

In case you thought getting more shots was a good idea...

It's really not. Show your folks.



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A new preprint is out entitled: “[Risk of Coronavirus Disease 2019 \(COVID-19\) among Those Up-to-Date and Not Up-to-Date on COVID-19 Vaccination](#)”¹ and it concludes from a multivariate analysis of 48,344 individuals (Employees of Cleveland Clinic) that ‘those not “up-to-date” on COVID-19 vaccination *had a lower risk of COVID-19* than those “up-to-date”’.

I can already hear the hit piece vultures circling and chanting: it’s not peer-reviewed. No it’s not, but read it anyway and ask yourself if this study has merit. Decide for yourself. Maybe my summary can help.

What did they do?

They looked at the differences between ‘infection rates’ (cumulative incidence) with COVID-19 in individuals who’d received the bivalent shots treating injection with the COVID-19 bivalent product as a time-dependent covariate. What this means is that they accounted for the fact that injection status can change per individual at any time (injection time), and at each injection (event) time, that current status of the individual is compared with the current values of all others who were at risk of COVID-19 at that time.

So they collected and compared two rates: incidence rate for ‘up-to-date’ and ‘not-up-to-date’ which were calculated by dividing the number of individuals in each group who reached the outcome - COVID-19 (as determined by ‘testing’) - by the number of individuals either injected or not.

It is very clear from Figure 1 in the preprint that the risk of getting COVID-19 is lower if you are *not* up-to-date (red). As time progressed (from the end of January 2023), the disparity between the two groups becomes more apparent. Who here is surprised?

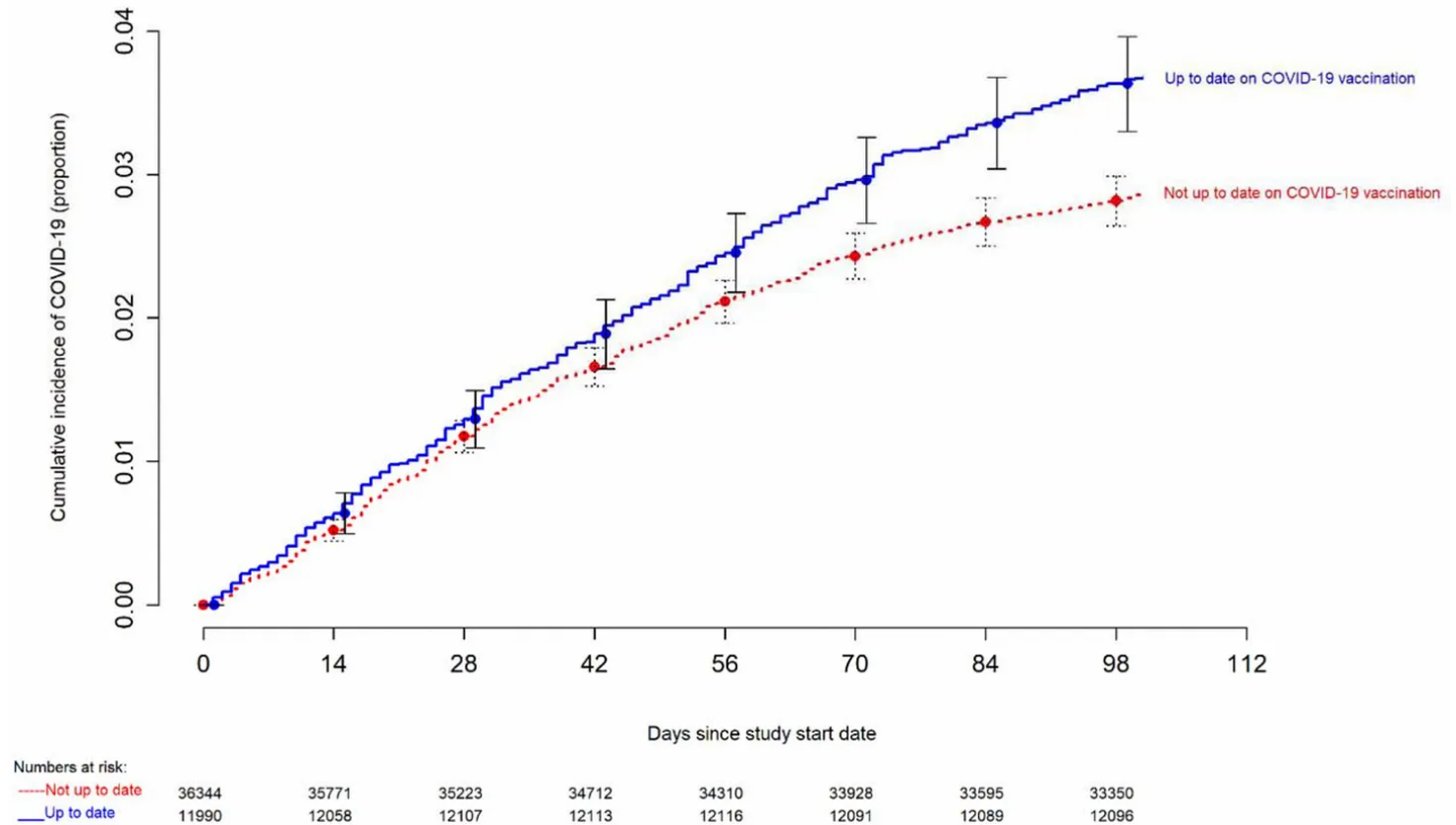
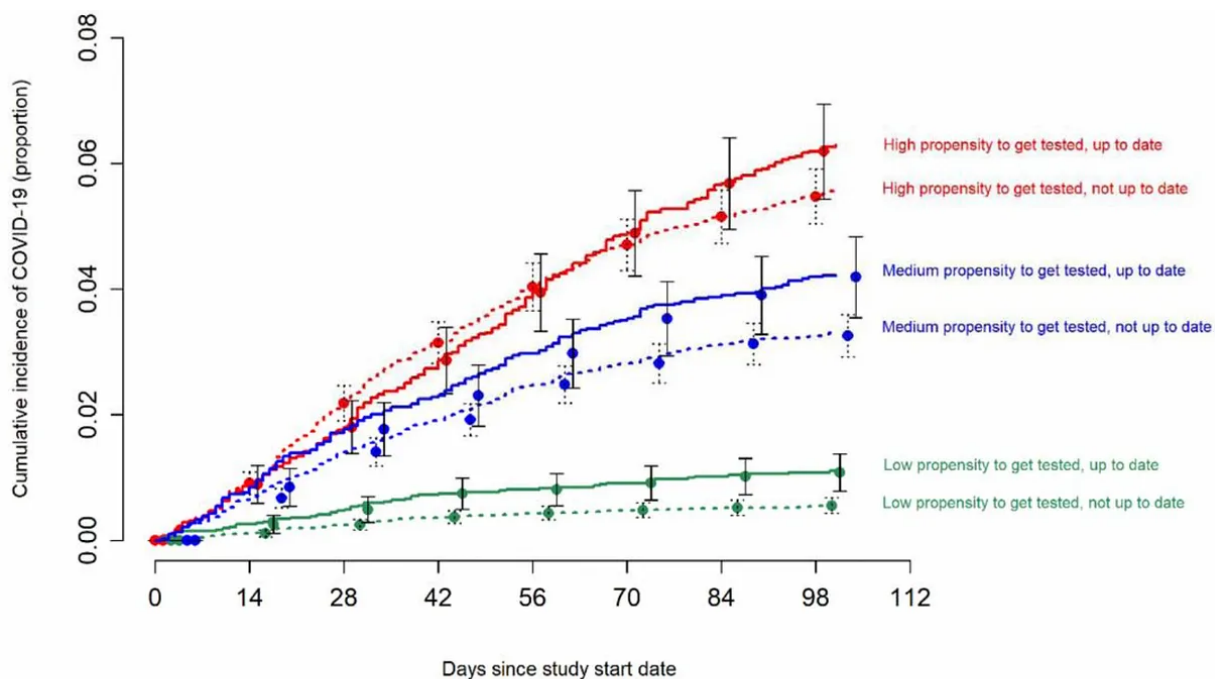


Figure 1 from preprint. Simon-Makuch hazard plot comparing the cumulative incidence of COVID-19 in the "up-to-date" and "not up-to-date" states with respect to COVID-19 vaccination. Day zero was 29 January 2023, the day the XBB lineages of the Omicron variant became the dominant strains in Ohio. Point estimates and 95% confidence intervals are jittered along the x-axis to improve visibility.
<https://www.medrxiv.org/content/10.1101/2023.06.09.23290893v1.full>

Covariates collected were age, sex, job location, and prior SARS-CoV-2 infection. Since the propensity to get 'tested' for COVID-19 can vary among individuals, here it was defined as the number of COVID-19 nucleic acid amplification tests (NAATs) done divided by the number of years of employment at Cleveland Clinic Health System (CCHS) during the pandemic.

When they stratified propensity to get tested, for each tertile, they observed that the

COVID incidence was higher in the ‘up-to-date’ group even when the propensity to get tested was low (green).



Numbers at risk:

High propensity to get tested, not up to date	10724	10475	10224	9969	9782	9607	9467	9363
High propensity to get tested, up to date	3772	3785	3789	3776	3752	3722	3699	3691
Medium propensity to get tested, not up to date	14602	14462	14335	14223	14135	14040	13950	13877
Medium propensity to get tested, up to date	4595	4629	4672	4693	4718	4731	4751	4763
Low propensity to get tested, not up to date	11018	10834	10664	10520	10393	10281	10178	10110
Low propensity to get tested, up to date	3623	3644	3646	3644	3646	3638	3639	3642

Figure 2 from preprint. Simon-Makuch hazard plot comparing the cumulative incidence of COVID-19 in the “up-to-date” and “not up-to-date” states with respect to COVID-19 vaccination, stratified by tertiles of propensity to get tested for COVID-19. Day zero was 29 January 2023, the day the XBB lineages of the Omicron variant became the dominant strains in Ohio. Point estimates and 95% confidence intervals are jittered along the x-axis to improve visibility. Solid lines represent the “up-to-date” states while dashed lines represent the “not up-to-date” states. <https://www.medrxiv.org/content/10.1101/2023.06.09.23290893v1.full>.

They also used multivariable Cox proportional hazards regression - which is a survival model that relates the time that passes, before some event occurs, to one or more covariates that may be associated with that quantity of time ² - to determine any potential association of various variables with time to COVID-19 (the outcome).

According to the model, adjusted for COVID-19 test propensity, age, sex, and phase of most recent SARS-CoV-2 infection, “not-up-to-date” status was associated with a lower risk of COVID-19 (HR, 0.77; 95% C.I., 0.69-0.86; P-value, <0.001) as shown in the

blurry table below. The covariates minimally effected the the adjusted Hazard Ratio (HR) as seen when comparing the Unadjusted HR and Adjusted HR columns.

Variables	Unadjusted HR (95% CI)	P	Adjusted HR (95% CI) ^a	P
Vaccination status "not up-to-date" ^{ab}	0.78 (0.70-0.87)	<0.001	0.77 (0.69-0.86)	<0.001
Propensity to get tested for COVID-19 ^c	1.07 (1.06 – 1.09)	<0.001	1.09 (1.08-1.10)	<0.001
Age	1.001 (0.997-1.005)	0.56	0.999 (0.995-1.003)	0.65
Male sex	0.83 (0.74-0.94)	0.004	0.81 (0.71-0.91)	<0.001
Most recent prior SARS-CoV-2 infection^d				
During Pre-Omicron phase	1.11 (0.96-1.29)	0.14	1.06 (0.92-1.23)	0.44
During Omicron BA.1/BA.2 dominant phase	0.91 (0.80-1.04)	0.18	0.85 (0.74-0.97)	0.02
During Omicron BA.4/BA.5 dominant phase	0.31 (0.24-0.40)	<0.001	0.28 (0.22-0.36)	<0.001
During Omicron BQ dominant phase	0.12 (0.05-0.27)	<0.001	0.09 (0.04-0.21)	<0.001

Abbreviation: COVID-19, Coronavirus Disease 2019; HR, hazard ratio; CI, confidence interval; SARS-CoV-2, Severe Acute Respiratory Syndrome Coronavirus-2

^aFrom a multivariable Cox-proportional hazards regression model.

^bTime-dependent covariate

^cCalculated as number of COVID-19 nucleic acid amplification tests done per year of employment at Cleveland Clinic during the course of the pandemic.

^dReference: no documented prior infection.

Table 2 from preprint. Unadjusted and Adjusted Associations With Time to COVID-19.

<https://www.medrxiv.org/content/10.1101/2023.06.09.23290893v1.full#T2>

Ultimately, the authors found that the prior ‘infection’ (and robust immunity acquired from said infection), was deterministic of future COVID-19 status, ie: lower risk for COVID-19.

Infection is superior to injection with regard to COVID-19 repeat infections.

Therefore it is not surprising that not being “up-to-date” according to the CDC definition was associated with a higher risk of prior BA.4/BA.5 or BQ lineage infection, and therefore a lower risk of COVID-19, than being “up-to-date”, while the XBB lineages were dominant.

And finally, the authors write:

It is now well-known that SARS-CoV-2 infection provides more robust protection than vaccination. [3](#) [4](#) [5](#)

Yes, it is well-known. It was well-known before. Vaccination can ever only hope to be second best to natural immunity, in my opinion.

- Best vaccination scenarios can prevent severe symptom onset where the injection material is not more harmful than helpful in generating targeted immune responses for challenge situations.
- Worst vaccination scenarios can cause more harm than good, as is seemingly being demonstrated with the gene-based therapies introduced to the human population at the beginning of the COVID era.

When the medicine is more harmful, ie: associated with higher morbidity, than the disease, then it is time to stop calling it medicine.

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- 1 Nabin K. Shrestha, Patrick C. Burke, Amy S. Nowacki, Steven M. Gordon. Risk of Coronavirus Disease 2019 (COVID-19) among Those Up-to-Date and Not Up-to-Date on COVID-19 Vaccination. medRxiv 2023.06.09.23290893; doi: <https://doi.org/10.1101/2023.06.09.23290893>.
 - 2 https://en.wikipedia.org/wiki/Proportional_hazards_model
 - 3 Shrestha NK, Burke PC, Nowacki AS, Terpeluk P, Gordon SM. Necessity of Coronavirus Disease 2019 (COVID-19) Vaccination in Persons Who Have Already Had COVID-19. *Clin Infect Dis Off Publ Infect Dis Soc Am* 2022; 75:e662–e671.
 - 4 Gazit S, Shlezinger R, Perez G, et al. Comparing SARS-CoV-2 natural immunity to vaccine-induced immunity: reinfections versus breakthrough infections. 2021: 2021.08.24.21262415.
 - 5 León TM, Dorabawila V, Nelson L, et al. COVID-19 Cases and Hospitalizations by COVID-19 Vaccination Status and Previous COVID-19 Diagnosis — California and New York, May–November 2021. *MMWR Morb Mortal Wkly Rep* 2022; 71:125–131.

