



**NORTHEAST**

BUSINESS GROUP ON HEALTH

# COVID-19 Update

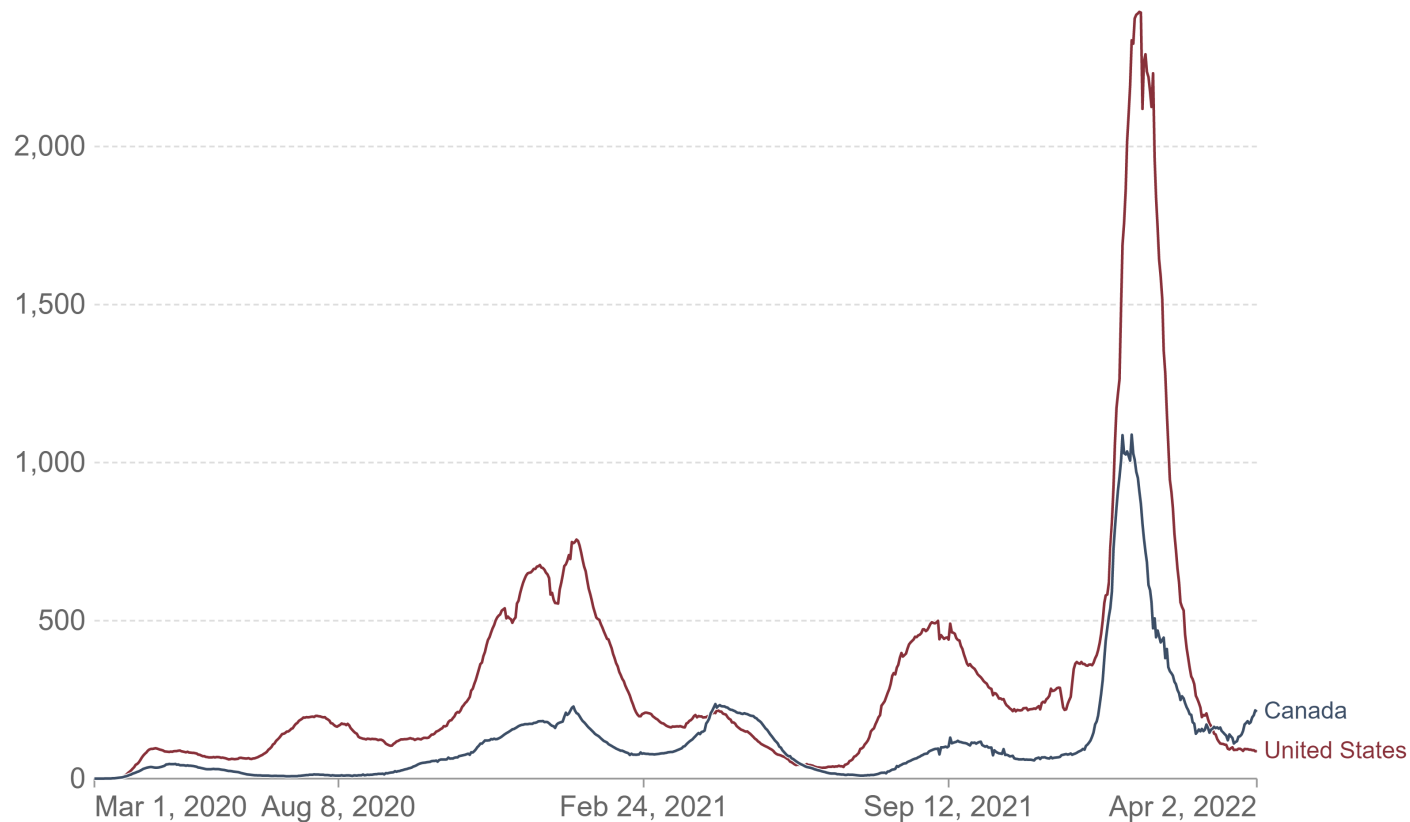
**Dr Mark Cunningham-Hill**

Medical Director NEBGH

Monday April 4<sup>th</sup>, 2022

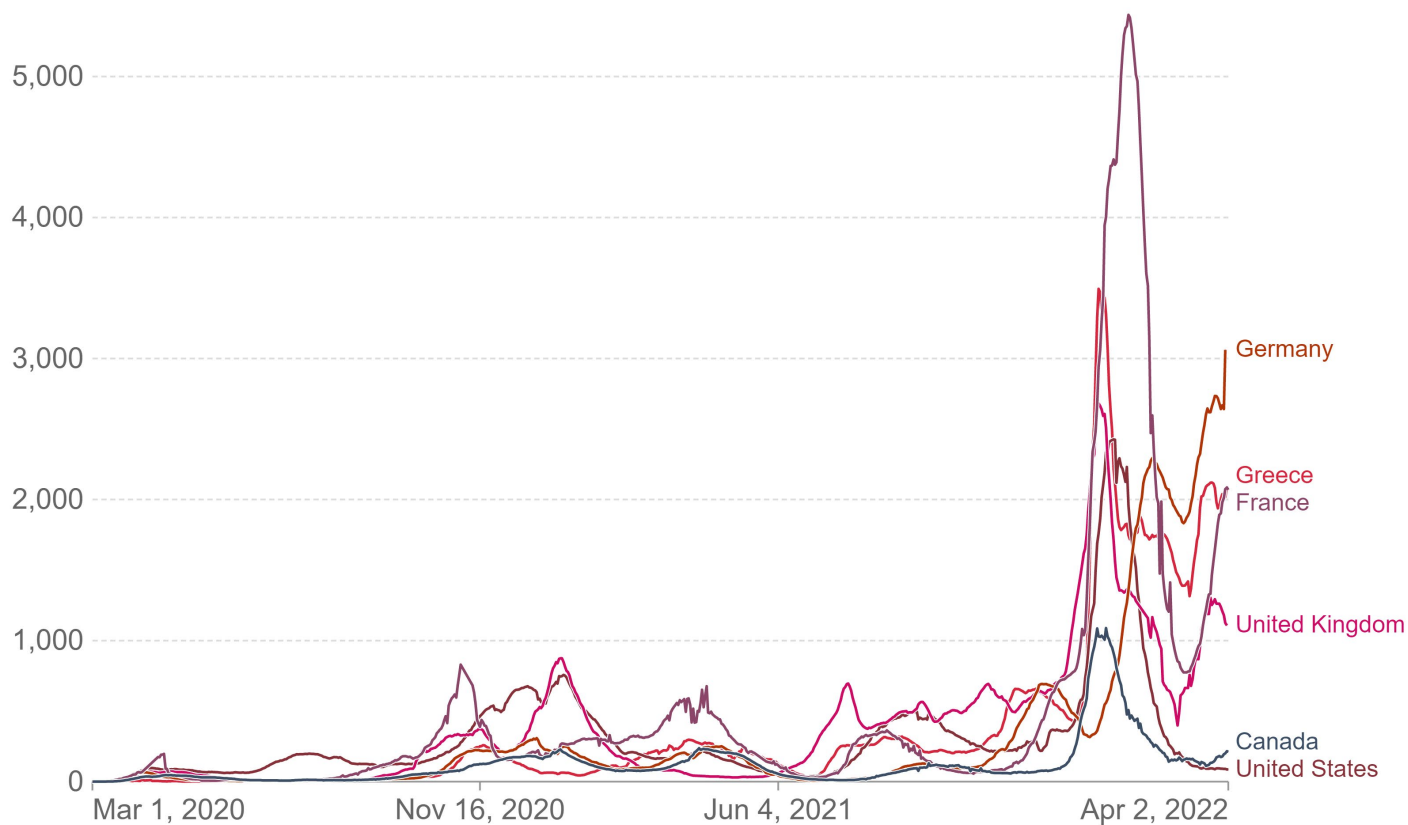
# Daily new confirmed COVID-19 cases per million people

7-day rolling average. Due to limited testing, the number of confirmed cases is lower than the true number of infections.



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# So what about a BA.2 wave in the US

## Signs for Optimism

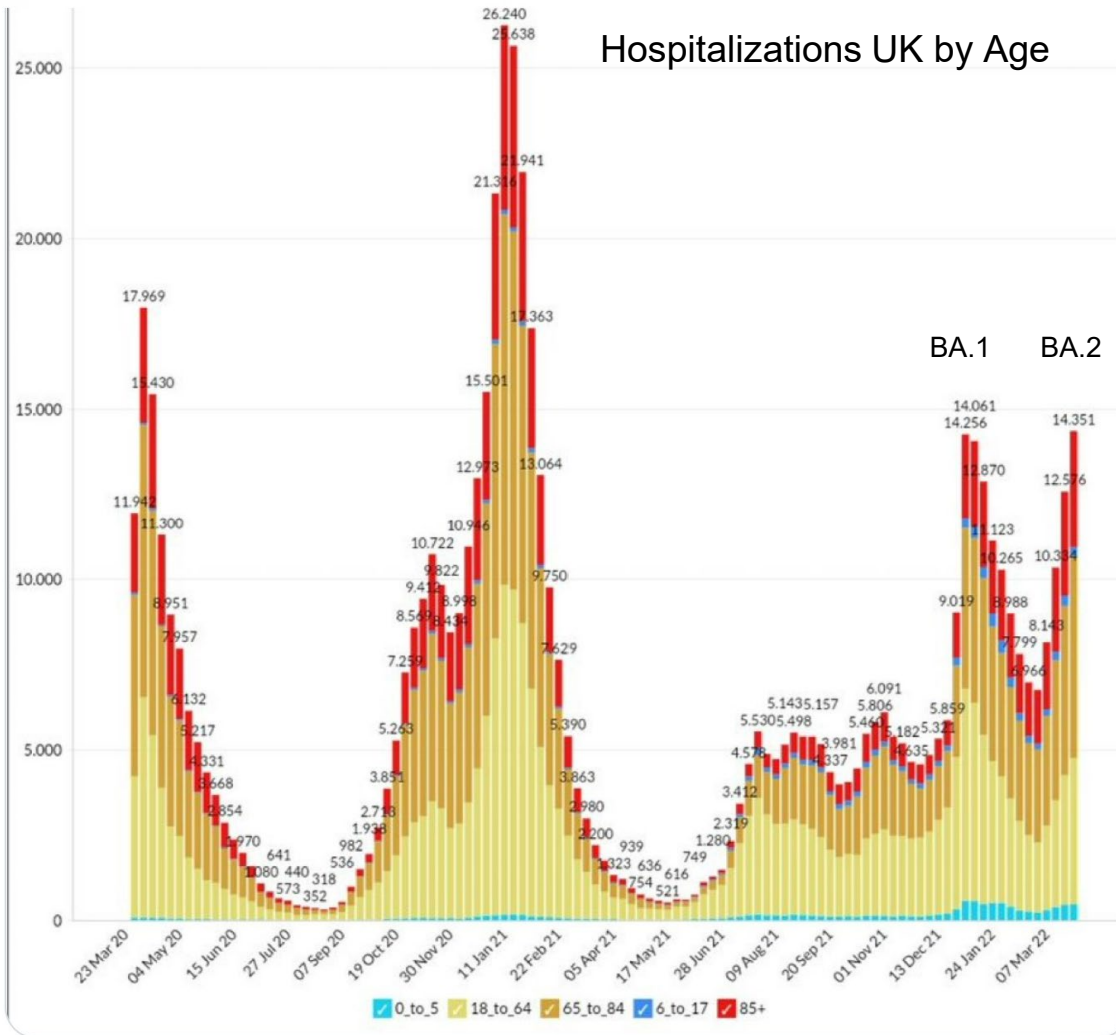
- US starting at a lower-case rate
- Graph flattening but not significant rises
- Wastewater doesn't show significant increases
- BA.2 already 55% of cases

## Signs for Caution

- US has followed Europe for previous waves
- Vaccination and booster rates lower in US than many EU countries
- Mask use and behaviors no better than EU

**Prediction:** US will only see a modest surge but the ratio of hospitalizations to case rates will be similar or worse than BA.1

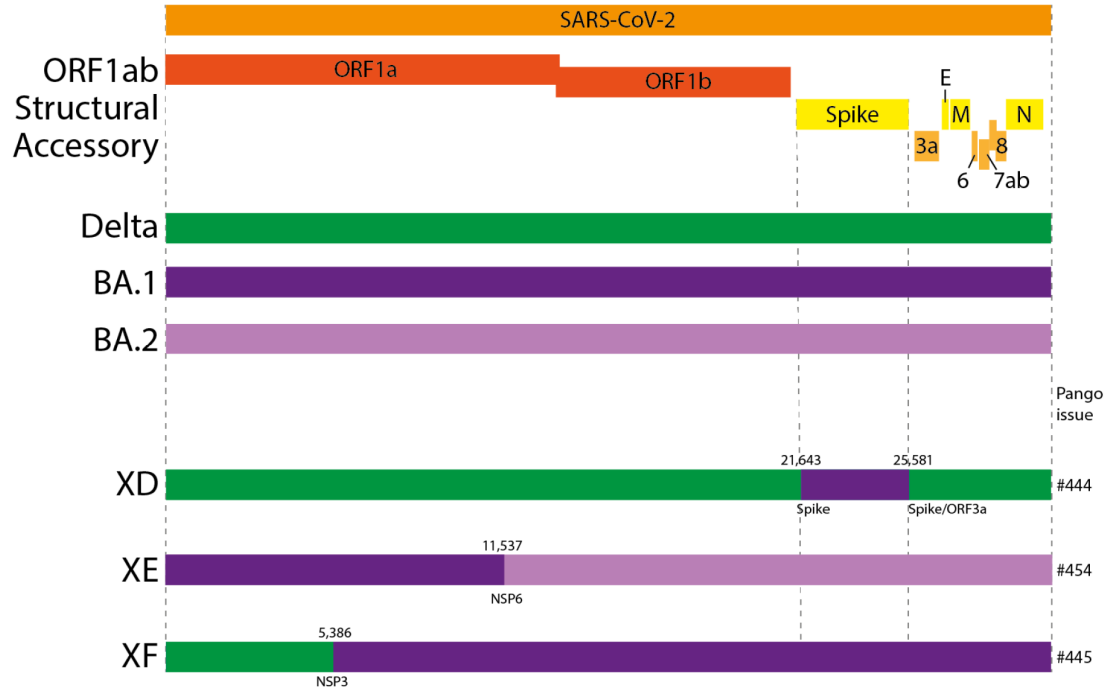
# Hospitalizations UK by Age



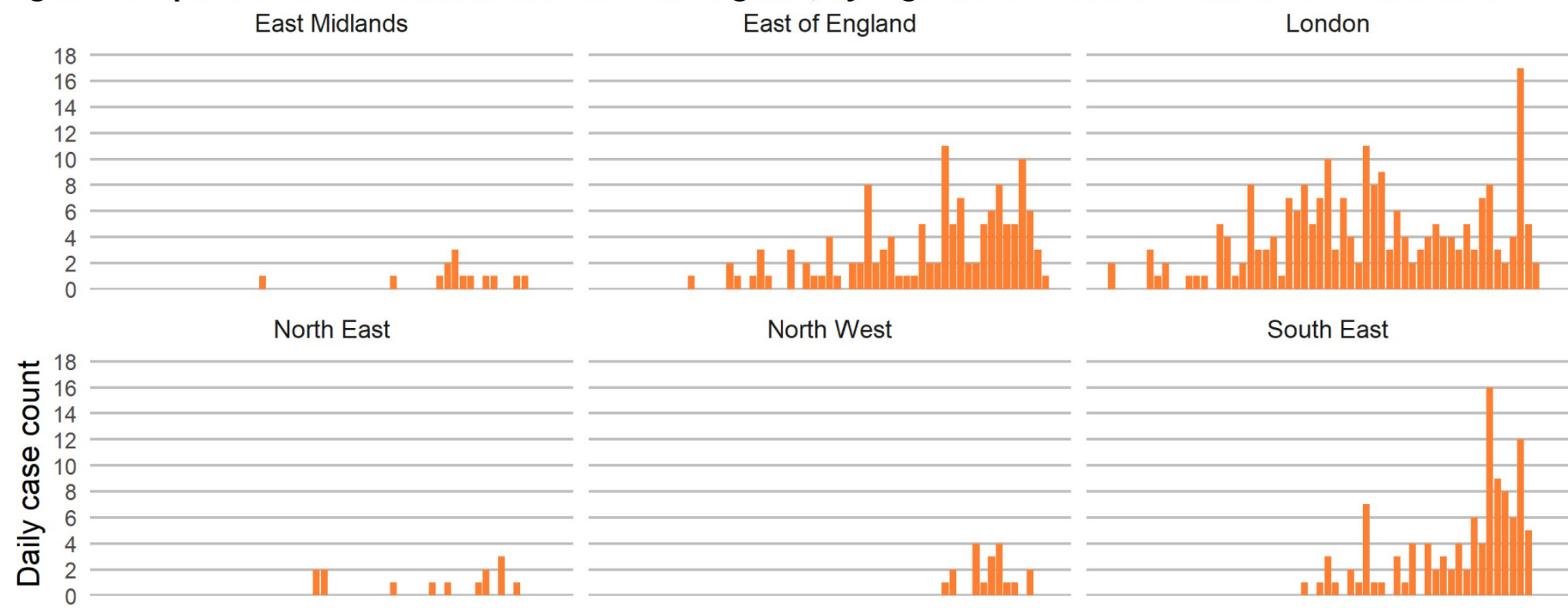
In February, 99% of the population in England had antibodies to covid, either from infection or vaccination. So why the BA.2 hospitalizations?

- Possibly people assume they are protected by prior BA.1 so go unmasked etc.. But if unvaccinated prior BA.1 infection equivalent to 1 dose of vaccine i.e., not enough

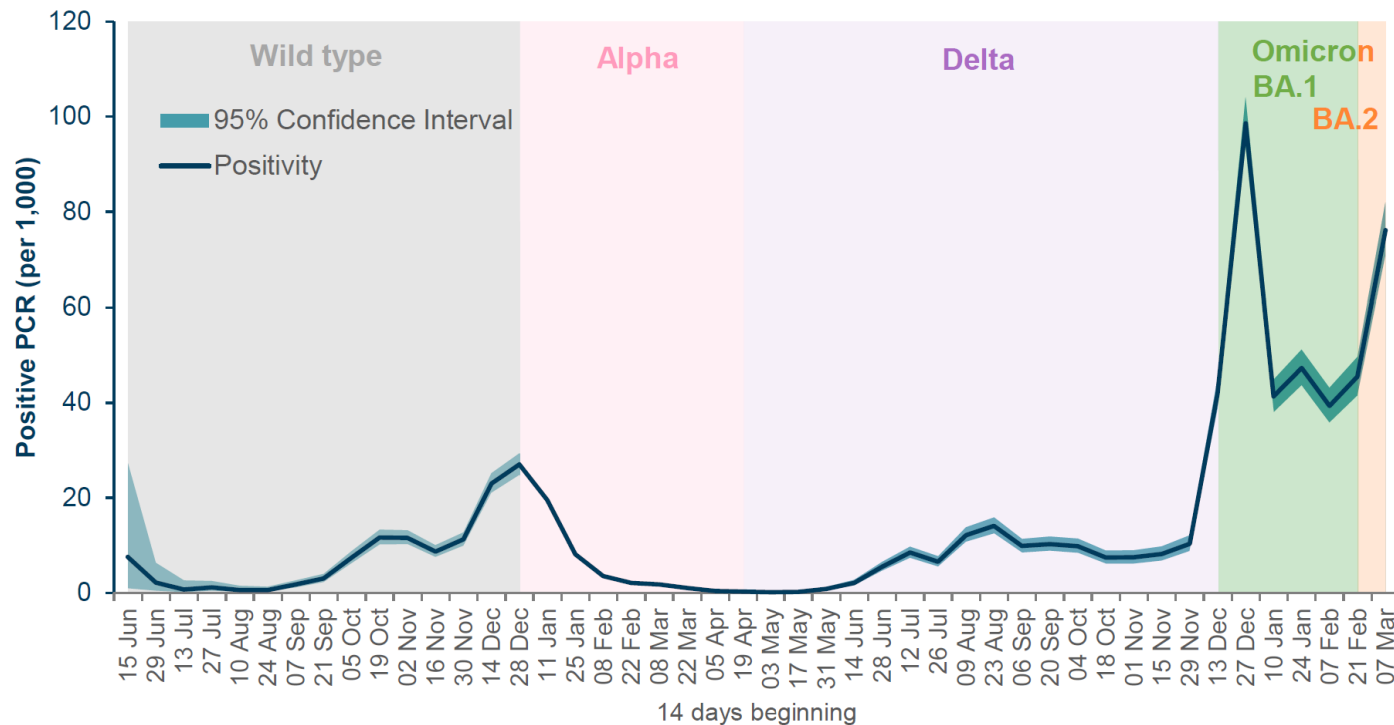
# XD, XE and XF – newly designated recombinant lineages



**Figure 11. Epicurve of recombinant XE cases in England, by region of residence – data as of 22 March 2022**



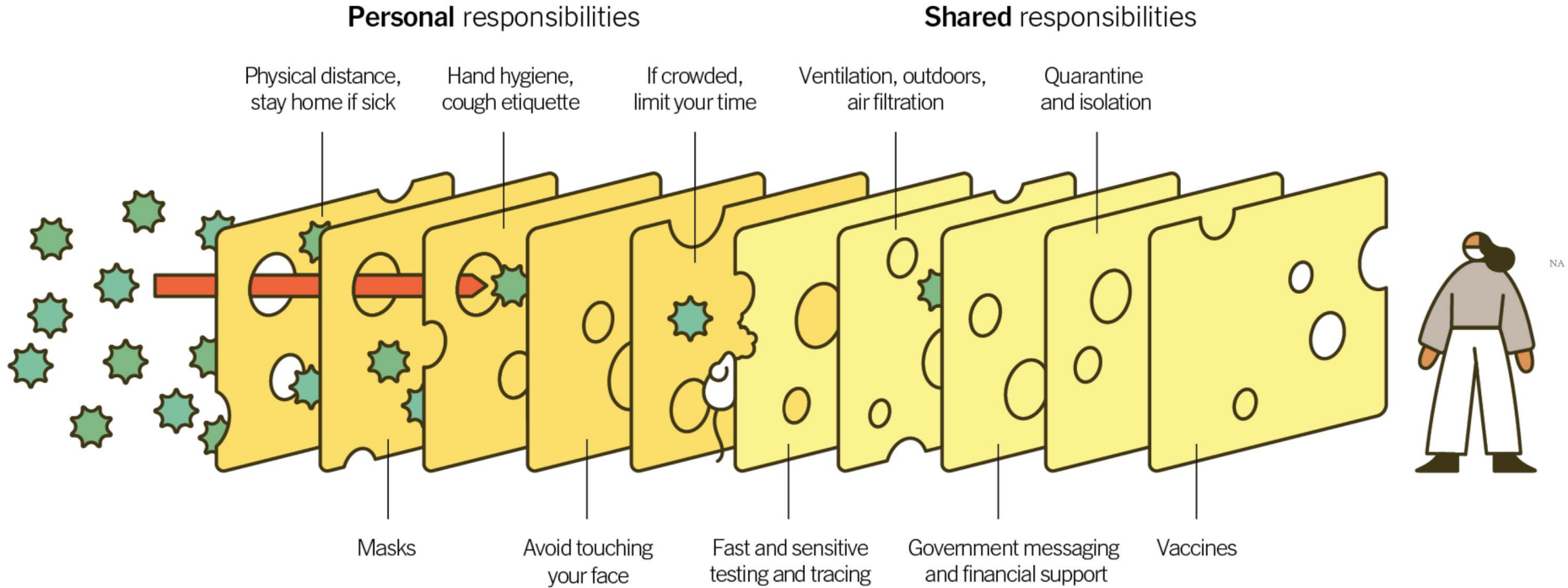
**Figure 21. Fortnightly trends in PCR positivity within the SIREN study from 15 June 2020 to 20 March 2022**



The SARS-CoV-2 Immunity and Reinfection EvaluationN (SIREN) is a cohort over 44,000 National Health Service healthcare workers, recruited from 135 hospital sites UK-wide

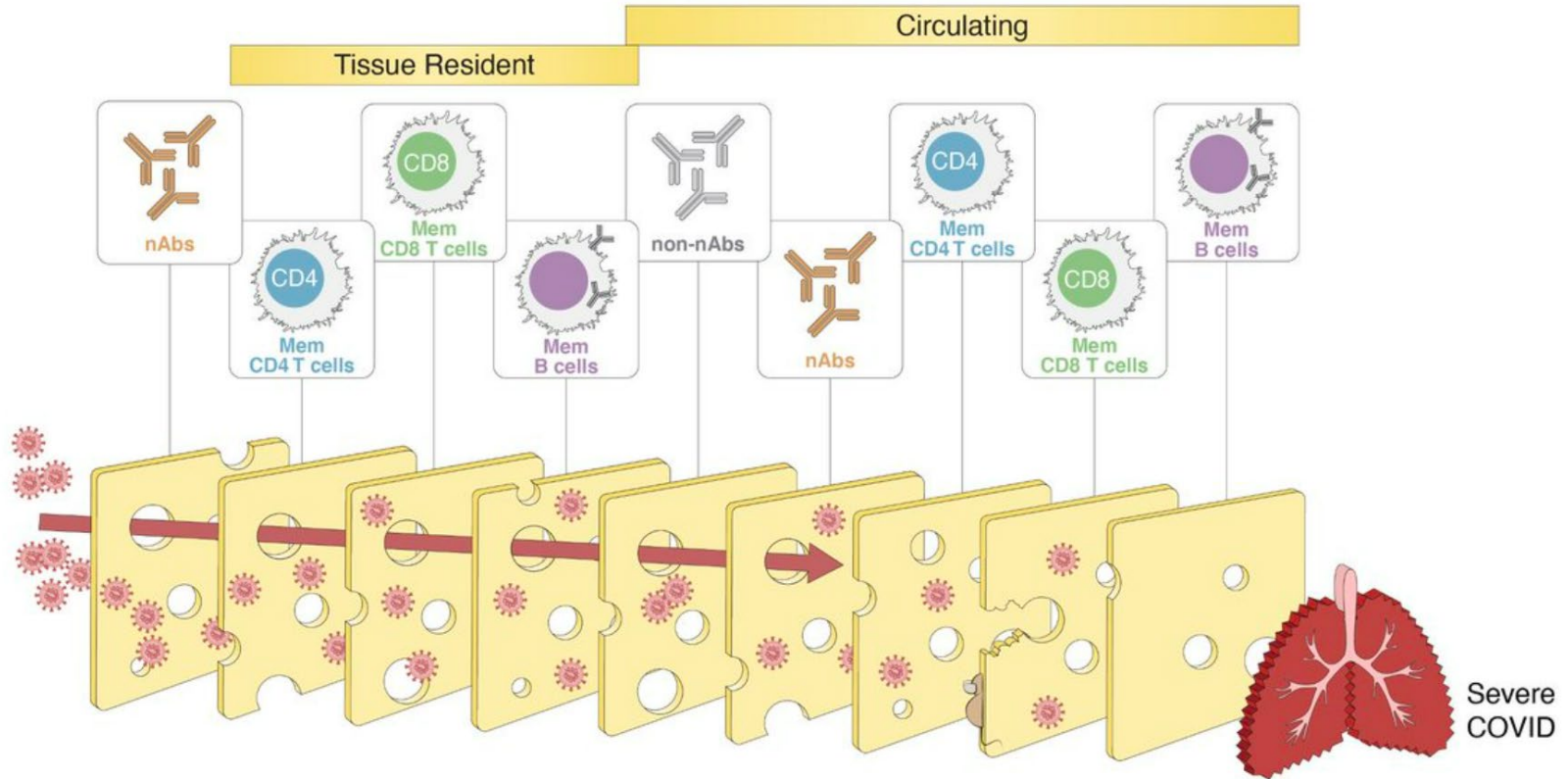


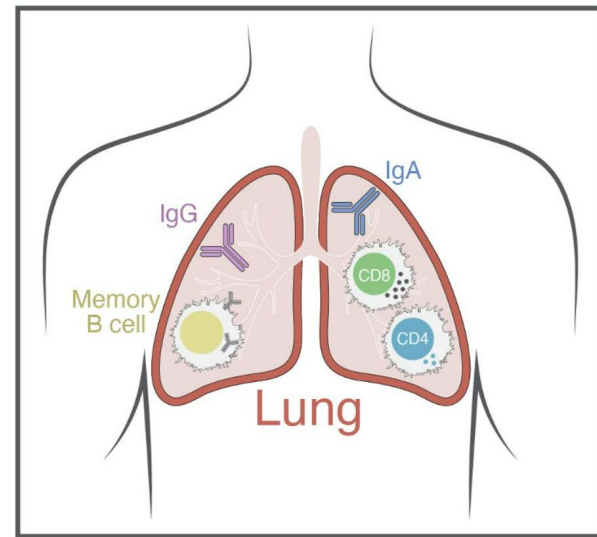
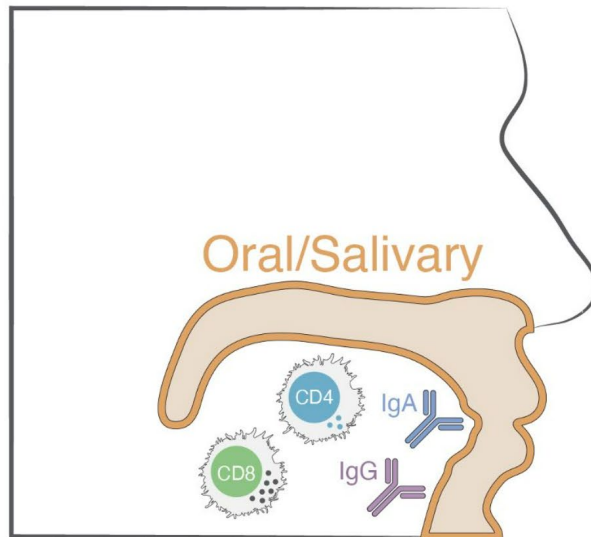
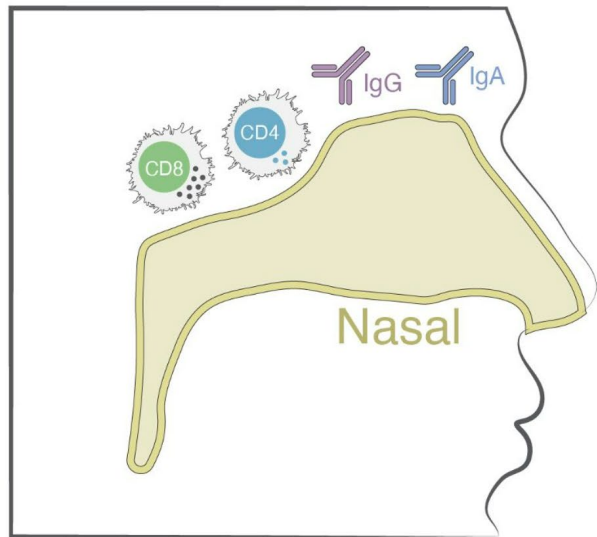
# Multiple layers of protection



# Layered defenses

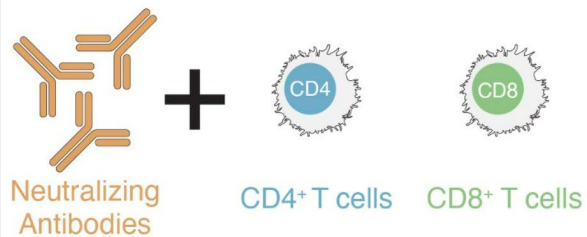
## Or the swiss cheese model of immunity







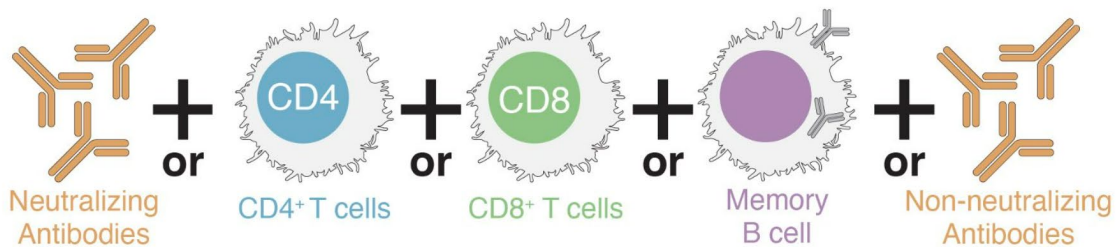
### Protection against detectable infection



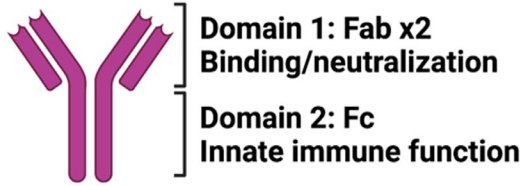
Major

Minor

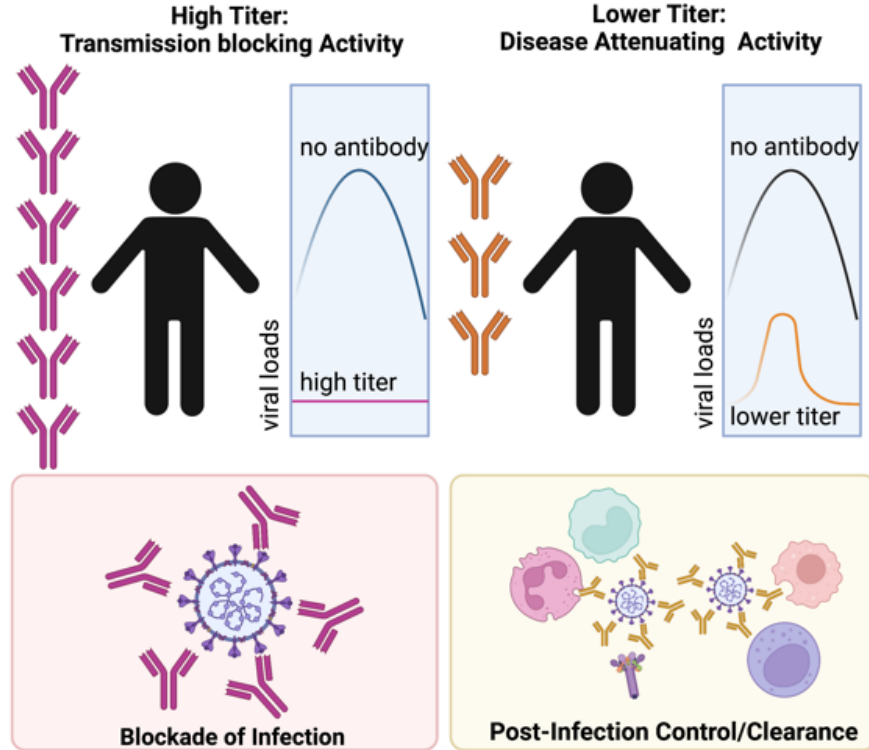
### Protection against hospitalizations and deaths



# Fab vs Fc

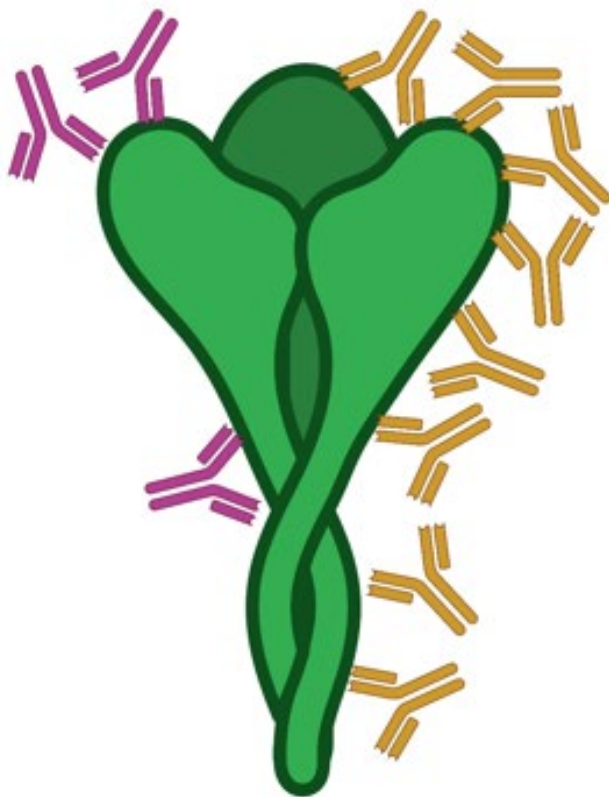


Antibody molecules can be divided into 2 functional domains: Domain #1- composed of 2 antigen binding domains that contribute to antigen specificity and drive neutralization and Domain #2- consisting of a single constant domain that provides instructions to the immune system for elimination of antibody-opsonized material.

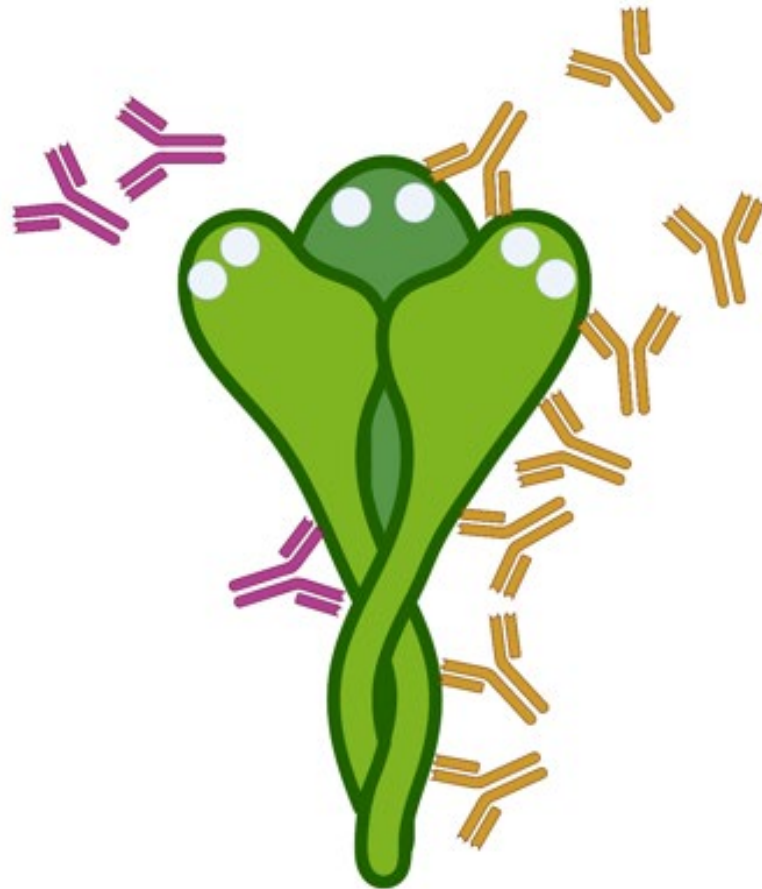


Neutralizing

Non-neutralizing



Wild type



Variants



# Questions

## Upcoming NEBGH virtual events:

- **April 11** – Dr. Mark's Weekly COVID-19 Update
- **June 16** – Benefits Leadership for a Changing World: Accept the Challenge!