Name: Odile Launay

Country: France

Affiliation: Université Paris Cité

Function: Head of the clinical vaccine research (CIC Cochin Pasteur) and I Reivac (French clinical research network dedicated to vaccinology

Main expertise: vaccination in particular populations, respiratory infections, emerging infections

mRNA Covid-19 vaccines for elderly

Odile Launay

AIB technical meeting
Warsaw, 8 May 2025

Disclosures

- MSD, GSK bio, Sanofi Pasteur, Janssen, Pfizer, AstraZeneca, Moderna

Covid-19 mortality
2 years after the start of the pandemic

Estimating excess mortality due to the COVID-19 pandemic: a systematic analysis of COVID-19-related mortality, 2020–21

COVID-19 Excess Mortality Collaborators*

- Estimated excess mortality:

  18.2 million (95% CI: 17.1-19.6)

- Rate of 120.3/100,000 person-years

- Highest rates (> 400/100,000 PY): India, USA, Russia, Mexico, Brazil, Indonesia, Pakistan

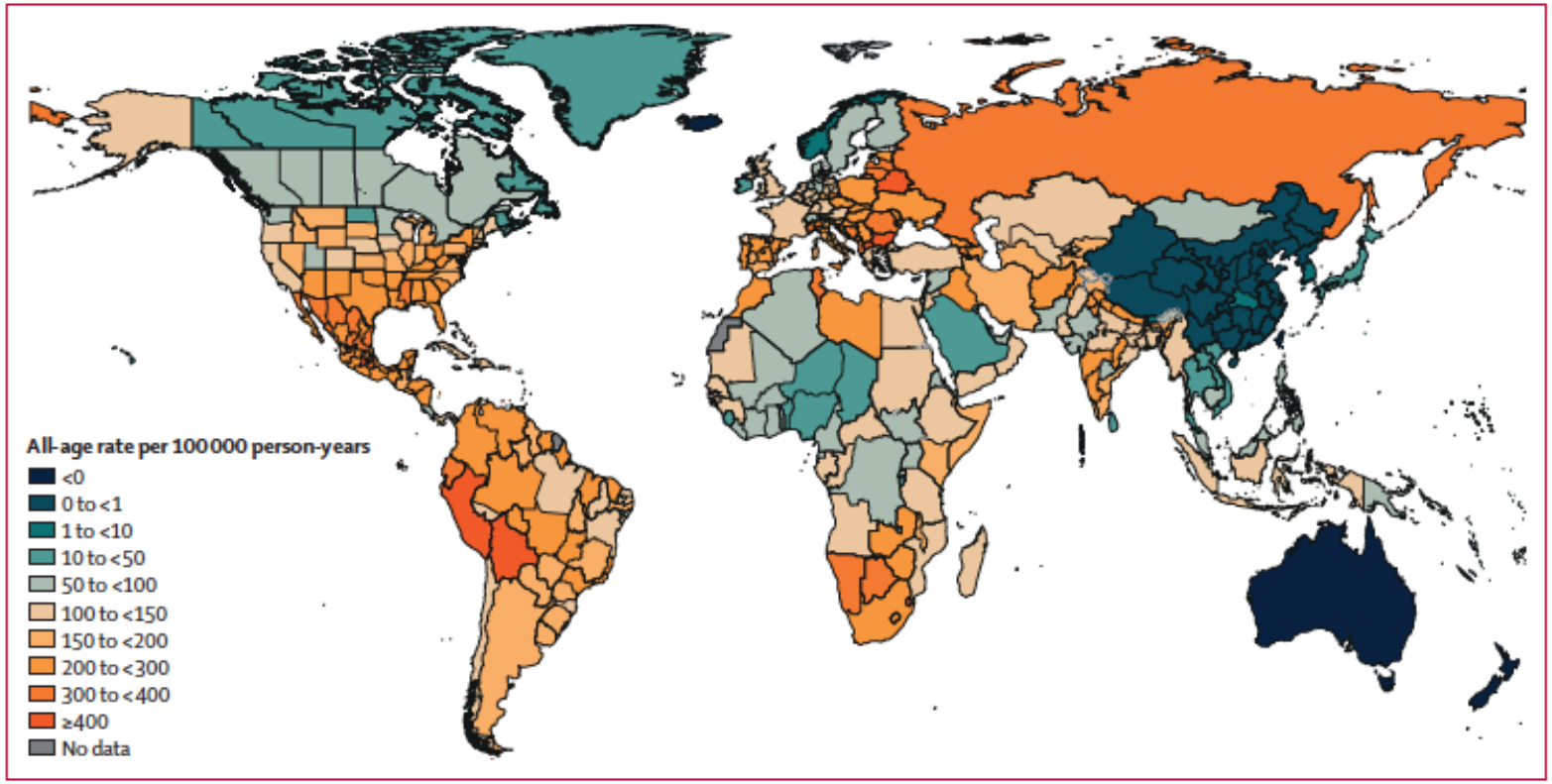
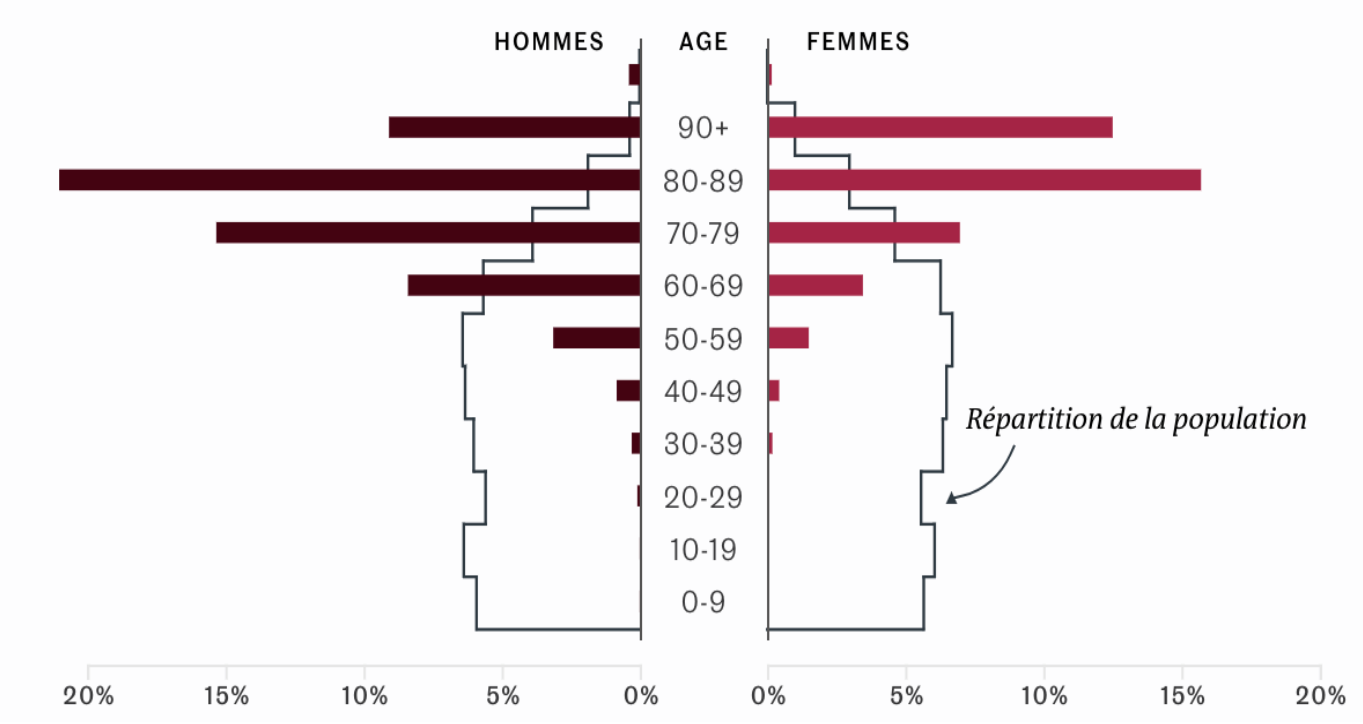


Figure 2: Global distribution of estimated excess mortality rate due to the COVID-19 pandemic, for the cumulative period 2020–21

Lancet 2022 Apr 16;399(10334):1513-1536. doi: 10.1016/S0140-6736(21)02796-3

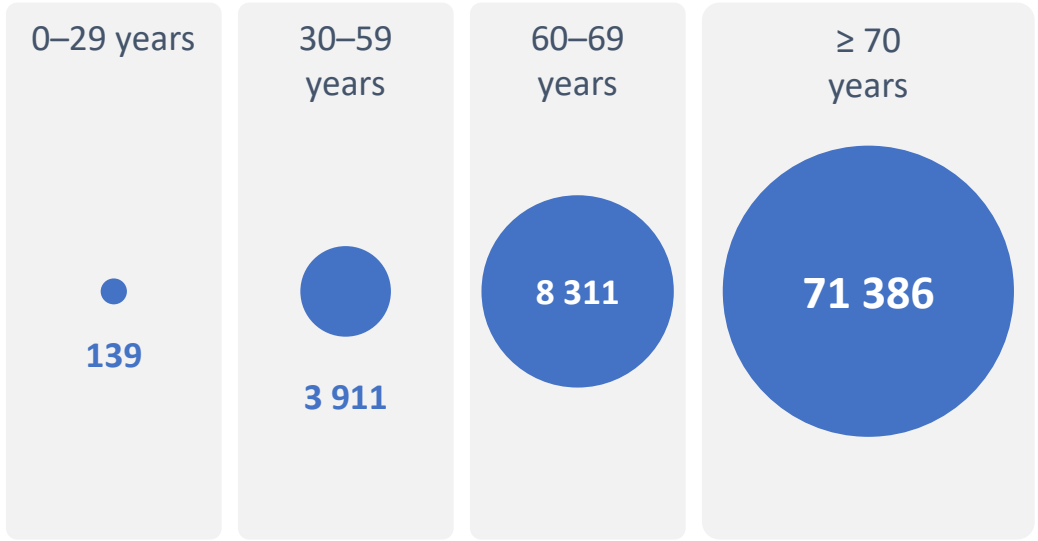
Covid-19 mortality in older people (France)

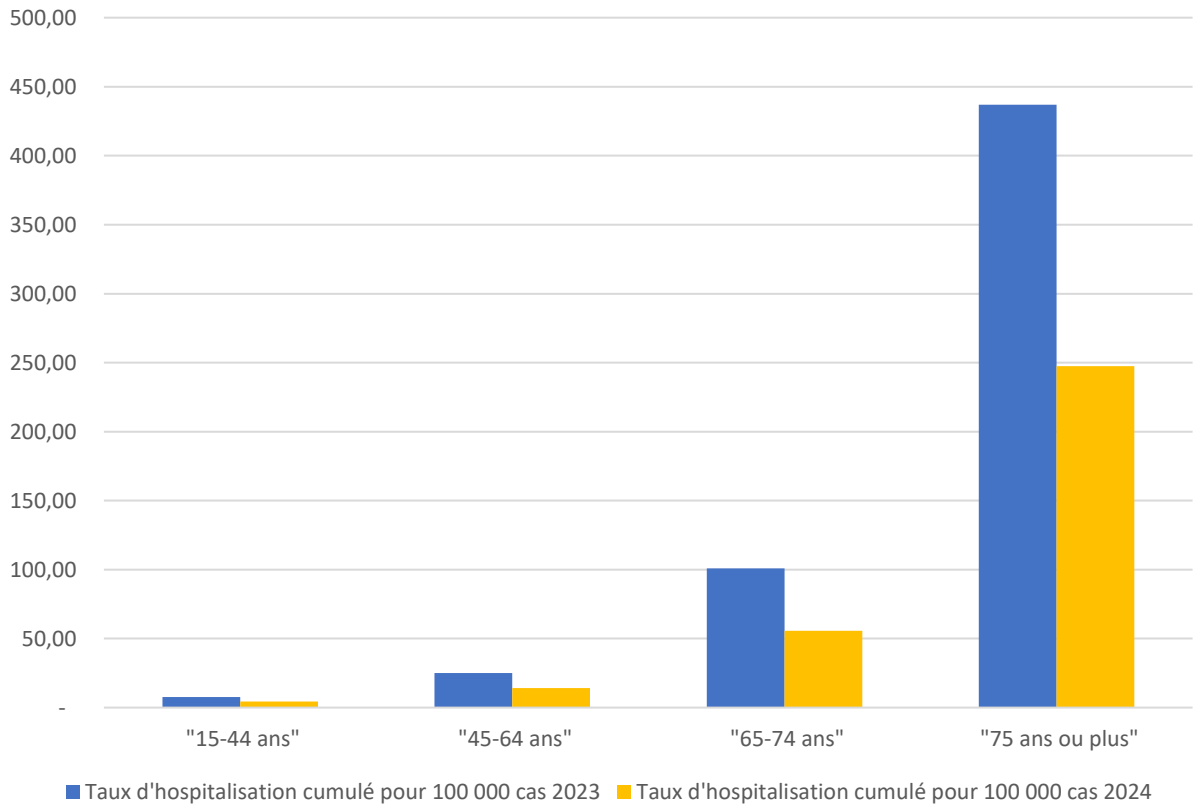
Percentages of death according to age and gender in France



Role of ageing related immune alterations / immune ageing?

Cumulative number of deaths (2019-2023) and cumulative rates of hospitalizations (2023-2024) associated with Covid-19 by age group (France)





Cumulative number of deaths associated with Covid-19 by age group (2019–2023)

Cumulative rates of hospitalizations associated with Covid-19 by age group (2023 blue bars, 2024, yellow bars)

2024-2025: Covid-19 mortality still high

Characteristics of patients hospitalized in intensive care unit in France (unconsolidated data)

	Influenza (N= 1849)	**Covid-19** (N=326)	**RSV** (N= 321)
Men (N,%)	1014 (55%)	198 (61%)	165 (52%)
Age ≥ 65 years (N,%)	846 (46%)	221 (68%)	206 (64%)
Comorbidities (N,%)	1564 (86%)	287 (88%)	307 (96%)
Deaths (N,%)	266 (14%)	70 (21%)	43 (13%)
Age ≥ 65 years (N,%)	**162 (61%)**	**63 (90%)**	**34 (79%)**

SPF, 2025

Humoral response to primary immunization with SARS-CoV-2 Spike mRNA LNP vaccine

Clinical Microbiology and Infection 29 (2023) 388.e1–388.e8

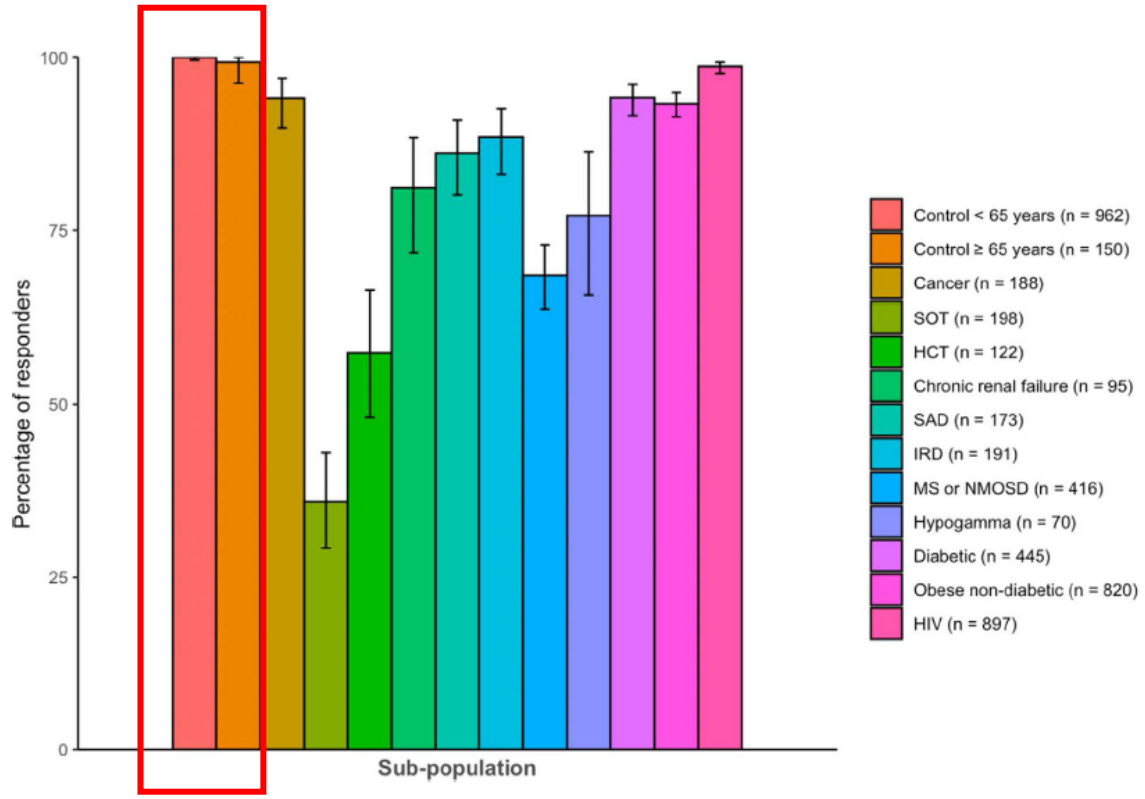
Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

Original article

One-month humoral response following two or three doses of messenger RNA coronavirus disease 2019 vaccines as primary vaccination in specific populations in France: first results from the Agence Nationale Recherche contre le Sida (ANRS)0001S COV-POPART cohort



Percentage of responders with anti-Spike antibodies 1 month after the second dose (

Humoral response to primary immunization with SARS-CoV-2 spike mRNA LNP vaccine

Clinical Microbiology and Infection 29 (2023) 388.e1–388.e8

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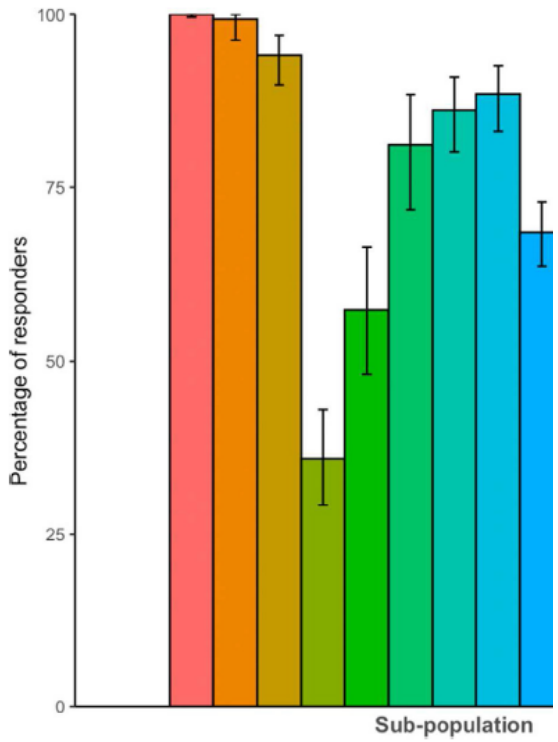
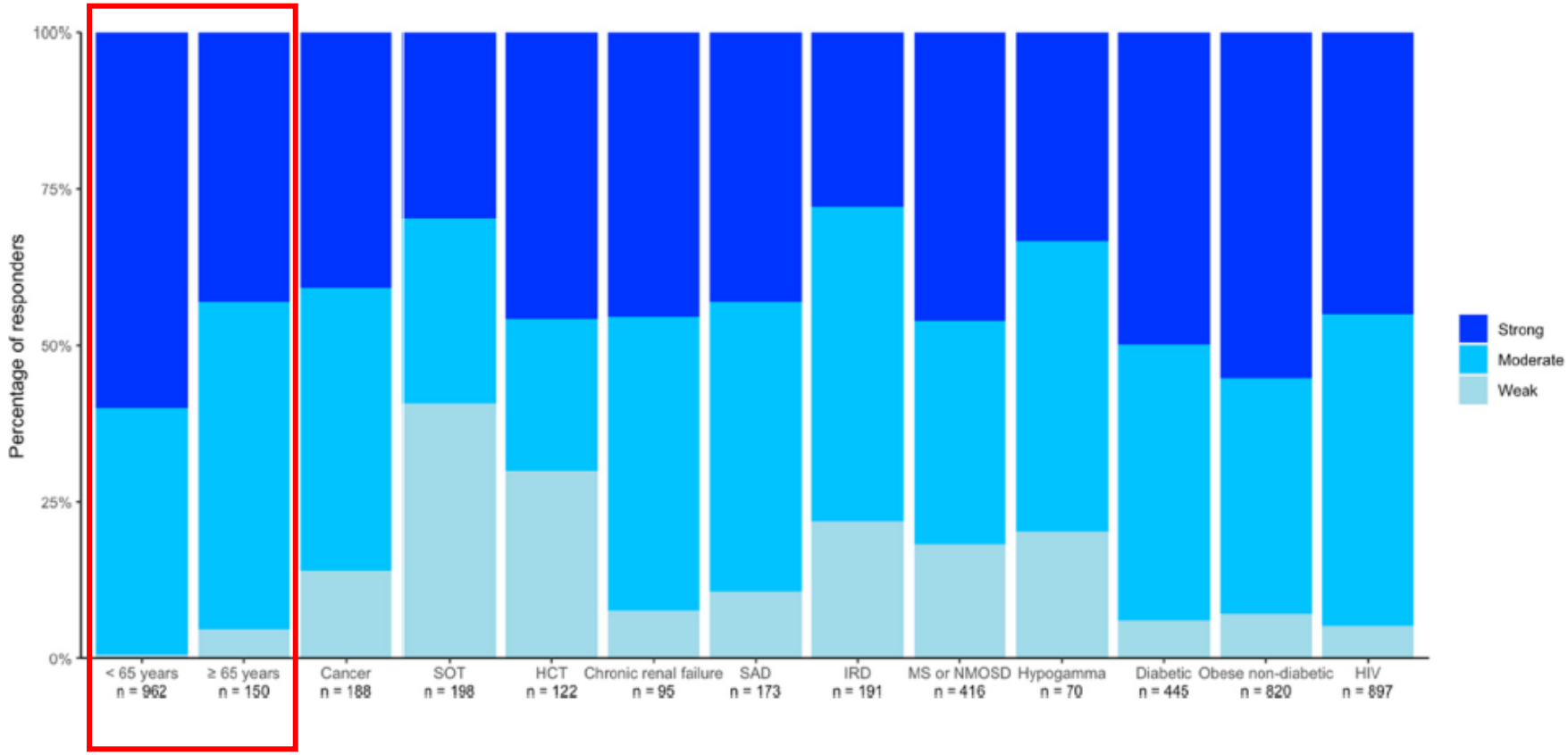
One-month humoral response following two or three doses of messenger RNA coronavirus disease 2019 vaccines as primary





Distribution of responders according to the strength of anti-Spike antibodies response

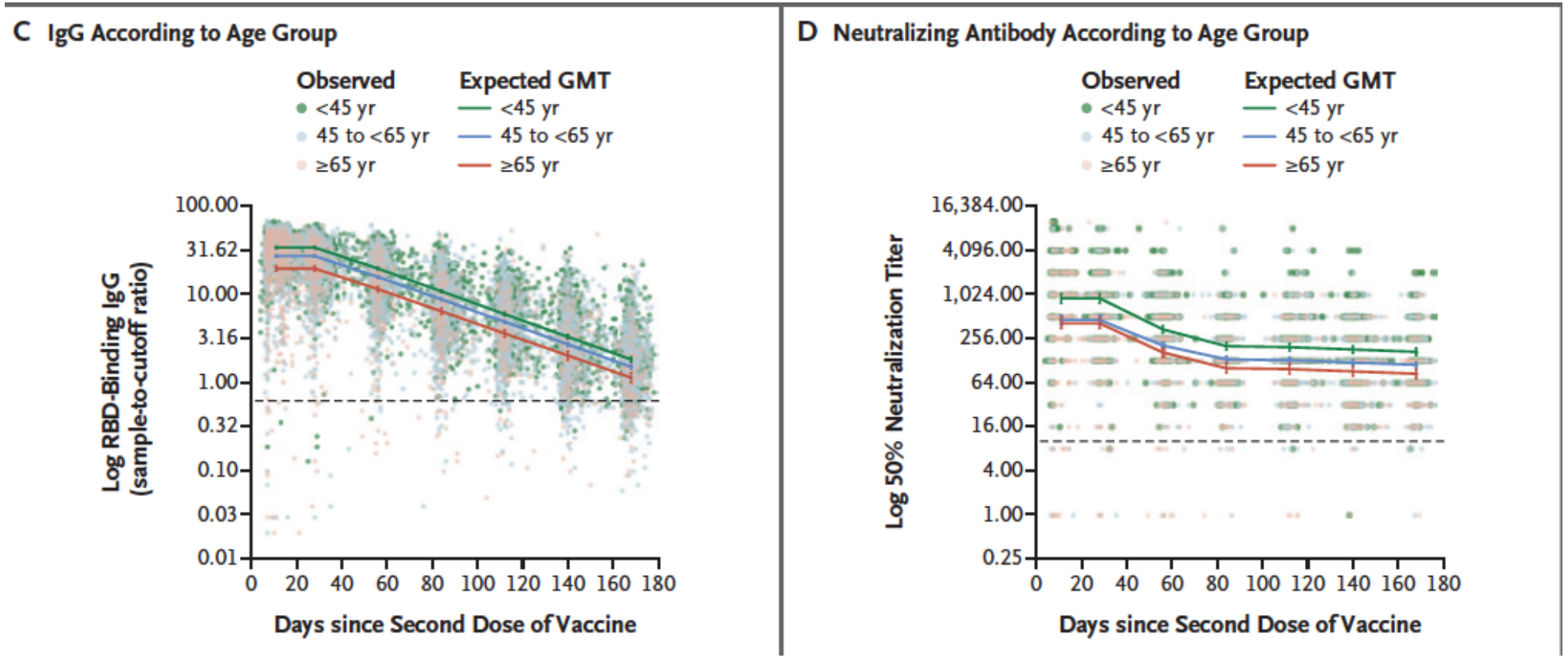
Waning in immune humoral response to Covid-19 vaccine

ORIGINAL ARTICLE

Waning Immune Humoral Response to BNT162b2 Covid-19 Vaccine over 6 Months

Einav G. Levin, M.D., Yaniv Lustig, Ph.D., Carmit Cohen, Ph.D.,

NEJM 2021



First-generation' COVID-19 vaccines: VE in real life

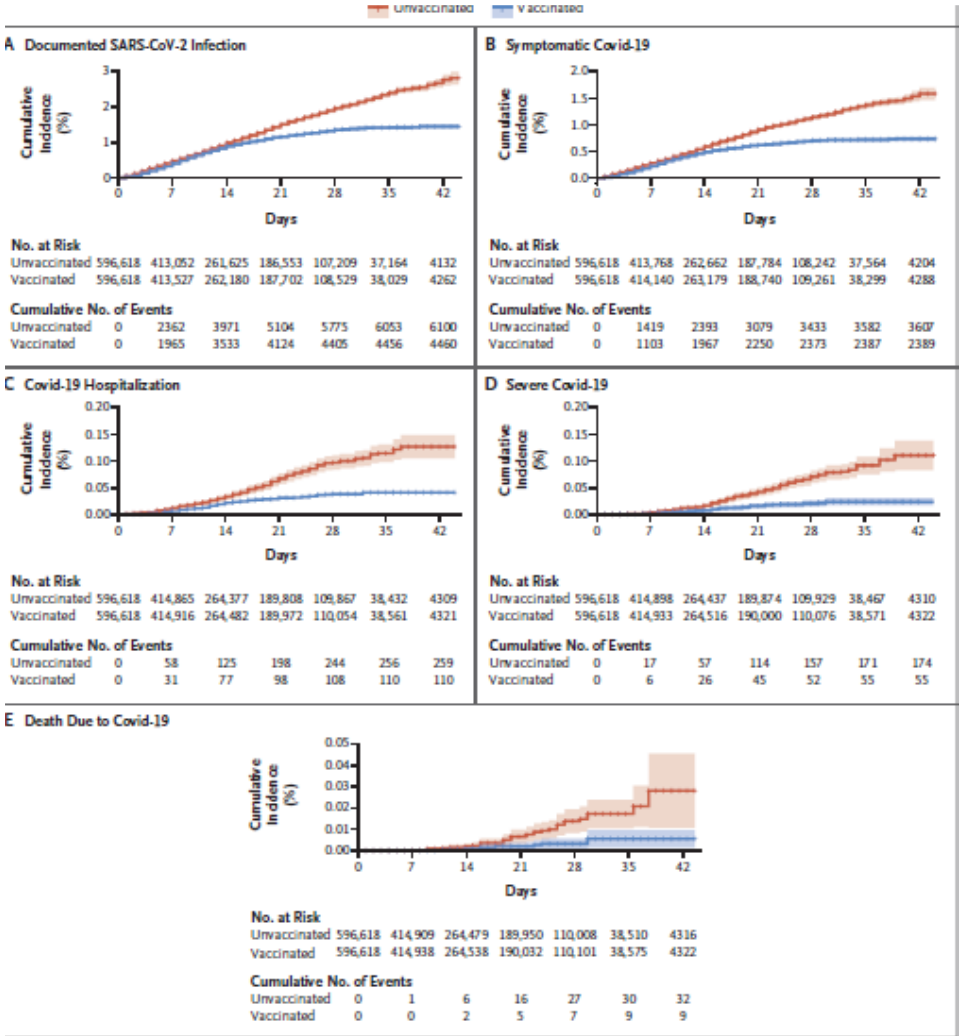


Figure 2. Cumulative Incidence of the Five Outcomes.

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.

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.

- Study conducted in Israel using a database of 4.7 million people (53% of the population)
- Case (vaccinated)/control (unvaccinated) study
- 596,618 people in each group

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)

‘First-generation' COVID-19 vaccines: VE in real life

The NEW ENGLAND JOURNAL of MEDICINE

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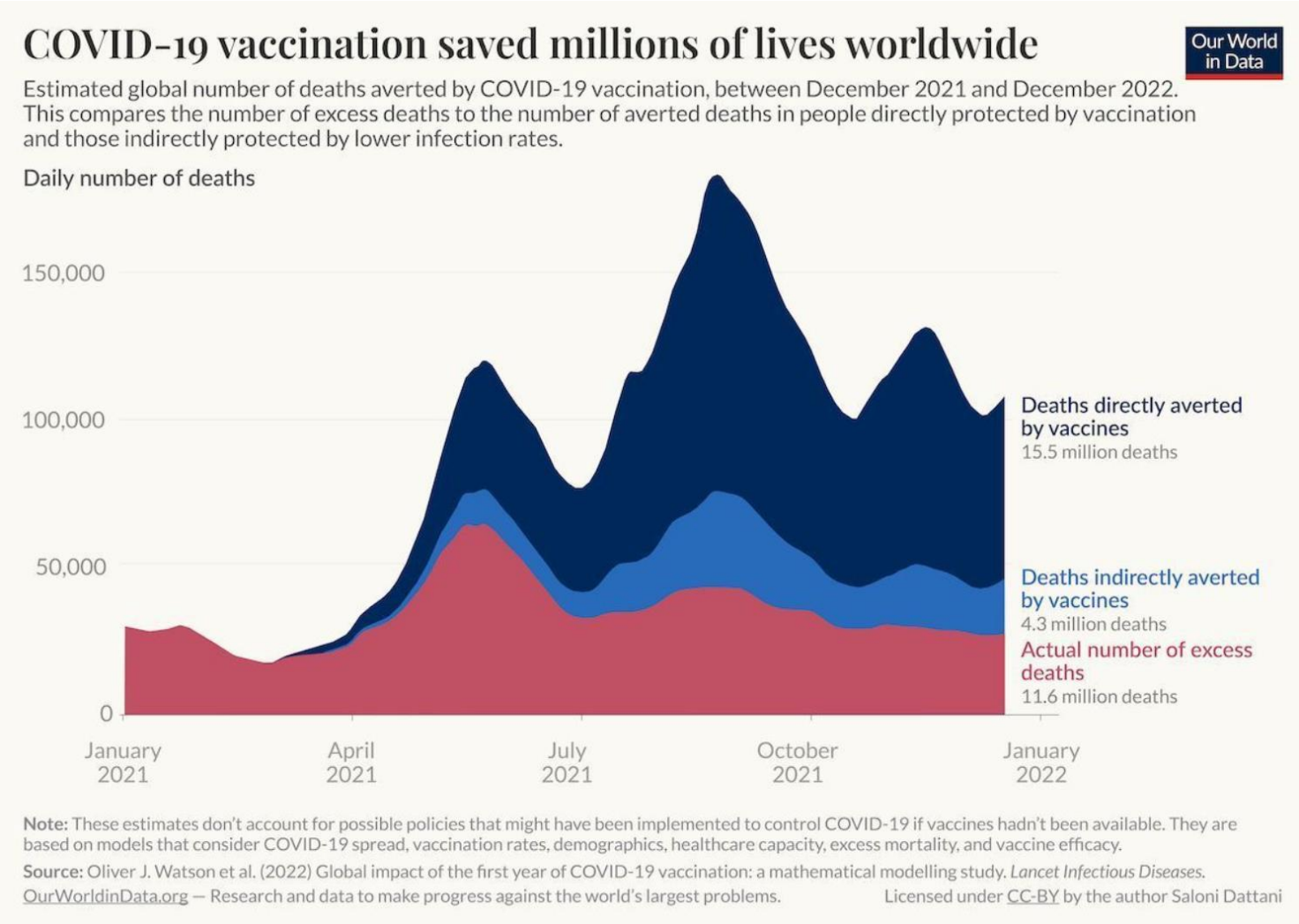
Table 3. Estimated Vaccine Effectiveness against Covid-19 Outcomes in Subpopulations According to Characteristics at Baseline.*

Characteristic and Period	Documented Infection		Symptomatic Illness	
	1–RR	Risk Difference	1–RR	Risk Difference
	% (95% CI)	no./1000 persons (95% CI)	% (95% CI)	no./1000 persons (95% CI)
Male sex				
14 to 20 days after first dose	41 (32 to 50)	1.71 (1.22 to 2.21)	52 (41 to 61)	1.26 (0.90 to 1.62)
21 to 27 days after first dose	57 (48 to 65)	2.25 (1.76 to 2.75)	62 (49 to 72)	1.30 (0.92 to 1.67)
7 days after second dose to end of follow-up	91 (80 to 96)	7.33 (4.48 to 10.84)	88 (71 to 98)	2.90 (1.87 to 4.02)
Female sex				
14 to 20 days after first dose	50 (41 to 57)	2.39 (1.84 to 2.86)	60 (52 to 68)	1.81 (1.43 to 2.19)
21 to 27 days after first dose	63 (55 to 71)	2.38 (1.91 to 2.91)	69 (58 to 78)	1.38 (1.02 to 1.71)
7 days after second dose to end of follow-up	93 (88 to 97)	9.75 (6.84 to 13.48)	96 (90 to 100)	6.22 (3.60 to 9.56)
Age, 16 to 39 yr				
14 to 20 days after first dose	49 (41 to 57)	2.29 (1.74 to 2.88)	57 (46 to 68)	1.38 (0.99 to 1.80)
21 to 27 days after first dose	64 (54 to 72)	2.80 (2.20 to 3.48)	67 (52 to 78)	1.27 (0.89 to 1.73)
7 days after second dose to end of follow-up	94 (87 to 97)	8.72 (5.72 to 12.69)	99 (96 to 100)	4.06 (2.76 to 5.66)
Age, 40 to 69 yr				
14 to 20 days after first dose	47 (40 to 55)	2.13 (1.69 to 2.66)	59 (50 to 67)	1.68 (1.32 to 2.05)
21 to 27 days after first dose	58 (49 to 67)	2.19 (1.67 to 2.70)	65 (53 to 74)	1.38 (1.03 to 1.80)
7 days after second dose to end of follow-up	90 (82 to 95)	8.96 (6.16 to 13.05)	90 (75 to 98)	5.01 (2.53 to 8.67)
Age, ≥70 yr				
14 to 20 days after first dose	22 (–9 to 44)	0.81 (–0.28 to 1.89)	44 (19 to 64)	1.36 (0.48 to 2.36)
21 to 27 days after first dose	50 (19 to 72)	1.40 (0.42 to 2.35)	64 (37 to 83)	1.35 (0.62 to 2.22)
7 days after second dose to end of follow-up	95 (87 to 100)	6.10 (3.43 to 9.61)	98 (90 to 100)	4.77 (2.14 to 7.70)

COVID-19 vaccination and deaths avoided

- **Globally: 15.5 million deaths directly averted during the first year of vaccination**



Lancet 2022 Sep;22(9):1293-1302

COVID-19 vaccination and deaths avoided

- **Globally: 15.5 million deaths directly averted during the first year of vaccination**

- **In Europe: estimated number of lives saved between December 2020 and March 2023**

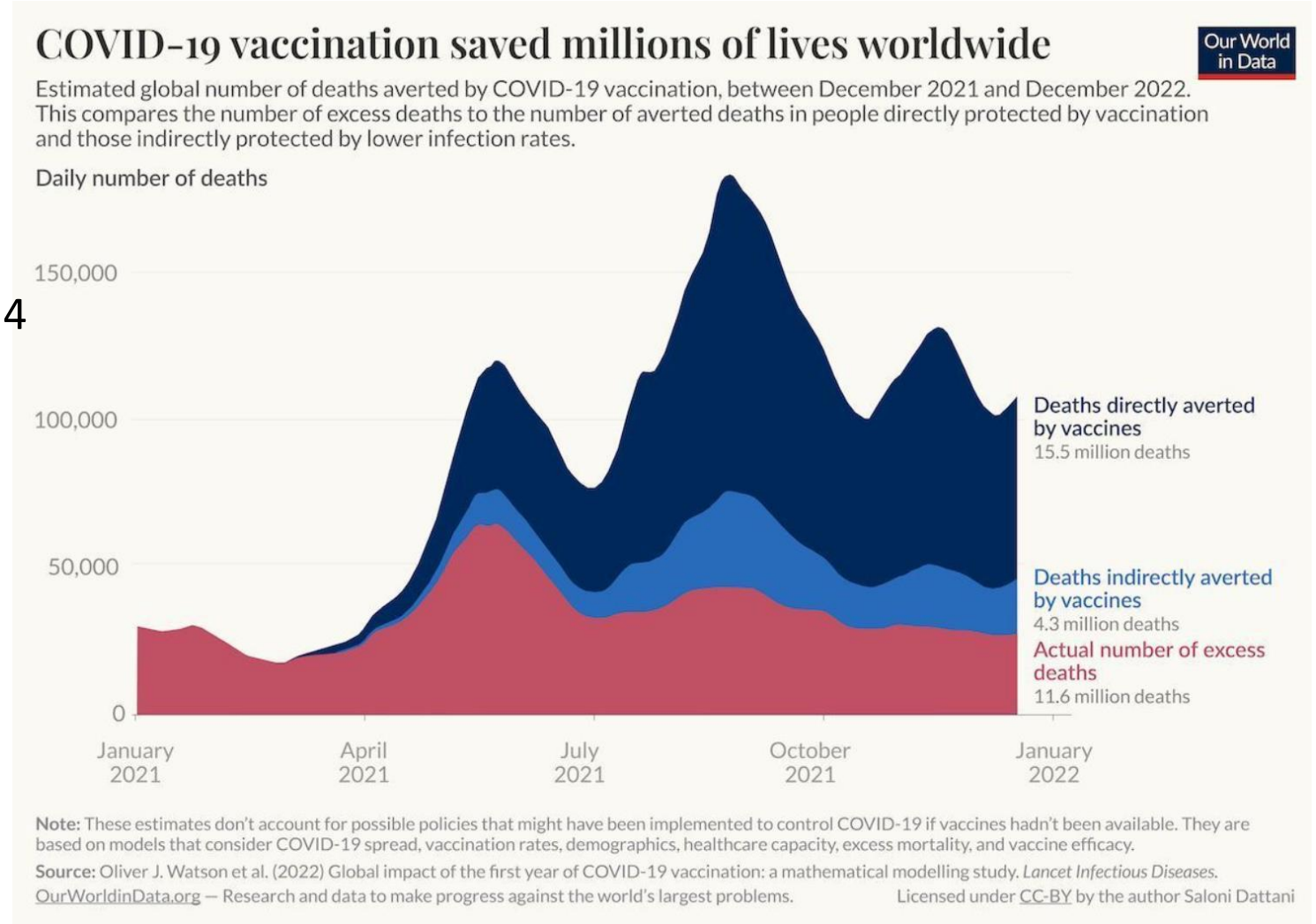
57% reduction in deaths, or approximately 1.4 million lives saved among adults aged ≥ 25 (range, 0.7 to 2.6 million) (2.5 million deaths observed)

96% aged ≥ 60 years old

50% aged ≥ 80 years old

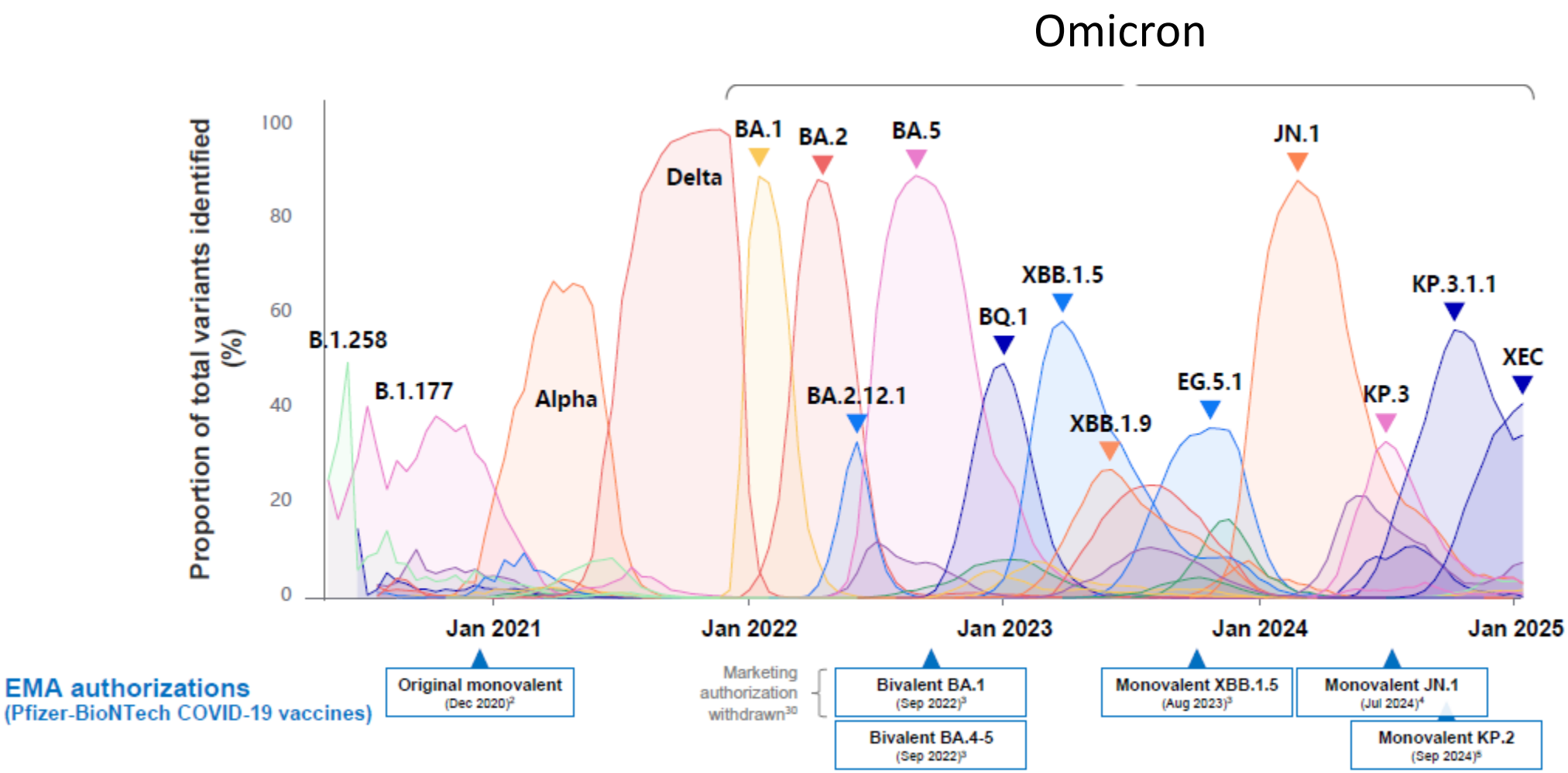
– 1st booster dose: 51% of deaths averted

- 67% of deaths averted during the Omicron period



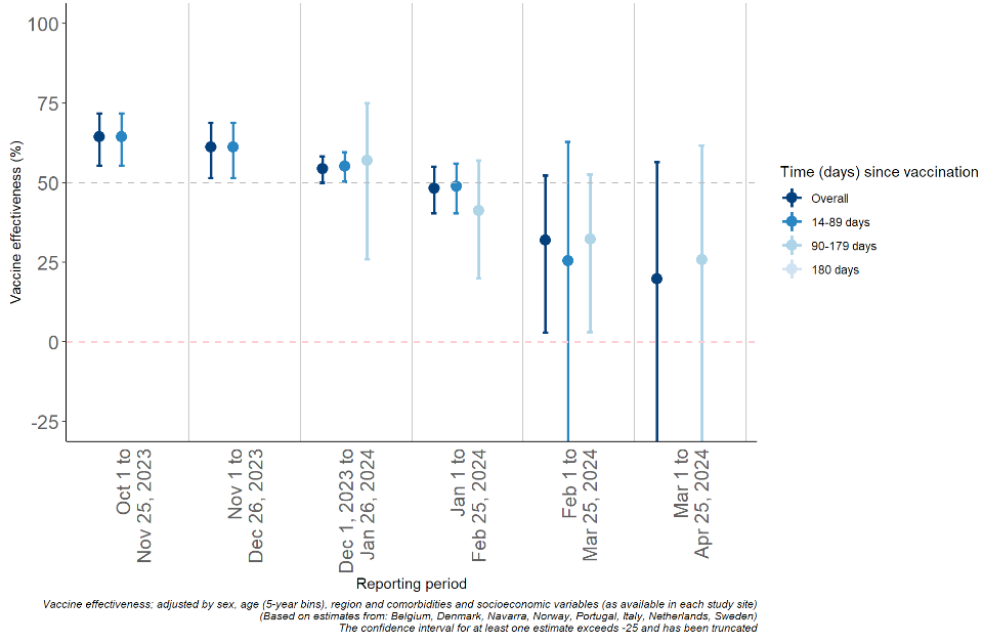
Lancet 2024 Sep;12(9):714-727

Adapted mRNA Covid 19 vaccines

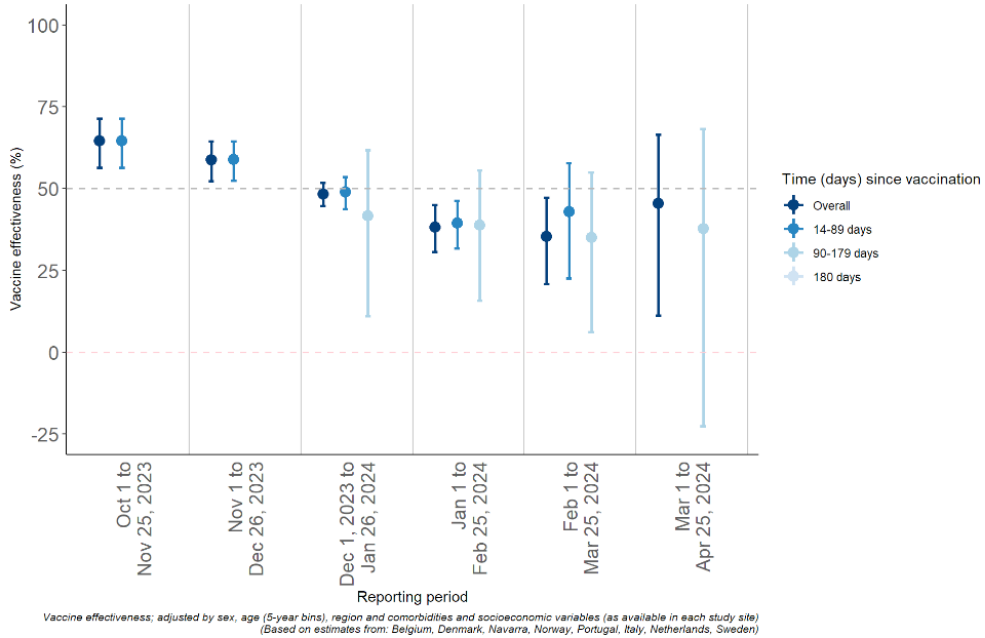


XBB1.5 Omicron Covid 19 vaccine effectiveness (2023-24) (hospitalisations)

- 65-79 years



- ≥ 80 years



ECDC, VEBIS

KP2 Omicron Covid 19 vaccine effectiveness (2024-25)

U.S. Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Weekly / Vol. 74 / No. 6
February 27, 2025

Interim Estimates of 2024–2025 COVID-19 Vaccine Effectiveness Among Adults Aged ≥18 Years — VISION and IVY Networks, September 2024–January 2025

Ruth Link-Gelles, PhD[1]; Sean Chickery, DHSc[2]; Alexander Webber, MPH[1]; Toan C. Ong, PhD[3];

- Negative-design studies in the US
- Two networks

- VISION network (adults, > 200 hospitals)

- IVY network

(> 65 years old, 26 hospitals)

- Data collection from registries
- Preliminary data

Characteristic	Vaccine effectiveness network and setting, no. (column %)								
	VISION ED/UC encounters, all adults aged ≥18 years			VISION hospitalizations, all adults aged ≥65 years			IVY hospitalizations, immunocompetent adults aged ≥65 years		
	Total	COVID-19 case-patients	COVID-19 control-patients	Total	COVID-19 case-patients	COVID-19 control-patients	Total	COVID-19 case-patients	COVID-19 control-patients
Total	**137,543**	**10,459**	**127,084**	**34,411**	**2,846**	**31,565**	**1,929**	**683**	**1,246**
Median age	53 [34, 72]	58 [37, 74]	53 [34, 71]	78 [72, 84]	79 [73, 86]	78 [71, 84]	77 [71, 84]	78 [72, 85]	76 [70, 83]
Age group									
18-64 years	88,858 (65)	6,113 (58)	82,745 (65)	--	--	--	--	--	
≥65 years	48,685 (35)	4,346 (42)	44,339 (35)	34,411 (100)	2,846 (100)	31,565 (100)	1,929 (100)	683 (100)	1,246 (100)
Immunocompromised*	--	--	--	8,192 (24)	598 (21)	7,594 (24)	--	--	

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- Effectiveness on emergency department consultations (VISION)

Age group/2024-2025 COVID-19 vaccination status/days since dose	COVID-19 case-patients N (Col %)	COVID-19 control-patients N (Col %)	Median interval since last dose among vaccinated*, days (IQR)	Adjusted vaccine effectiveness (95% CI)
≥18 years				
No 2024-2025 COVID-19 dose (Ref)	9,545 (91)	108,972 (86)	998 (539-1,142)	**Ref**
Received 2024-2025 COVID-19 dose 7–119 days earlier	914 (9)	18,112 (14)	55 (32-80)	**33 (28-38)**
2024-2025 COVID-19 dose, 7–59 days earlier	480 (5)	9,789 (8)	33 (20-46)	**36 (29-42)**
2024-2025 COVID-19 dose, 60–119 days earlier	434 (4)	8,323 (7)	82 (71-97)	**30 (22-37)**
18-64 years				
No 2024-2025 COVID-19 dose (Ref)	5,860 (96)	76,792 (93)	1,042 (751-1,180)	**Ref**
Received 2024-2025 COVID-19 dose 7–119 days earlier	253 (4)	5,953 (7)	53 (29-77)	**30 (20-39)**
2024-2025 COVID-19 dose, 7–59 days earlier	134 (2)	3,379 (4)	32 (20-45)	**36 (23-46)**
2024-2025 COVID-19 dose, 60–119 days earlier	119 (2)	2,574 (3)	81 (70-95)	**21 (5-35)**
≥65 years				
No 2024-2025 COVID-19 dose (Ref)	3,685 (85)	32,180 (73)	750 (346-1,076)	**Ref**
Received 2024-2025 COVID-19 dose 7–119 days earlier	661 (15)	12,159 (27)	57 (33-82)	**35 (29-41)**
2024-2025 COVID-19 dose, 7–59 days earlier	346 (8)	6,410 (14)	34 (21-47)	**36 (28-44)**
2024-2025 COVID-19 dose, 60–119 days earlier	315 (7)	5,749 (13)	83 (71-97)	**34 (25-42)**

KP2 Omicron Covid 19 vaccine effectiveness (2024-25)

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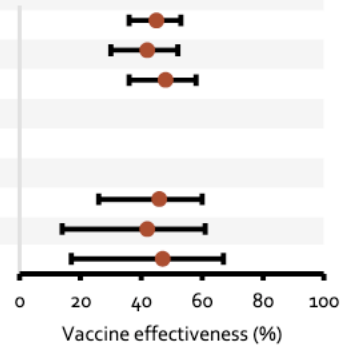
Ruth Link-Gelles, PhD[1]; Sean Chickery, DHSc[2]; Alexander Webber, MPH[1]; Toan C. Ong, PhD[3];

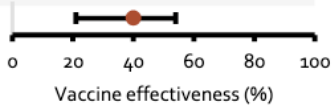
- Effectiveness on hospitalisation (65+)

Age group/2024-2025 COVID-19 vaccination status/days since dose	COVID-19 case-patients N (Col %)	COVID-19 control-patients N (Col %)	Median interval since last dose among vaccinated*, days (IQR)	Adjusted vaccine effectiveness (95% CI)
VISION				
No 2024-2025 COVID-19 dose (Ref)	2,016 (90)	19,198 (80)	775 (357-1,084)	**Ref**
Received 2024-2025 COVID-19 dose 7–119 days earlier	232 (10)	4,773 (20)	53 (30-77)	**45 (36-53)**
2024-2025 COVID-19 dose, 7–59 days earlier	129 (6)	2,759 (12)	33 (20-46)	**42 (30-52)**
2024-2025 COVID-19 dose, 60–119 days earlier	103 (5)	2,014 (8)	81 (70-94)	**48 (36-58)**
IVY				
No 2024-2025 COVID-19 dose (Ref)	614 (90)	1,021 (82)	Not available	**Ref**
Received 2024-2025 COVID-19 dose 7–119 days earlier	69 (10)	225 (18)	60 (31–85)	**46 (26-60)**
2024-2025 COVID-19 dose, 7–59 days earlier	41 (6)	105 (9)	31 (20–45)	**42 (14-61)**
2024-2025 COVID-19 dose, 60–119 days earlier	28 (4)	120 (11)	85 (72–98)	**47 (17-67)**

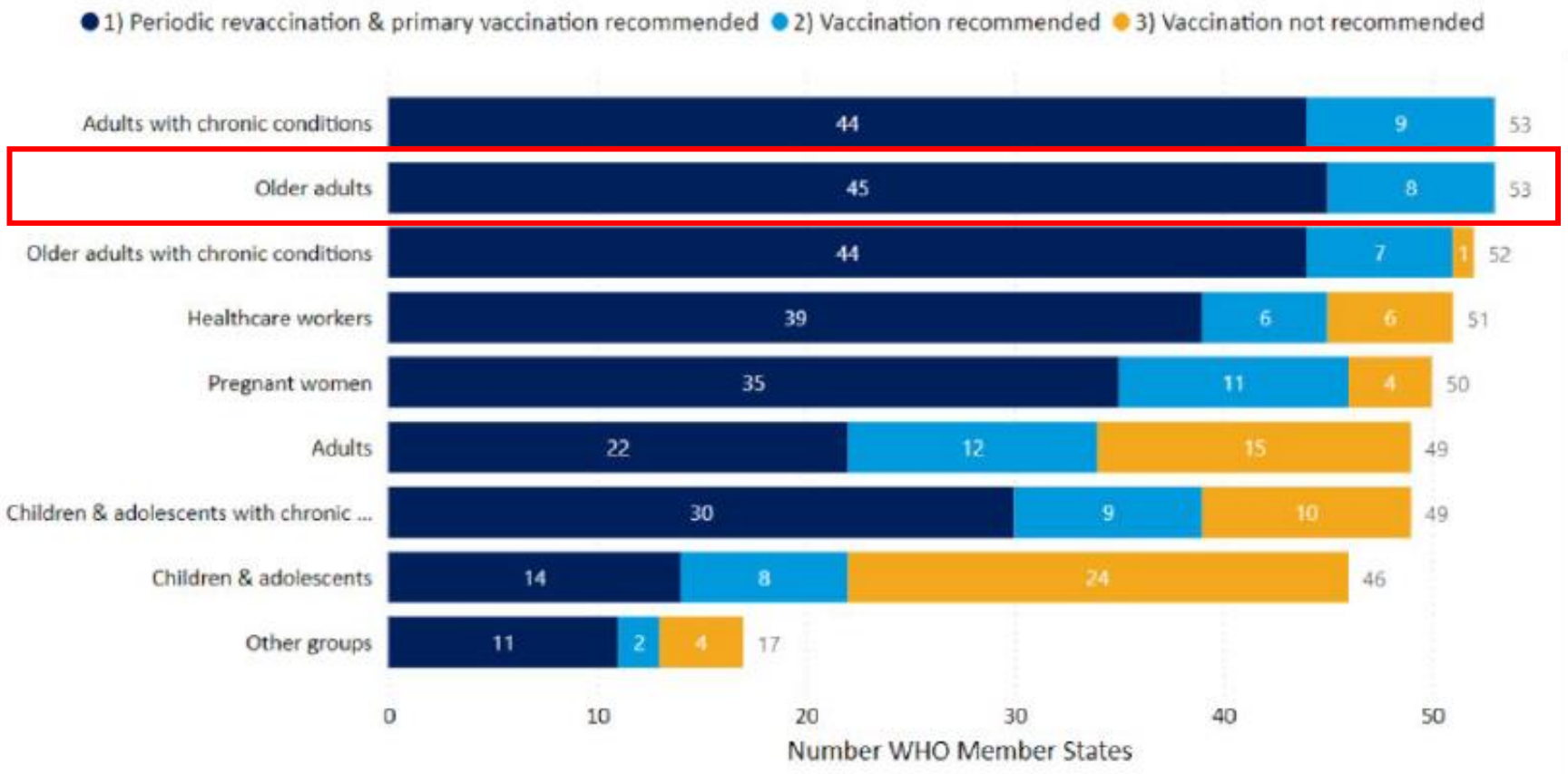


- Effectiveness among immunocompromised (65+)

2024-2025 COVID-19 vaccination status/days since dose	COVID-19 case-patients N (Col %)	COVID-19 control-patients N (Col %)	Median interval since last dose among vaccinated, days (IQR)	Adjusted VE (95% CI)
VISION				
No 2024-2025 COVID-19 dose (Ref)	524 (88)	5,885 (78)	720 (343-1,064)	**Ref**
Received 2024-2025 COVID-19 dose 7–119 days earlier	74 (12)	1,709 (22)	53 (31-78)	**40 (21-54)**



WHO: National policies on Covid-19 vaccination



85

WHO MS reported on COVID-19 vaccination policies for at least one population group

71

WHO MS reported recommending periodic vaccination for at least one population group

Older adults

are most frequently reported as being recommended to be periodically revaccinated against COVID-19

***Sources**: WHO-UNICEF Electronic Joint Reporting Form COVID-19 Module & WHO regional reporting systems.*

Covid-19 vaccine coverage in France (French national agency of public health SPF, non published)

	2023-2024	Spring 2024	2024-2025
≥ 65 years old	30.2%	-	19.8%
≥ 80 years old	36.9%	8.6%	20.8%
Nursing homes	68.4%	-	-

Covid-19 vaccination in elderly: conclusions, perspectives

- COVID-19 remains common and severe in the elderly
- Maintained mRNA vaccine efficacy despite the emergence of variants (adapted vaccines)
- Significance of infections outside the winter season justifies a spring campaign in specific populations, especially elderly (≥80 years old)
- Challenge of vaccination coverage
- Place of the sub-unit adjuvanted vaccine?