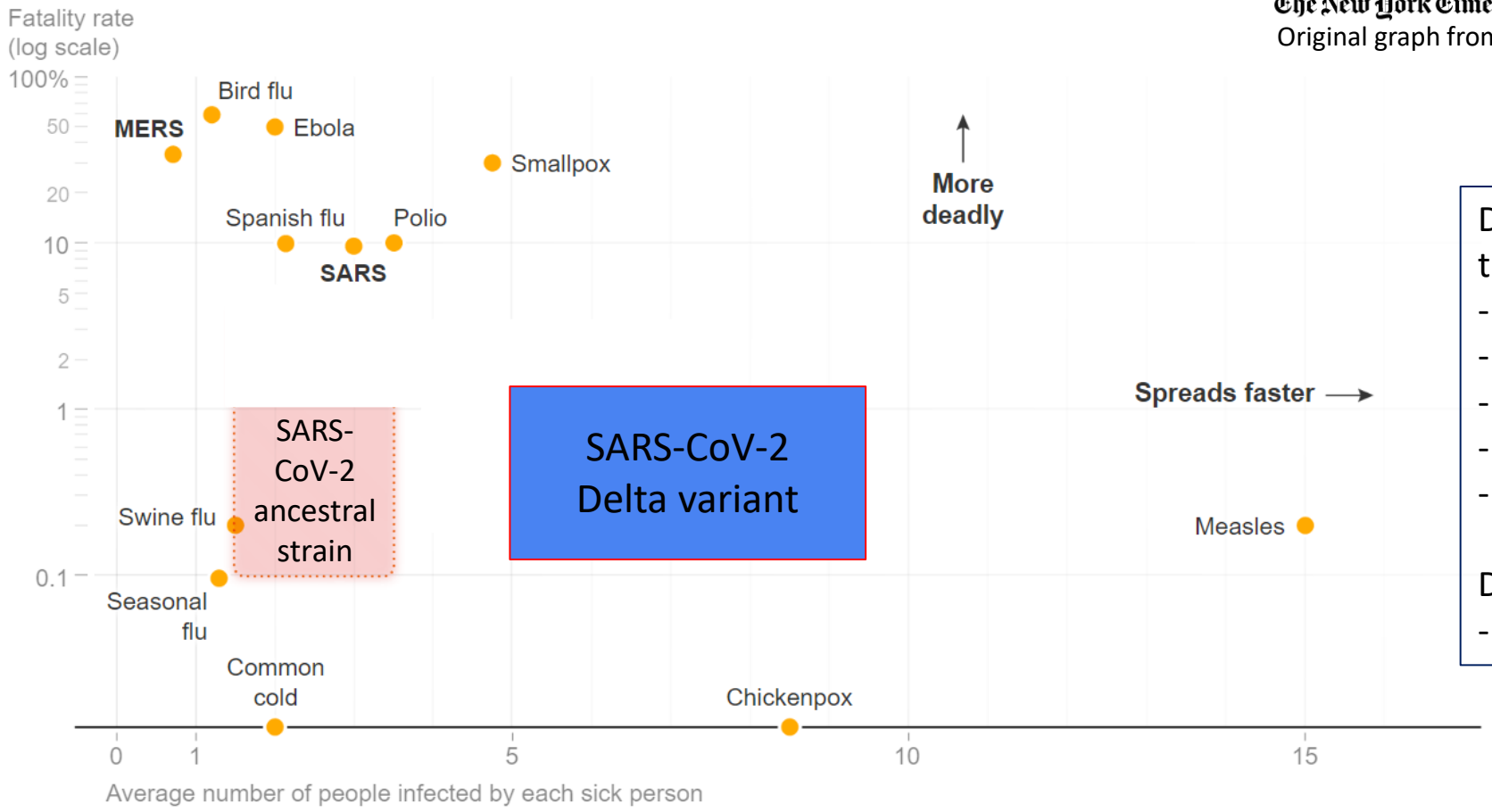
Delta variant

Transmission of Delta variant vs. ancestral strain and other infectious diseases



Delta variant is **more** transmissible than:
- MERS & SARS
- Ebola
- Common cold
- Seasonal flu & 1918 (“Spanish”) flu
- Smallpox

Delta variant is **as** transmissible as:
- Chicken Pox

Delta infections associated with higher viral load and duration of shedding: Published evidence

- India report of lower cycle threshold (Ct) values in Delta breakthrough cases in HCW (n=47, mean Ct 16.5) compared to non-Delta breakthrough cases (n=22, mean Ct 19); also larger cluster size with Delta breakthrough
- Delta infection associated with longer duration of Ct values ≤30 [median 18 days vs. 13 days for ancestral strains]
- Risk of reinfection with Delta may be higher [aOR 1.46 (CI 1.03-2.05)] compared to Alpha variant, but only if prior infection ≥180 days earlier

Micochova et al. doi: 10.21203/rs.3.rs-637724/v1
Ong et al. doi:10.2139/ssrn.3861566; PHE technical briefing 19:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005517/Technical_Briefing_19.pdf

Delta variant vaccine breakthrough cases may be as transmissible as unvaccinated cases

- Breakthrough cases reported to national passive surveillance have lower Ct values by 3 cycles **(~10-fold increase in viral load) for Delta** (Ct=18, n=19) compared with Alpha (Ct=21, n=207) and other lineages (Ct=21, n=251)

- Barnstable County, MA, outbreak: **No difference in mean Ct values in vaccinated and unvaccinated** cases [median among vaccinated (n=80): 21.9; unvaccinated (n=65): 21.5]

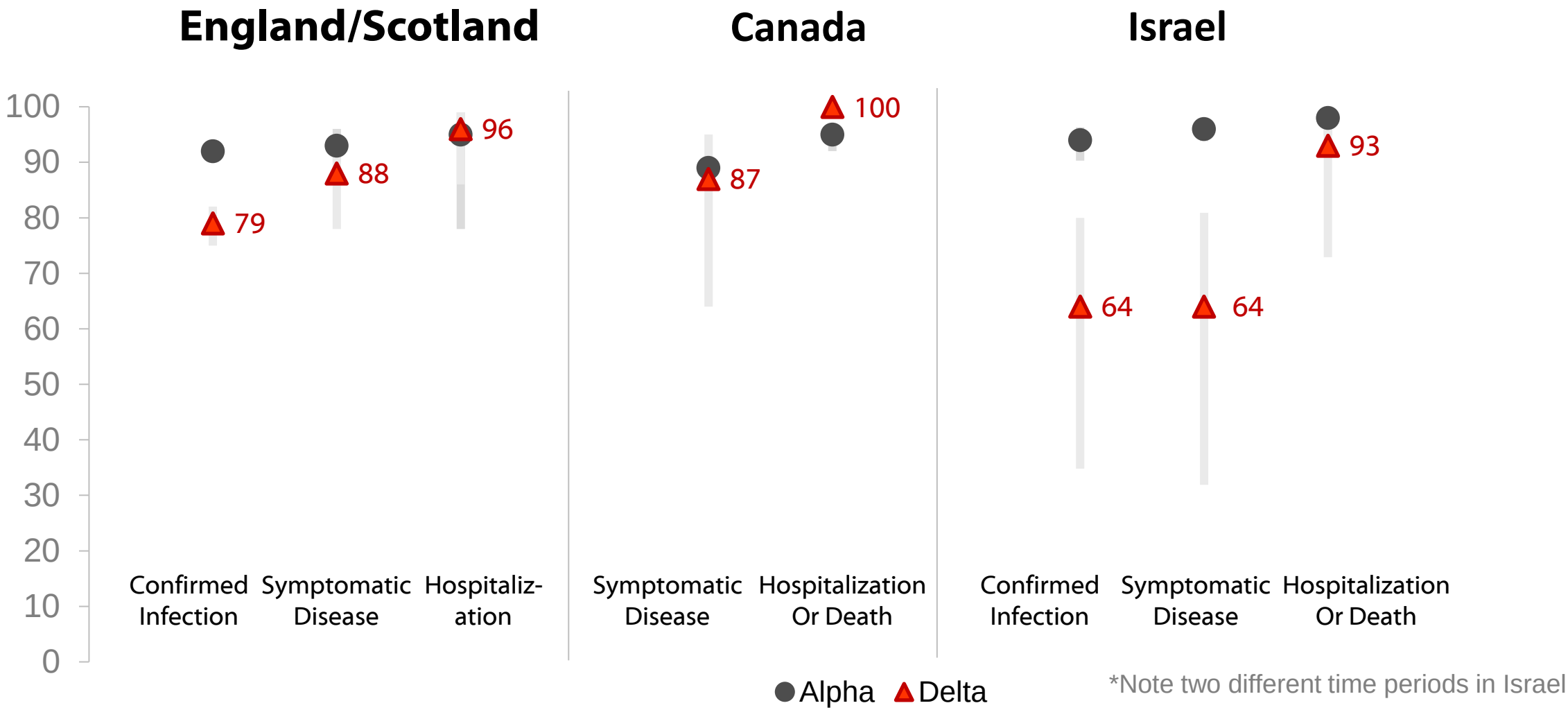
(CONFIDENTIAL – preliminary data, subject to change)

Delta variant may cause more severe disease than Alpha or ancestral strains: Published evidence

- Canada: Higher odds of hospitalization [aOR 2.20 (CI 1.93-2.53)], ICU admission [aOR 3.87 (CI 2.98-4.99)], and death [aOR 2.37 (CI 1.50-3.30)][1]
- Singapore: Higher odds of oxygen requirement, ICU admission, or death [aOR 4.90 (CI 1.43-30.78)] and pneumonia [aOR 1.88 (CI 0.95-3.76)][2]
- Scotland: Higher odds of hospitalization [HR 1.85 (CI 1.39-2.47)][3]

1. Fisman and Tuite, doi:10.1101/2021.07.05.21260050; 2. Ong et al. doi:10.2139/ssrn.3861566; 3. Sheikh et al. doi:10.1016/S0140-6736(21)01358-1

Pfizer 2-Dose Vaccine Effectiveness for Alpha vs. Delta



*Note two different time periods in Israel

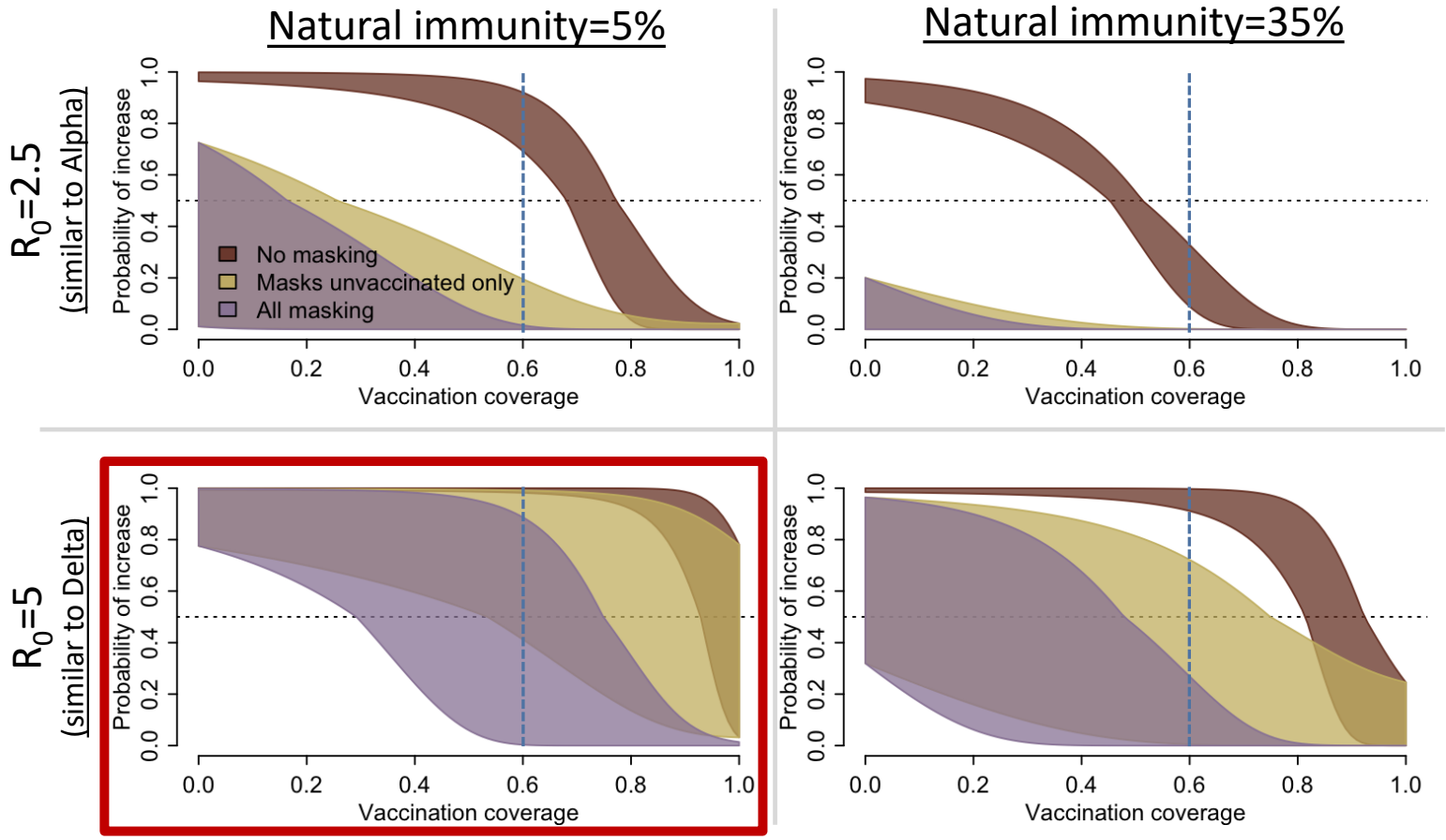
Sheikh et al. Lancet (2021): https://doi.org/10.1016/S0140-6736(21)01358-1; Lopez Bernal et al. medRxiv preprint; https://doi.org/10.1101/2021.05.22.21257658; Stowe et al. PHE preprint: https://khub.net/web/phe-national/public-library/-/document_library/v2WsRK3ZlEig/view/479607266; Nasreen et al.medRxiv preprint: https://doi.org/10.1101/2021.06.28.21259420; https://www.gov.il/en/departments/news/06072021-04

Given increased transmissibility, lower VE, and current vaccine coverage, NPIs needed to reduce transmission of Delta variant

Reported incidence 50 cases per 100,000 per week

Model Assumptions:

- Vaccine effectiveness 75-85%
- 50% infections reported
- Masking:
  - Source control 40-60% effective
  - Personal protection 20-30% effective
- NO ADJUSTMENTS FOR OTHER INTERVENTIONS
  - e.g., no distancing, no isolation, no gathering restrictions



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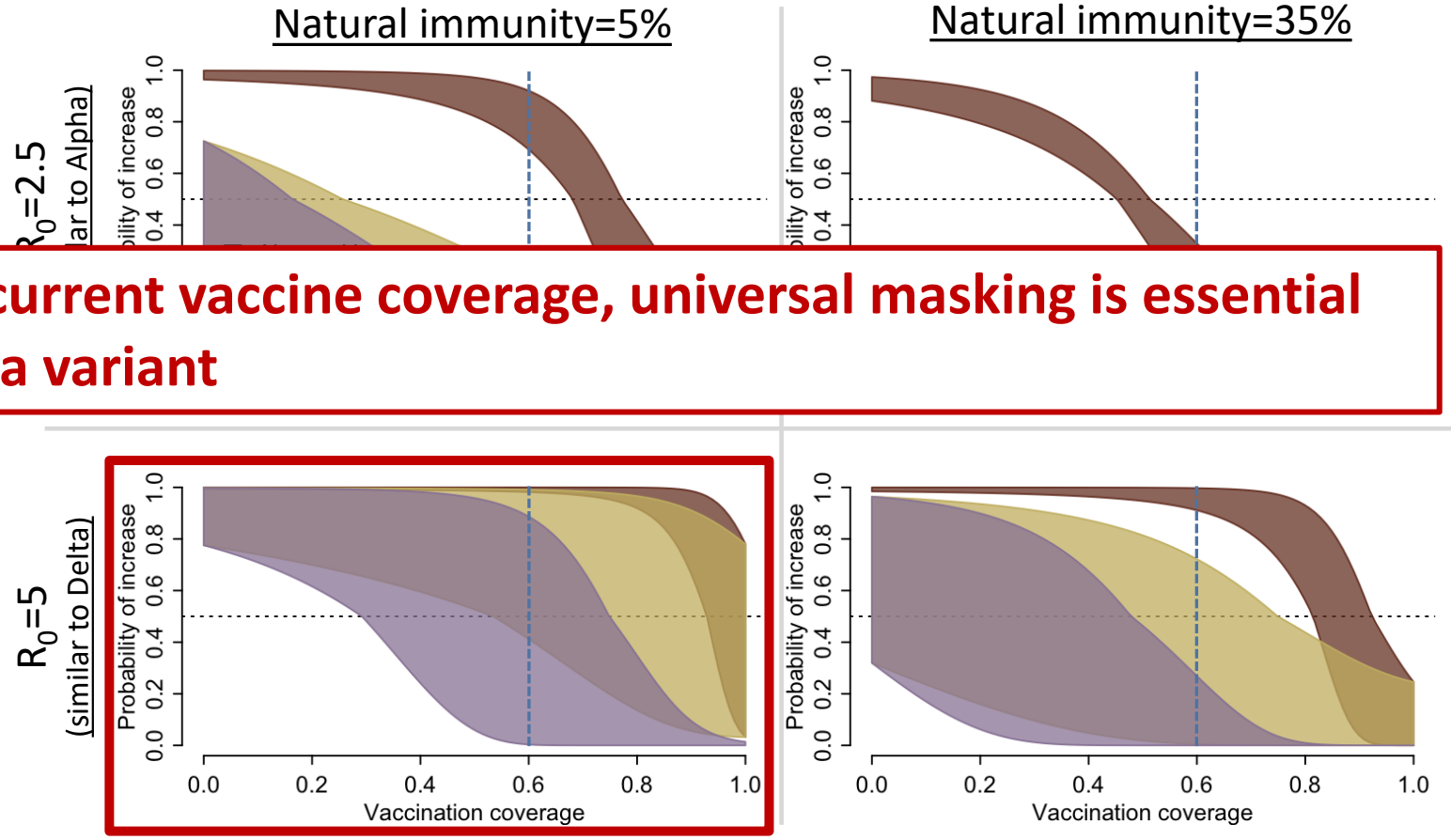

Given higher transmissibility and current vaccine coverage, universal masking is essential to reduce transmission of the Delta variant

- NO ADJUSTMENTS FOR OTHER INTERVENTIONS
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Summary

- Delta is different from previous strains
  - Highly contagious
  - Likely more severe
  - Breakthrough infections may be as transmissible as unvaccinated cases
- Vaccines prevent >90% of severe disease, but may be less effective at preventing infection or transmission
  - Therefore, more breakthrough and more community spread despite vaccination
- NPIs are essential to prevent continued spread with current vaccine coverage

Next steps for CDC

- Communications
  - Acknowledge the war has changed
  - Improve public's understanding of breakthrough infections
  - Improve communications around individual risk among vaccinated
    - Risk of severe disease or death reduced **10-fold or greater** in vaccinated
    - Risk of infection reduced **3-fold** in vaccinated
- Prevention
  - Consider vaccine mandates for HCP to protect vulnerable populations
  - Universal masking for source control and prevention
  - Reconsider other community mitigation strategies

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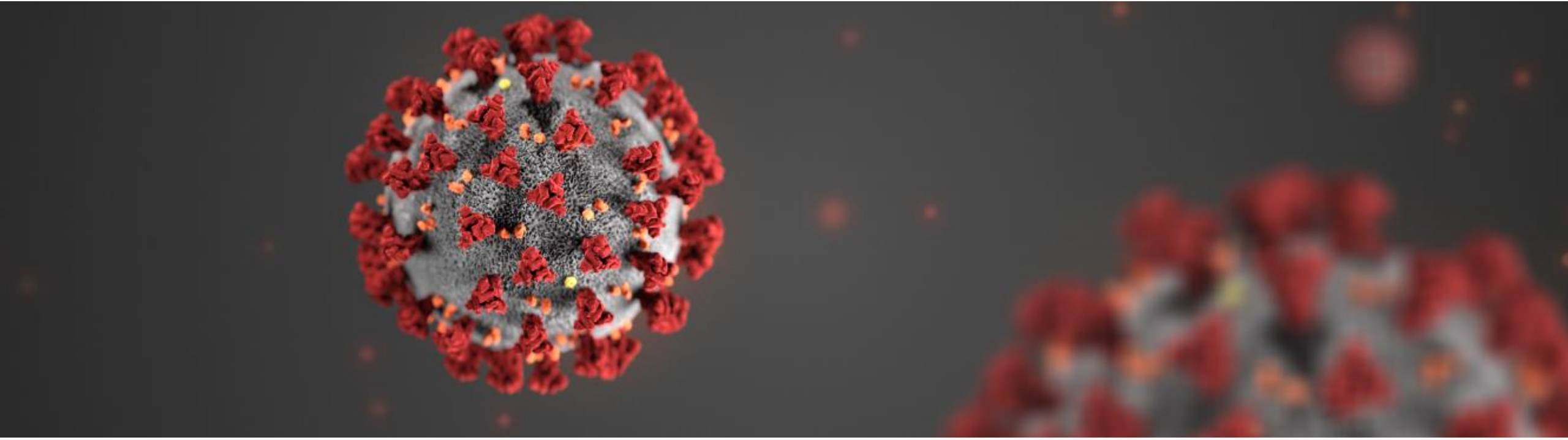

For more information, contact CDC
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TTY: 1-888-232-6348 www.cdc.gov

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