

COVID-19 Conversations

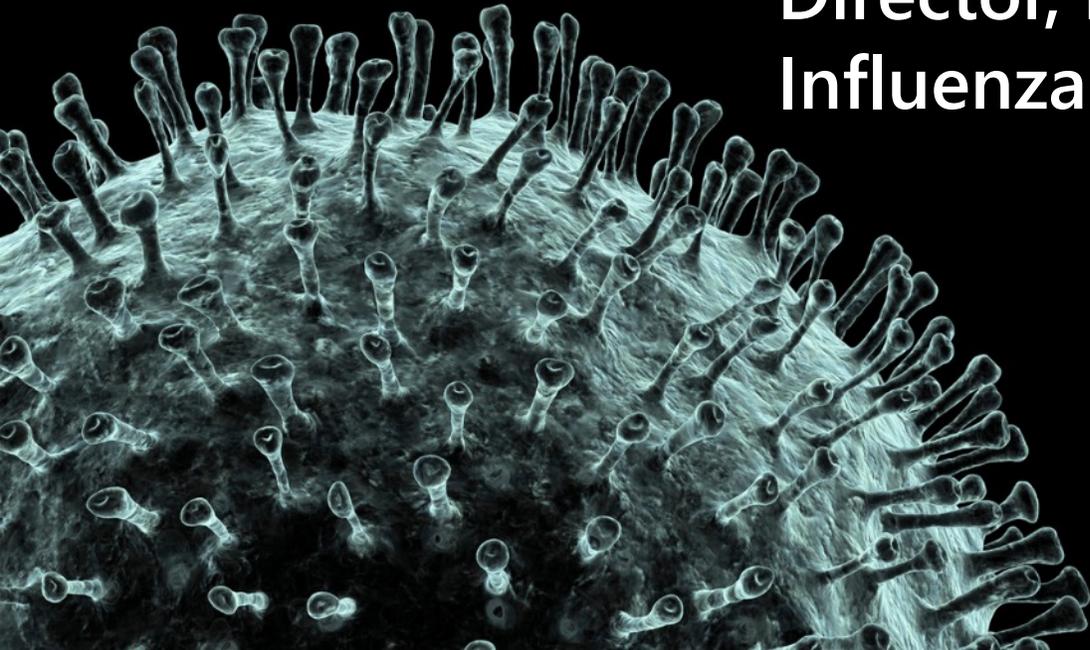


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Life with Endemic COVID-19 – the Continuing Role for Vaccination

Walter A Orenstein, Emory University

Living with COVID

NAM- APHA Symposium

5-26-19

[Yogi Berra](#) >



“It's tough to make predictions, especially about the future.”

— Yogi Berra

New York Yankees Catcher -1946-1963

Berra <https://www.goodreads.com/quotes/261863-it-s-tough-to-make-predictions-especially-about-the-future>

Will We Be Able to Stop Vaccination?

- **No** – the virus will not eradicate itself and even if we eliminate sustained transmission in the US we will still need to vaccinate
- Despite termination of endemic transmission of measles and polio, we still need to vaccinate because the viruses circulate elsewhere in the world
- Imports to the US will likely occur
- New susceptibles will be added to the pool every year with new births

Will We Need to Revaccinate People Already Vaccinated?

- **Don't Know**
- Will Depend on:
 - Duration of immunity induced by current vaccines
 - Mutation of SARS-CoV-2 viruses that lead to evasion of vaccine induced immunity (e.g., influenza)
- Will also depend on whether in certain settings higher immunity levels are needed to stop transmission
 - For example, with measles a 2nd dose was needed in middle schools, high schools and colleges because of higher force of infection in such settings

Will Future Outbreaks be Widespread or in Clusters?

- **Don't Know**

- Will depend on level of vaccination coverage and duration of immunity among vaccinees
 - Waning of immunity (due to time or virus mutations), if common, or gaps in immunization coverage could lead to widespread outbreaks
- If waning immunity is not a major problem, future outbreaks likely to cluster in pockets of un/underimmunized (e.g., measles) or places where force of infection is high (e.g., densely populated urban settings)
- Calculated herd immunity thresholds can be misleading since we are not a homogenous population. Almost lost measles elimination status in 2019 because of clusters of unvaccinated sustained transmission for almost 1 year

Need for Ongoing Surveillance to Determine:

- 1) Vaccine Effectiveness in a Real World Setting
- 2) When outbreaks occur are they the result of vaccine failure or failure to vaccinate or both
- 3) Do variants emerge which evade vaccine-induced immunity
- 4) WHO has developed guidelines for methodologies to assess vaccine effectiveness:

https://www.who.int/publications/i/item/WHO-2019-nCoV-vaccine_effectiveness-measurement-2021.1

Equation and Curves to Estimate Vaccine Effectiveness with the Screening Method

Bull WHO 1985: 63 (6): 1055-1068

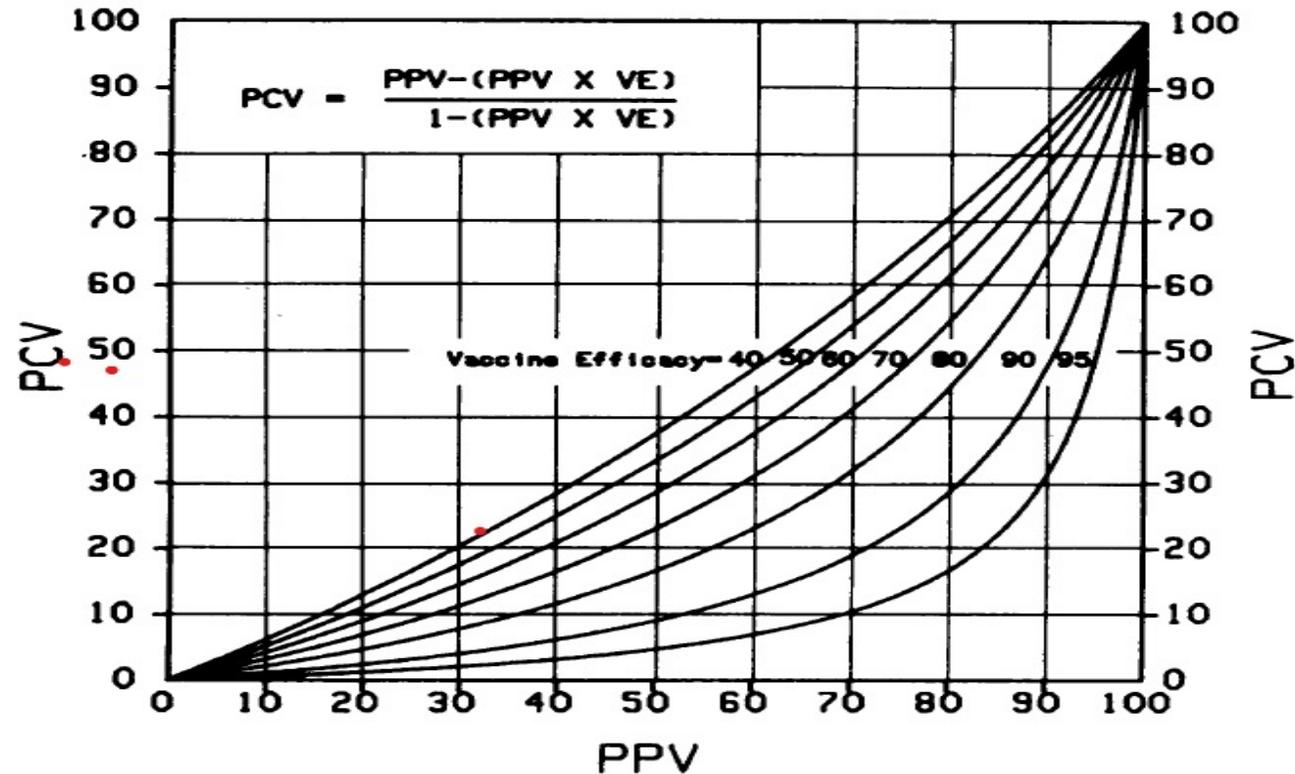


Fig. 1. The relationship between the percentage of cases vaccinated (PCV) and the percentage of the population vaccinated (PPV) for seven different percentage values of vaccine efficacy (VE).

Types of Potential Studies for Observational Studies of COVID-19 Vaccine Effectiveness

- Cohort Studies
 - Traditional Case-Control Studies
 - Test-Negative Case-Control Studies
 - Screening Method
 - Regression Discontinuity Design
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- For accurate determination of vaccine effectiveness it is critical to determine vaccination status accurately

Conclusions

- COVID-19 vaccination will likely need to be ongoing
- The need for boosters, the frequency of such boosters, if needed, and the composition of booster vaccines, if needed is not known at this time.
- It is critical to have surveillance systems in place to determine if cases are due to vaccine failure versus failure to vaccinate
- And if vaccine failure, why – (e.g., waning immunity, variant escape etc)
- And if failure to vaccinate, why (e.g., problems with access, hesitancy etc.)