

EVIDENCE FOR NATURAL IMMUNITY

4 Studies After September 1, 2022

1. **Natural immunity in superior against BA.4/BA.5.**

Study: Itarawneh, H., Chemaitelly, H., Ayoub, H. et al. Protective Effect of Previous SARS-CoV-2 Infection against Omicron BA.4 and BA.5 Subvariants. *New England Journal of Medicine*, 387:1620-1622 (October 27th, 2022)

Findings:

- Pre-Omicron natural immunity was 35.5% effective against BA.4 or BA.5 infection
- Post-Omicron natural immunity was 76.2% effective against BA.4 or BA.5 infection
- BA.4/BA.5 natural immunity was 76.2% effective against BA.4 or BA.5 re-infection

Overall: natural immunity, regardless of variant, is superior to a primary vaccination series against BA.4/BA.5 infection.

2. **Pre-Omicron natural immunity is superior against BA.1.**

Study: Chin, E., Leidner, D., Lamson, L., et al. Protection against Omicron from Vaccination and Previous Infection in a Prison System. *New England Journal of Medicine*. 387:1770-1782 (November 10th, 2022)

Findings:

- Pre-Delta natural immunity was 16.3-27.5% effective against BA.1 infection
- Delta natural immunity was 38.3-48.9% effective against BA.1 infection

Overall: Pre-Omicron natural immunity is superior to a primary vaccination series against BA.1 infection.

3. **Natural immunity is superior against BA.2.**

Study: Carazo, S., Skowronski, D.*, Brisson, M., et al. Protection against omicron (B.1.1.529) BA.2 reinfection conferred by primary omicron BA.1 or pre-omicron SARS-CoV-2 infection among health-care workers with and without mRNA vaccination: a test-negative case-control study. *The Lancet Infectious Diseases*. 23(1): 45-55 (September 21st, 2022)

** Dr. Skowronski works for the BCCDC and the preprint version would have been available to the PHO**

Findings:

- Pre-Omicron natural immunity was 38% effective against BA.2 infection
- Omicron BA.1 natural immunity was 72% effective against BA.2 infection
- A primary vaccination series was 35% effective against BA.2 infection

Overall: natural immunity, regardless of variant, is superior to a primary vaccination series against BA.2 infection.

4. Natural immunity is superior against all variants and severe illness.

Study: Chemaitelly, H., Ayoub, H., Almkudat, S., et al. Protection from previous natural infection compared with mRNA vaccination against SARS-CoV-2 infection and severe COVID-19 in Qatar: a retrospective cohort study. *The Lancet Microbe*. 3(11): E944-E955 (November 11th, 2022)

Findings:

- “Previous natural infection was associated with lower incidence of SARS-CoV-2 infection, regardless of the variant, than mRNA primary-series vaccination”
- “Natural infection was also associated with lower incidence of severe COVID-19 than mRNA vaccination”
- “Vaccine protection is negligible 6 or more months after the second dose”

Overall: natural immunity, regardless of variant, is superior to a primary vaccination series against all COVID-19 variant infections and severe illness.