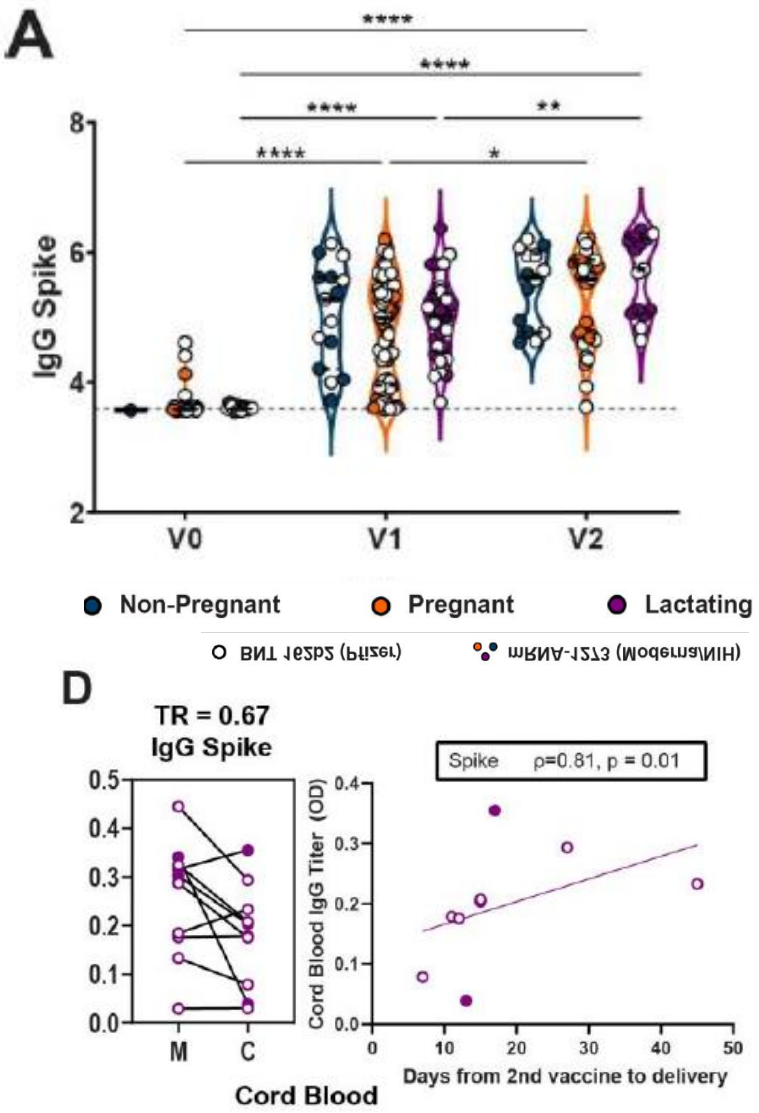
Vaccination et grossesse

TITLE: COVID-19 vaccine response in pregnant and lactating women: a cohort study

AUTHORS: Kathryn J. Gray, MD PhD[1*], Evan A. Bordt, PhD[2*], Caroline Atyeo, BS[3,4*], Elizabeth Deriso, PhD[3], Babatunde Akinwunmi, MD MPH MMSc[1], Nicola Young, BA[5],

medRxiv preprint doi: https://doi.org/10.1101/2021.03.07.21253094;

- 131 femmes: 84 femmes enceinte, 31 allaitantes, 16 controles
- Cohorte prospective
- Vaccination ARNm
- Passage dans le sang de cordon et dans le lait

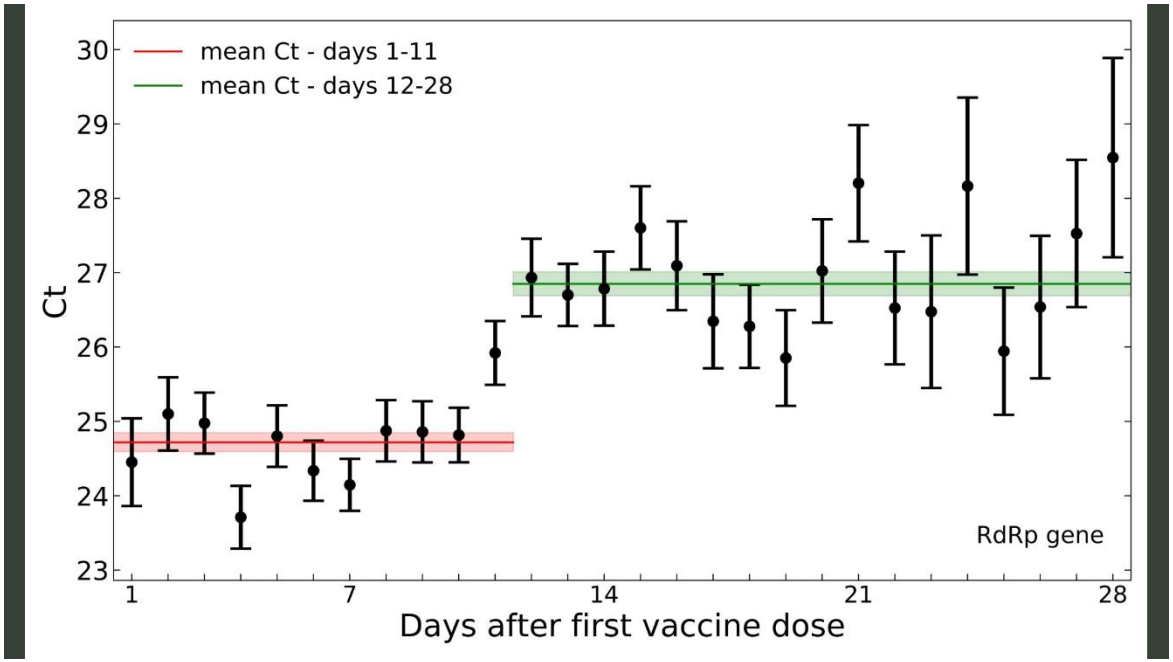


Effet des vaccins ARNm sur la transmission?

nature medicine
BRIEF COMMUNICATION
https://doi.org/10.1038/s41591-021-01316-7
Check for updates

Initial report of decreased SARS-CoV-2 viral load after inoculation with the BNT162b2 vaccine

Matan Levine-Tiefenbrun[1,6], Idan Yelin[1,6] ✉, Rachel Katz[2], Esma Herzel[2], Ziv Golan[3], Licita Schreiber[3], Tamar Wolf[3], Varda Nadler[3], Amir Ben-Tov[2,4], Jacob Kuint[2,4], Sivan Gazit[2], Tal Patalon[2], Gabriel Chodick[2,4] and Roy Kishony[1,5] ✉



- Viral load substantially reduced for infections occurring 12-37 days after the first dose of vaccine
- Reduced viral loads : potentially lower infectiousness, further contributing to vaccine effect on virus spread

Effet de la vaccination sur des soignants sur leur entourage?

Table 3: Effect of vaccination in healthcare workers on documented COVID-19 in healthcare workers and their household at multiple time periods following the first dose

			Days from vaccination				
Population	**Outcome**	**Unvaccinated period**	**Day 1-6**	**Day 7-13**	**Day 14-20**	**Day 20-27**	**Post day 28**
Healthcare workers	Cases	1	0·81 (0·72 to 0·90)	1·11 (1·02 to 1·22)	0·54 (0·47 to 0·61)	0·42 (0·36 to 0·49)	0·43 (0·39 to 0·47)
Healthcare workers	Hospitalisation	1	0·48 (0·25 to 0·92)	0·78 (0·48 to 1·27)	0·16 (0·06 to 0·43)	0·13 (0·04 to 0·40)	0·17 (0·09 to 0·32)
Household	Cases	1	0·73 (0·61 to 0·87)	1·08 (0·94 to 1·25)	0·85 (0·73 to 0·99)	0·68 (0·58 to 0·81)	0·64 (0·56 to 0·73)
Household	Hospitalisation	1	0·95 (0·53 to 1·69)	1·25 (0·78 to 2·02)	0·96 (0·56 to 1·63)	0·83 (0·47 to 1·46)	0·64 (0·40 to 1·01)

Results shown are hazard ratios from Cox models adjusting for the variables shown in the footnote of Table 2 (model 4).

- Comparaison periode sans vaccination avec periode apres une dose
- Etude anglaise
- Efficacité demontrée pour les soignants et leur entourage familial

The NEW ENGLAND JOURNAL of MEDICINE

CORRESPONDENCE

Antibody Responses in Seropositive Persons after a Single Dose of SARS-CoV-2 mRNA Vaccine

N ENGL J MED 384;14 NEJM.ORG APRIL 8, 2021

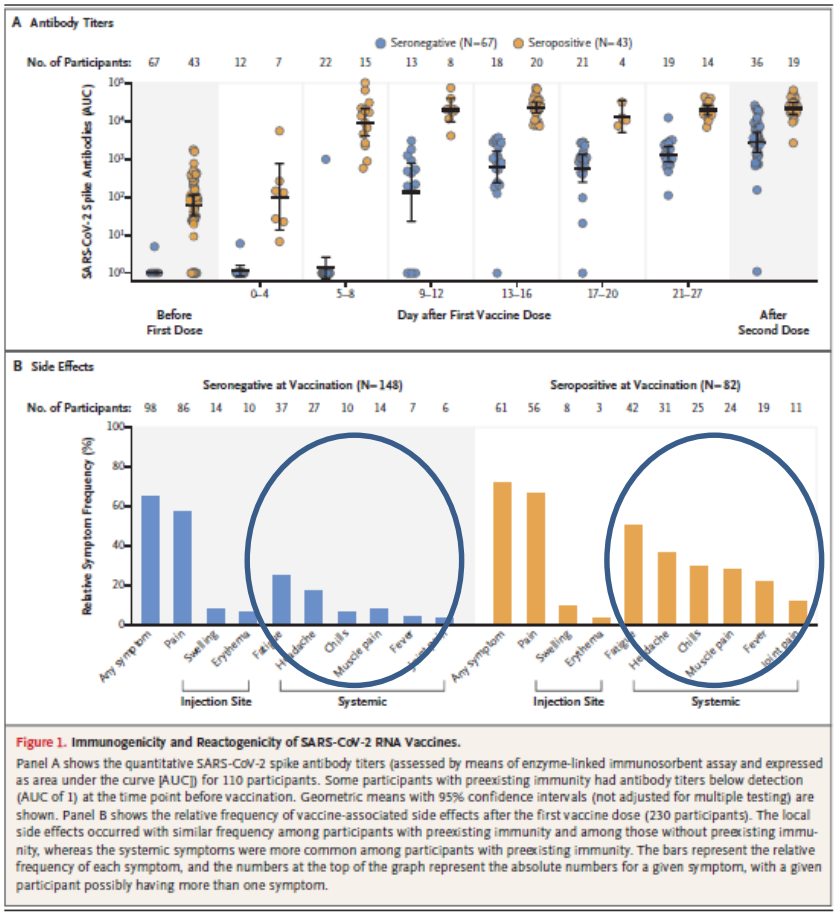


Figure 1. Immunogenicity and Reactogenicity of SARS-CoV-2 RNA Vaccines.

Panel A shows the quantitative SARS-CoV-2 spike antibody titers (assessed by means of enzyme-linked immunosorbent assay and expressed as area under the curve [AUC]) for 110 participants. Some participants with preexisting immunity had antibody titers below detection (AUC of 1) at the time point before vaccination. Geometric means with 95% confidence intervals (not adjusted for multiple testing) are shown. Panel B shows the relative frequency of vaccine-associated side effects after the first vaccine dose (230 participants). The local side effects occurred with similar frequency among participants with preexisting immunity and among those without preexisting immunity, whereas the systemic symptoms were more common among participants with preexisting immunity. The bars represent the relative frequency of each symptom, and the numbers at the top of the graph represent the absolute numbers for a given symptom, with a given participant possibly having more than one symptom.

- Réponse plus rapide et plus intense chez les pré exposés au SARS COV2
- Réactogénicité augmentée (signes généraux) chez les pré exposés

RESEARCH LETTER

Spike Antibody Levels of Nursing Home Residents With or Without Prior COVID-19 3 Weeks After a Single BNT162b2 Vaccine Dose

Hubert Blain, MD, PhD
Edouard Tuaillon, MD, PhD
Lucie Gamon
Amandine Pisoni
Stephanie Miot, MD, PhD
Marie-Christine Picot, MD, PhD
Jean Bousquet, MD, PhD

JAMA Published online April 15, 2021

Figure. Levels of IgG Antibody Against the SARS-CoV-2 Spike (S) Protein After a Single Dose of Vaccine in Nursing Home Residents

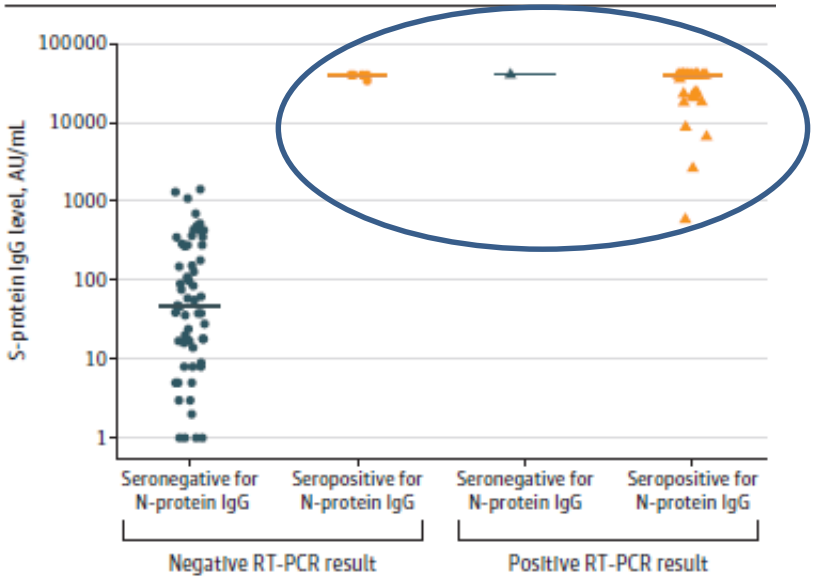


Table. Demographic Characteristics and Seroconversion Level of 96 Residents by COVID-19 Status During Past 7 to 10 Months

	Prior COVID-19		
	Yes (n = 36)[a]	No (n = 60)[b]	*P* value
Age, mean (SD), y	89.06 (6.69)	83.91 (8.38)	.002
Sex			
Female	29 (80.5)	42 (70.0)	.25
Male	7 (19.5)	18 (30.0)	
SARS-CoV-2 IgG level, No. (%)			
N protein >0.8 signal to cutoff ratio	26 (72.2)	0	<.001
S protein >50 AU/mL	36 (100)	29 (49.2)	<.001
S-protein IgG antibody, median (IQR) [range], AU/mL	≥40 000 (22 801-≥40 000) [588-≥40 000]	48.0 (14.0-278.0) [1-1426]	<.001

- 96 nursing home residents
- A single dose of ARNm Pf. may be sufficient to obtain high level of S-protein IgG Ab in nursing home residents previously diagnosed COVID-19

Science REPORTS

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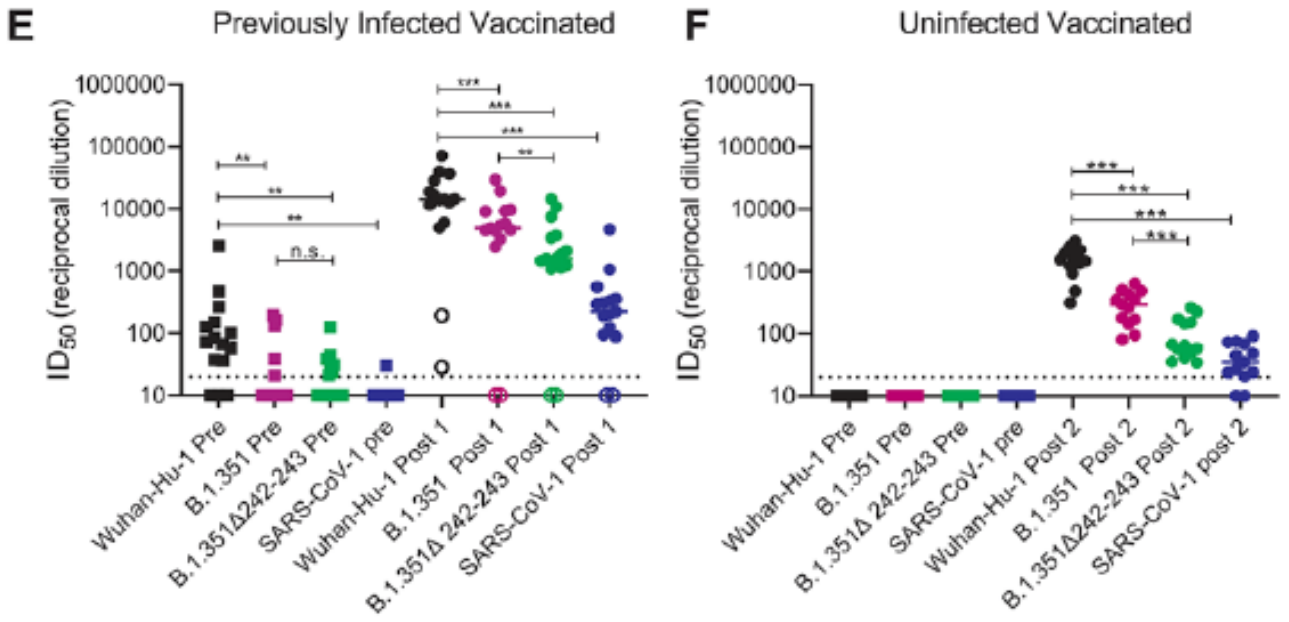
mRNA vaccination boosts cross-variant neutralizing antibodies elicited by SARS-CoV-2 infection

Leonidas Stamatatos[1,2*], Julie Czartoski[1], Yu-Hsin Wan[1], Leah J. Homad[1], Vanessa Rubin[1], Hayley Glantz[1], Moni Neradilek[1], Emilie Seydoux[1], Madeleine F. Jennewein[1], Anna J. MacCamy[1], Junli Feng[1], Gregory Mize[1], Stephen C. De Rosa[1,3], Andrés Finzi[4,5,6], Maria P. Lemos[1], Kristen W. Cohen[1], Zoe Moodie[1], M. Juliana McElrath[1,2,7*], Andrew T. McGuire[1,2,3*]

- One dose of mRNA vaccine for subjects with a history of COVID infection boost cross variant neutralizing antibodies including South African



Variants SARS CoV2

SARS-CoV-2 Variants of Concern and Variants of Interest, updated 31 May 2021

Variants of Concern

A SARS-CoV-2 variant that meets the definition of a VOI (see below) and, through a comparative assessment, has been demonstrated to be associated with one or more of the following changes at a degree of global public health significance:

- Increase in transmissibility or detrimental change in COVID-19 epidemiology; or
- Increase in virulence or change in clinical disease presentation; or
- Decrease in effectiveness of public health and social measures or available diagnostics, vaccines, therapeutics.

WHO label	Pango lineage	GISAID clade/lineage	Nextstrain clade	Earliest documented samples	Date of designation
Alpha	B.1.1.7	GRY (formerly GR/501Y.V1)	20I/S:501Y.V1	United Kingdom, Sep-2020	18-Dec-2020
Beta	B.1.351	GH/501Y.V2	20H/S:501Y.V2	South Africa, May-2020	18-Dec-2020
Gamma	P.1	GR/501Y.V3	20J/S:501Y.V3	Brazil, Nov-2020	11-Jan-2021
Delta	B.1.617.2	G/452R.V3	21A/S:478K	India, Oct-2020	VOI: 4-Apr-2021 VOC: 11-May-2021

Variants of Interest

A SARS-CoV-2 isolate is a Variant of Interest (VOI) if, compared to a reference isolate, its genome has mutations with established or suspected phenotypic implications, and either:

- has been identified to cause community transmission/multiple COVID-19 cases/clusters, or has been detected in multiple countries; OR
- is otherwise assessed to be a VOI by WHO in consultation with the WHO SARS-CoV-2 Virus Evolution Working Group.

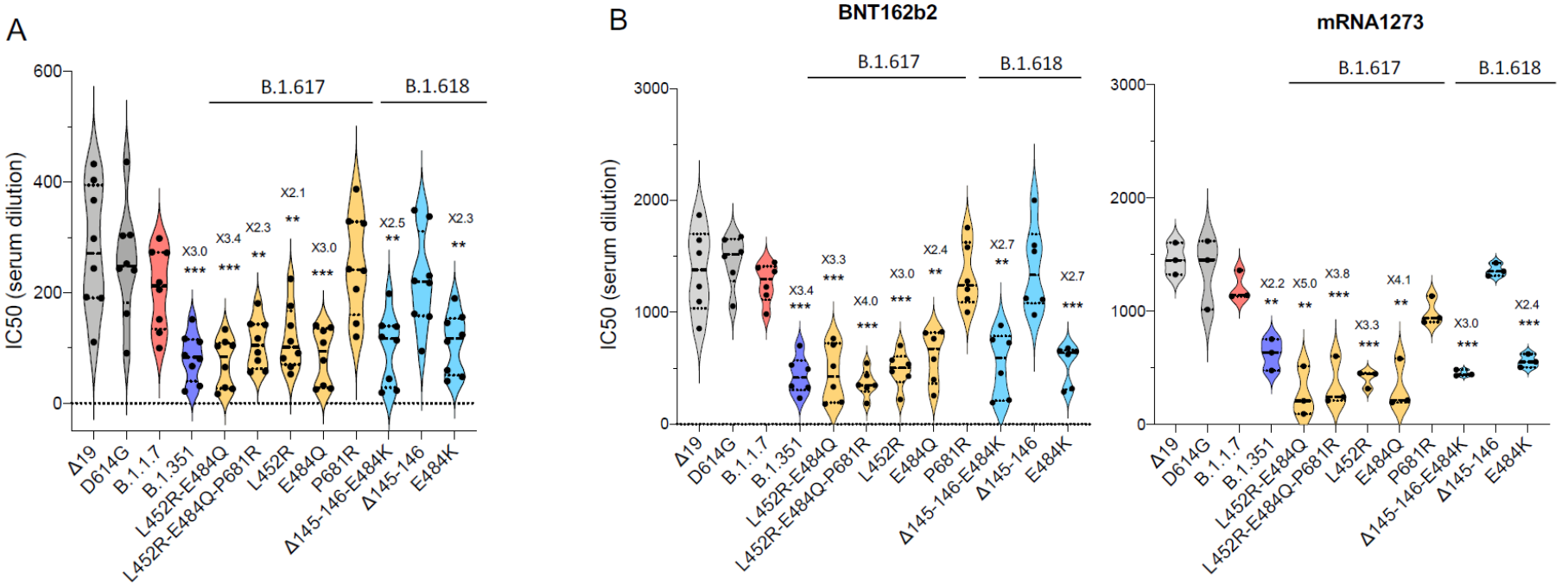
WHO label	Pango lineage	GISAID clade/lineage	Nextstrain clade	Earliest documented samples	Date of designation
Epsilon	B.1.427/B.1.429	GH/452R.V1	20C/S:452R	United States of America, Mar-2020	5-Mar-2021
Zeta	P.2	GR	20B/S:484K	Brazil, Apr-2020	17-Mar-2021
Eta	B.1.525	G/484K.V3	20A/S:484K	Multple countries, Dec-2020	17-Mar-2021
Theta	P.3	GR	20B/S:255C	Philippines, Jan-2021	24-Mar-2021
Iota	B.1.526	GH	20C/S:484K	United States of America, Nov-2020	24-Mar-2021
Kappa	B.1.617.1	G/452R.V3	21A/S:154K	India, Oct-2020	4-Apr-2021

Propriétés des variants

	Transmissibility	Immune Evasiveness	Vaccine Effectiveness^
Ancestral	—	—	✓
D614G	+	—	✓
B.1.1.7	+++	—	✓
B.1.351	+	++++	✓
P.1	++	++	✓
B.1.429	+	+	✓
B.1.526	+	+	✓
B.1.617.2	++++*	++	✓

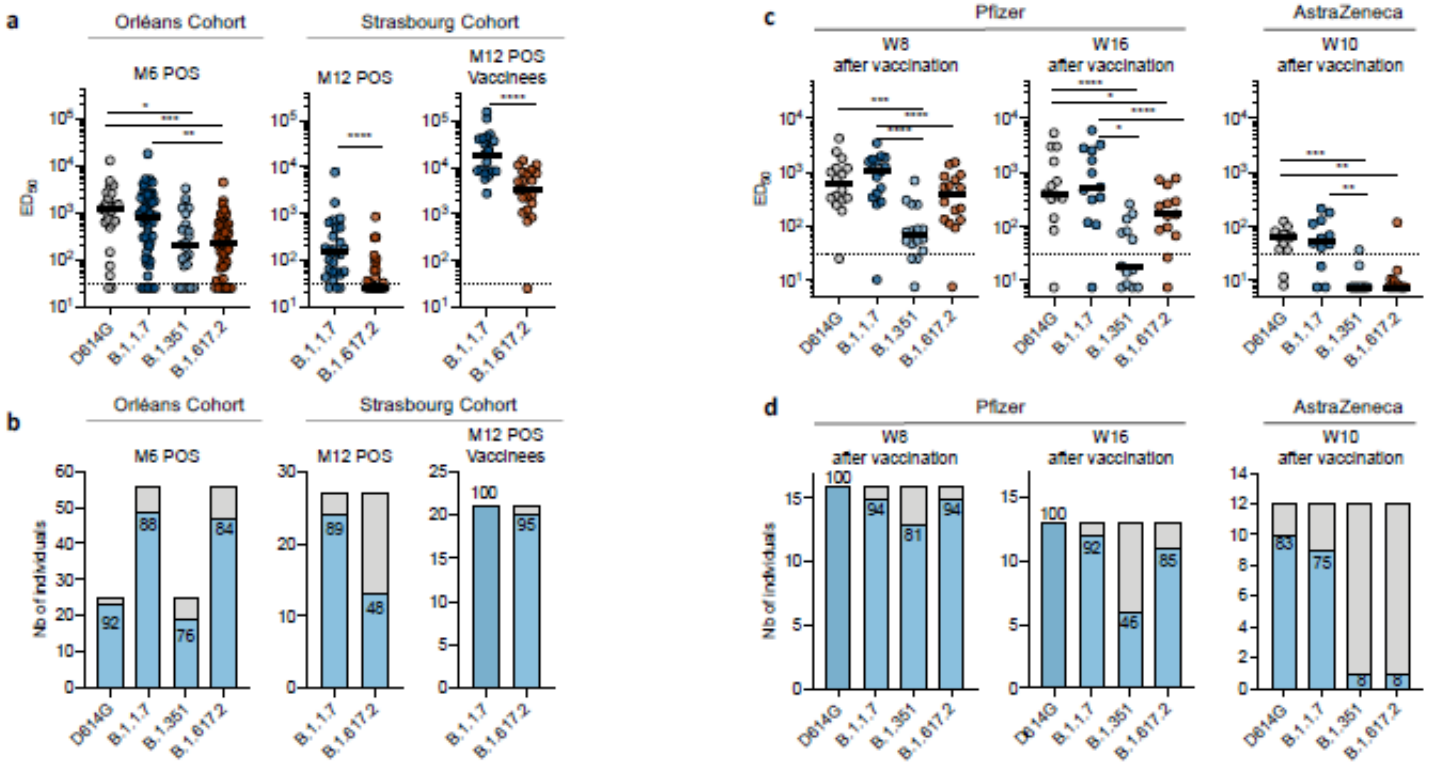
*Relative transmissibility to B.1.1.7 yet to be fully defined
^Effectiveness from real world evidence vs. severe illness, not all vaccines are effective vs all variants, and importance of 2-doses, especially for B.1.617.2 for which 1 dose of mRNA or AZ is only ~30% effective

Efficacité *in vitro* sur les variants



Tada T et al, pre print

Efficacité *in vitro* sur les variants



Données francaises, I Pasteur , pre print

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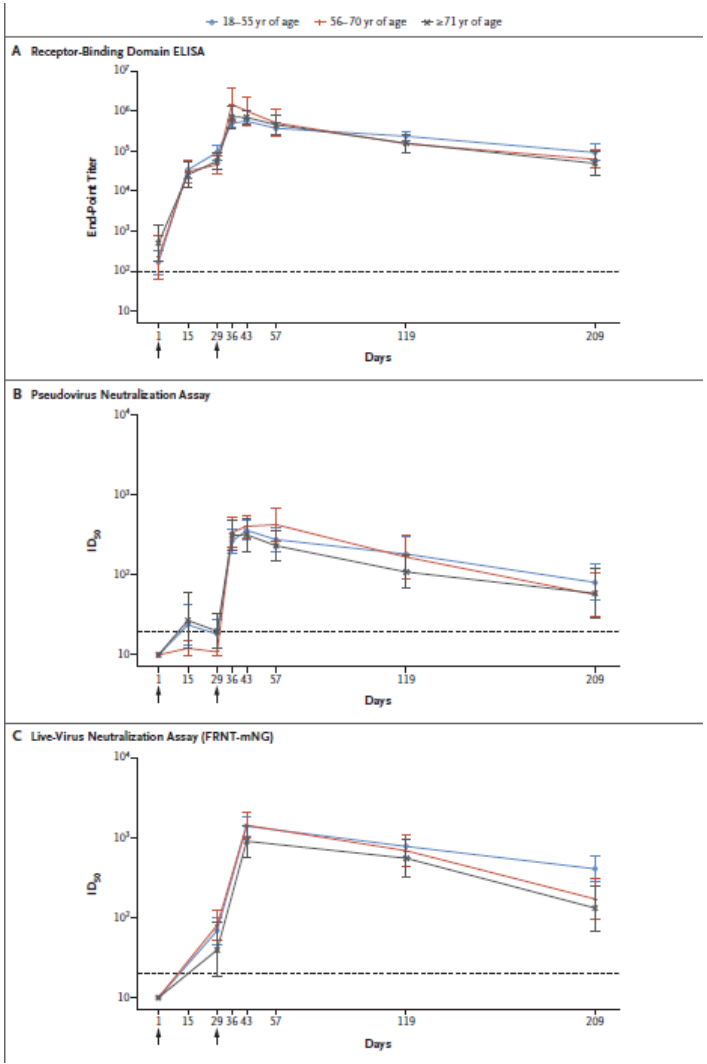
CORRESPONDENCE

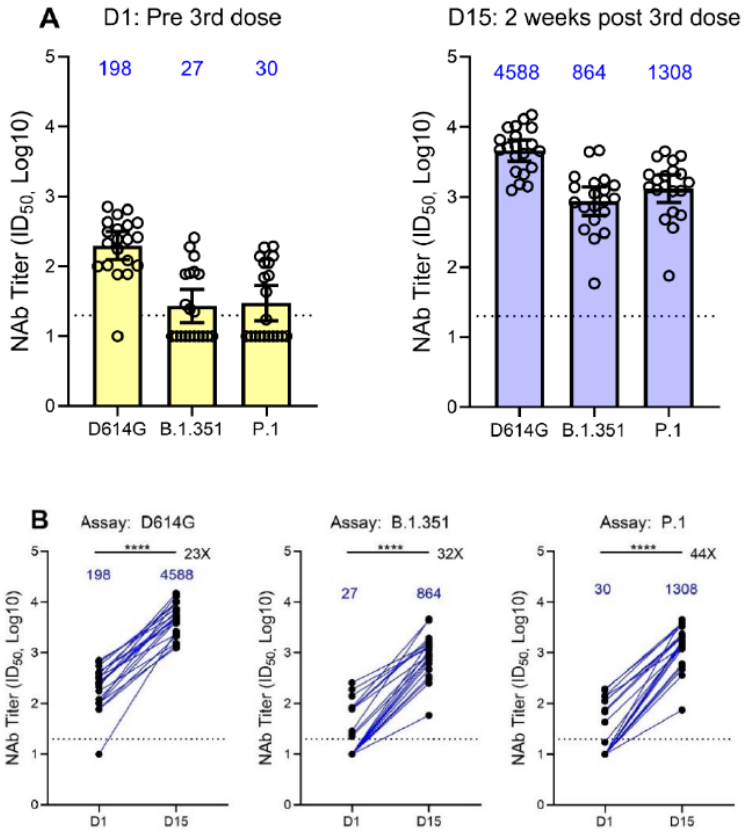
Antibody Persistence through 6 Months after the Second Dose of mRNA-1273 Vaccine for Covid-19



Preliminary Analysis of Safety and Immunogenicity of a SARS-CoV-2 Variant Vaccine Booster

Authors: Kai Wu[1*], Angela Choi[1*], Matthew Koch[1*], LingZhi Ma[1], Anna Hill[1], Naveen Nunna[1],

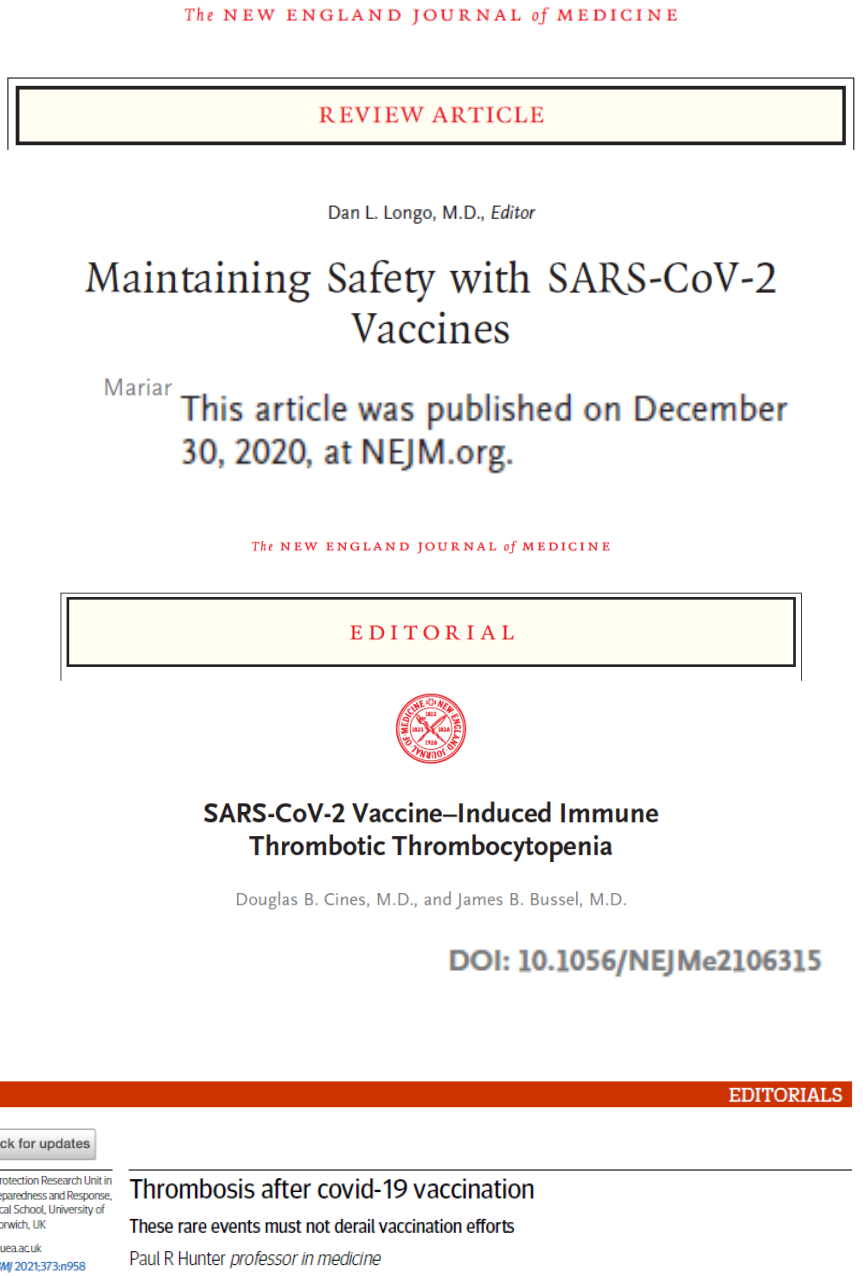
https://doi.org/10.1101/2021.05.05.21256716;



SARS CoV-2 vaccines safety

- Local and general reactogenicity
- rare cases of **anaphylaxis** (<1/100 000), mRNA vaccines
- mainly in people with a history of severe allergie

- **Thrombosis after Covid 19 vaccination**:
- Rare events
- Observed after vaccination with adenovirus vectored vaccines
- Clinical picture is similar to heparin induced thrombocytopenia
- « vaccine induced immune thrombotic thrombocytopenia »



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REVIEW ARTICLE

Dan L. Longo, M.D., *Editor*

Maintaining Safety with SARS-CoV-2 Vaccines

Mariar

This article was published on December 30, 2020, at NEJM.org.

The NEW ENGLAND JOURNAL of MEDICINE

EDITORIAL

SARS-CoV-2 Vaccine–Induced Immune Thrombotic Thrombocytopenia

Douglas B. Cines, M.D., and James B. Bussel, M.D.

DOI: 10.1056/NEJMe2106315

EDITORIALS

Check for updates

NIHR Health Protection Research Unit in Emergency Preparedness and Response, Norwich Medical School, University of East Anglia, Norwich, UK

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Cite this as: *BMJ* 2021;373:n958

Thrombosis after covid-19 vaccination

These rare events must not derail vaccination efforts

Paul R Hunter *professor in medicine*

Conclusion

- De nombreuses questions en suspend sur l'efficacité en particulier:
  - persistance de la protection : nécessité des rappels, intervalle?
  - vaccination des patients immunodéprimés
  - efficacité clinique des différents vaccins sur les variants
  - Immunité collective

- Questions de sécurité, sources d'hésitation vaccinale
- Nécessité de disposer d'études d'interchangeabilité des vaccins et de vaccination hétérologue