

COVID 19



Keeping Up with a Moving Target



CME Information

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Name of Faculty or Presenter	Reported Financial Relationship
Paul G. Auwaerter, MD, MBA, FIDSA	JNJ: Ownership equity Scientific Consulting: Verily, EMD Serono, Shionogi DMSB: Humanigen

Dr. Auwaerter has indicated that he will be referencing the unlabeled or unapproved use of agents currently being investigated in on-going studies and trials, including monoclonal antibodies, antivirals, and several vaccine platforms.

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CME Information

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Learning Objectives

- Discuss immune response to infection with omicron variant after vaccination



Thank You

This activity is supported by an educational grant from Gilead Sciences, Inc. and in-kind support by DKBmed LLC

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Please see **COVID19.DKBmed.com** for additional resources and educational activities



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Are mRNA Vaccines Effective in the Omicron Era?

Daily new confirmed COVID-19 deaths per million people

7-day rolling average. Due to varying protocols and challenges in the attribution of the cause of death, the number of confirmed deaths may not accurately represent the true number of deaths caused by COVID-19.

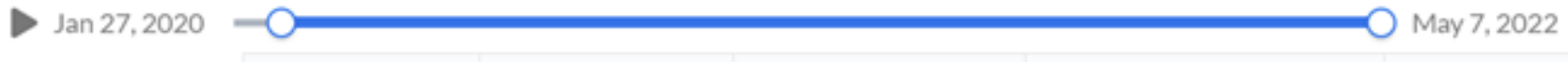


LINEAR LOG



Source: Johns Hopkins University CSSE COVID-19 Data

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May 11, 2022

OMICRON CONTINUES TO EVOLVE RAPIDLY

What are the implications for mRNA vaccines?

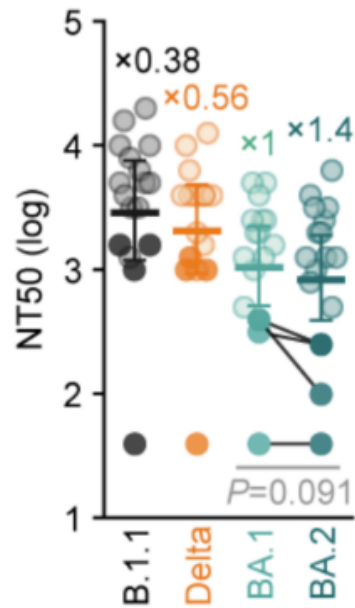
Omicron Breakthrough

- More common than earlier variants, despite mRNA booster
 - Rationale for booster #2

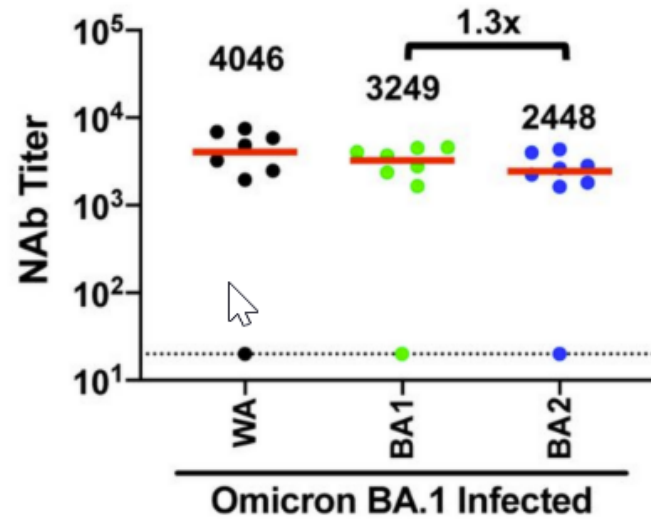
- **Booster #2**
 - Enhances vaccine efficacy
 - Decreases risk for severe COVID-19
(only short-term data available)

What Happens if Immunized and Omicron Infected?

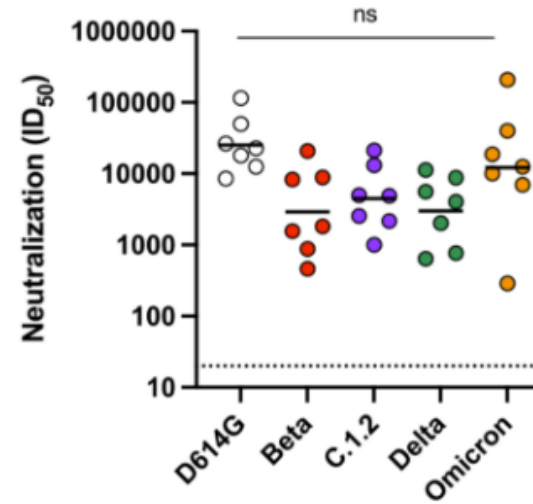
Omicron infection after current vaccine elicits good neutralization of Omicron



Yamasoba et al (2022)



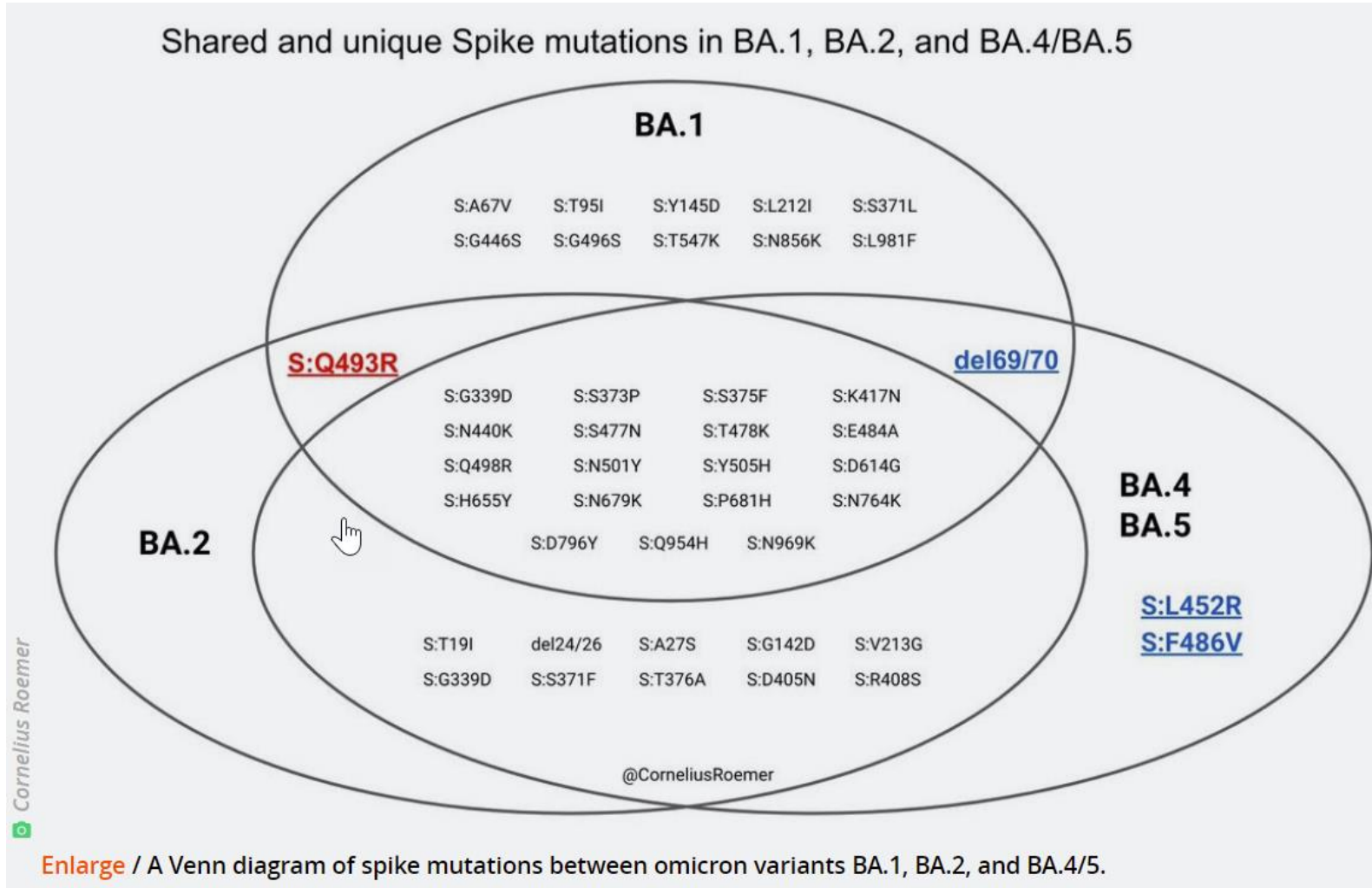
Yu et al (2022)



Richardson et al (2022)

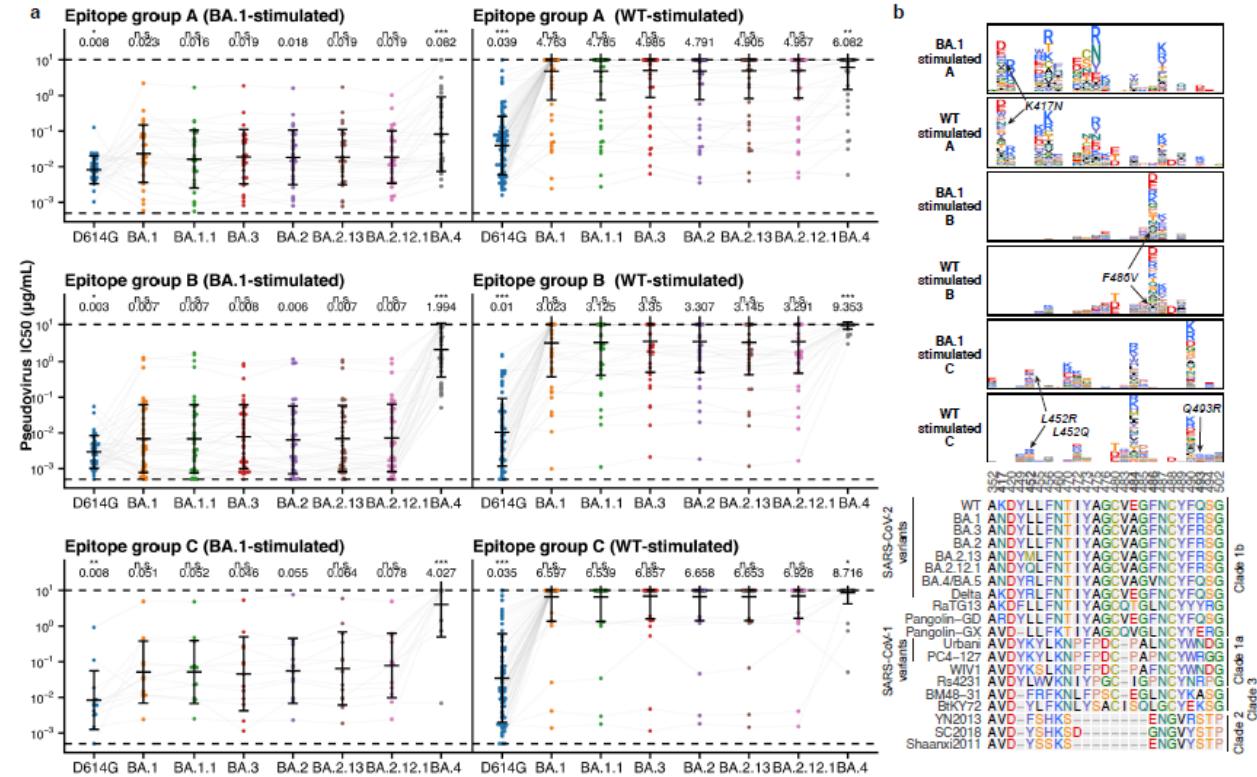
Humans vaccinated with current vaccines then infected with Omicron BA.1 neutralize Omicron BA.1 and BA.2 comparably to Delta and older Wuhan-Hu-1-like viruses

Omicron Subvariant Mutations



But what about BA.2 and its Subvariants?

- BA.2.12.1, BA.2.13, BA.4 and BA.5 L452 mutation
 - All have ↑ ACE2 binding
 - More breakthroughs
 - 2° ↓ neutralizing abs recognizing var.
 - BA.4 & BA.4 ↓ ACE2 binding
- 70-80% memory B-cells post-Omicron breakthrough infection recognize Wuhan-Hu-1 vs. ~25% in Omicron infections w/0 vaccination
- Earlier paper
 - ~15% Omicron-induced antibodies recognize Wuhan-Hu-1



Extended Data Fig. 6 | Comparison of BA.1-stimulated and WT-stimulated antibodies in group A, B and C.



VACCINE DASHBOARD

CDC effort: helpful safety data

CDC Vaccine Dashboard (Sample)

CLICK BELOW TO NAVIGATE

- HOME
- Outcomes List
- RCA
- OUTCOME SPECIFIC
- COVERAGE
- HOSPITALIZATIONS
- SIMULT. VACCINES
- DETAILED TABLES
- PREGNANCY
- BOOSTER DOSES

Vaccine Safety Datalink (VSD) Weekly COVID-19 Vaccine Dashboard: February 27, 2022 *
* Visualization published on February 27, 2022; data current as of previous Saturday. VSD population includes individuals 5 years of age and older.

Total Doses Administered

16,403,956

Total Doses Admin per 100K

147,189

People Received At Least One Dose

8,504,214

People Fully Vaccinated

8,401,211

Total Booster Doses Admin[^]

4,564,951

To date, 74.5% of the age eligible VSD population is fully vaccinated and 77.3% received at least one dose

74.5%77.3%

Number of people vaccinated with primary series & doses administered over time, by reporting week

Demographic breakdown of people who received at least one primary series dose

By Sex

Female: 4,532,584

Male: 3,971,630

By Race/Ethnicity

Hispanic/Latino: 2,098,535

AI/AN: 25,762

Asian: 1,241,785

Black: 526,470

NH/PI: 54,222

White: 3,455,446

Multiple / Other: 299,060

Unknown: 802,934

By Site *

A: 111,843

B: 381,758

C: 375,293

D: 550,551

E: 89,774

F: 3,263,463

G: 417,433

H: 3,314,099

* There is a one week lag in data reported by SCK

Number of events in primary series by outcome *

	Janssen Dose 1	Moderna Dose 1	Moderna Dose 2	Pfizer-BioNTech Dose 1	Pfizer-BioNTech Dose 2	Total
ADEM	42	159	207	2	3	5
AMI	13	41	25	71	26	176
ANAPH	3	29	10	31	6	79
ANAPH2	47	196	204	397	397	1,241
ARDS	1	4	7	7	6	25
BP	43	161	174	190	193	761
CVST	1	4	8	8	3	24
DIC	2	7	12	11	17	49
ENCEPH		6	8	5	6	25
GBS	13	7	4	12	4	40
HSTK	9	73	56	82	92	312
ISTK	58	322	330	356	349	1,415
ITP	5	10	18	19	15	67
KD				11	3	14
MISC/MISA	8	33	70	62	150	323
MYOC	2	5	9	9	11	36
NARC	24	148	156	147	196	671
PE	16	78	84	138	133	449
TM	2	2	2	2	7	15
TTP	3	2	3	4	2	14
TTS	7	29	21	22	19	98
VTE	37	185	170	201	246	839
Total	336	1,501	1,578	1,973	2,126	7,514

* Booster dose count includes anyone since 08/10/2021 who is fully vaccinated and received another COVID-19 vaccine >=4 months following mRNA series completion or >=2 months following receipt of Janssen vaccine.

* Table displays outcomes with cases in the 1-21 day risk window (0-1 day for ANAPH & ANAPH2). ANAPH2 uses internal OVID's to identify anaphylaxis vs. ICD-10 codes used in ANAPH. ANAPH and ANAPH2 are not mutually exclusive.

Vaccinated concurrent comparator sequential analysis, signals to date

Outcome	Vaccine Type	Dose	Risk Interval	Signal this week?
MYOC	Both mRNA	Both doses	1-21	Yes
		Dose 2	1-21	Yes
	Pfizer- BioNTech	Both doses	1-21	Yes
		Dose 2	1-21	Yes



How much protection does one-way masking provide?



With rapid antigen tests more readily available now, is there much value in PCR tests for most people?



Thank You!

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- QA@dkbmed.com