



Grand Rounds



Matthew Hepburn, M.D.

2021 Commencement Speaker
and Honorary Degree Recipient

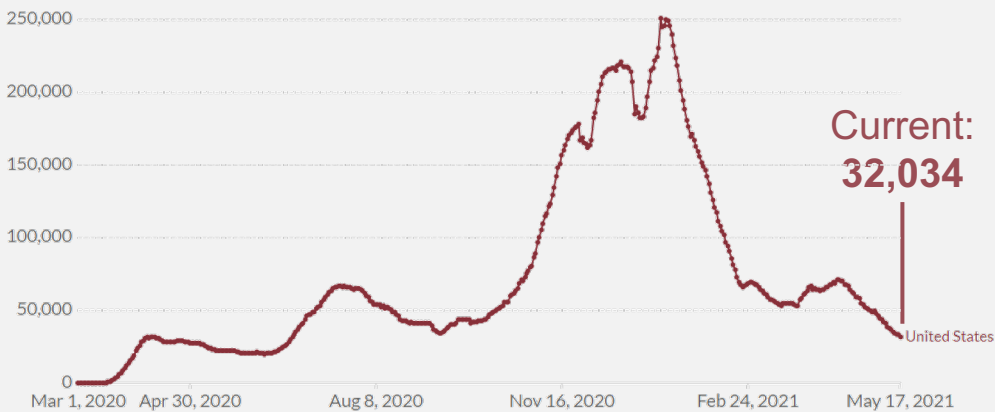
COVID-19 Vaccine Update

- As the US population continues to be vaccinated, vaccine development continues:
 - Supporting a global mission
 - Immunocompromised patients
 - Assessing duration of protection and planning booster
 - Pivoting to potential variant vaccines

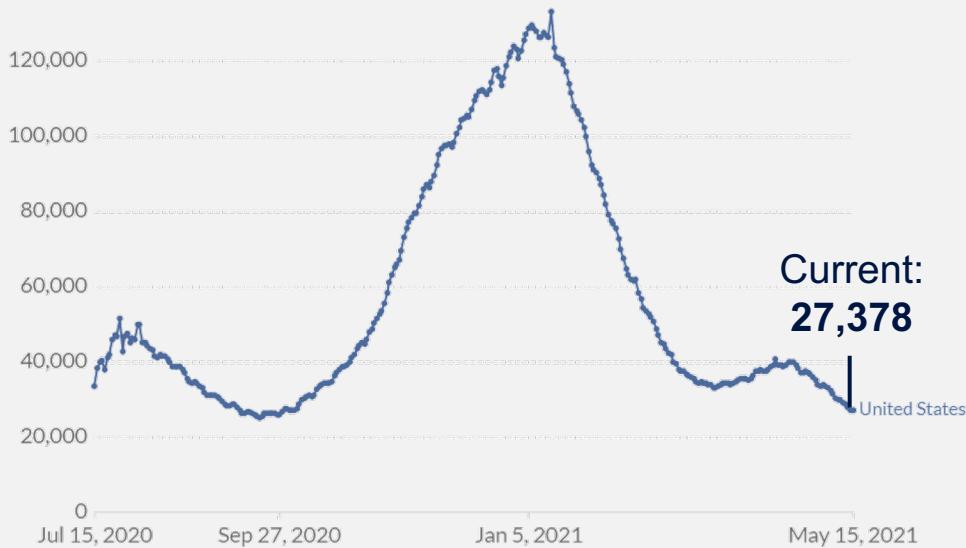
United States

Daily cases in the United States

7-day average

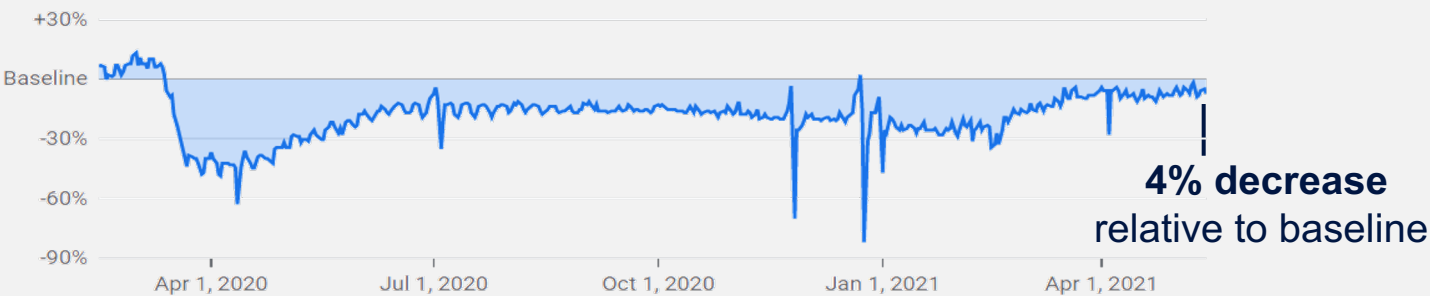


COVID-19 patients hospitalized in the United States



Mobility relative to baseline

Retail & recreation index

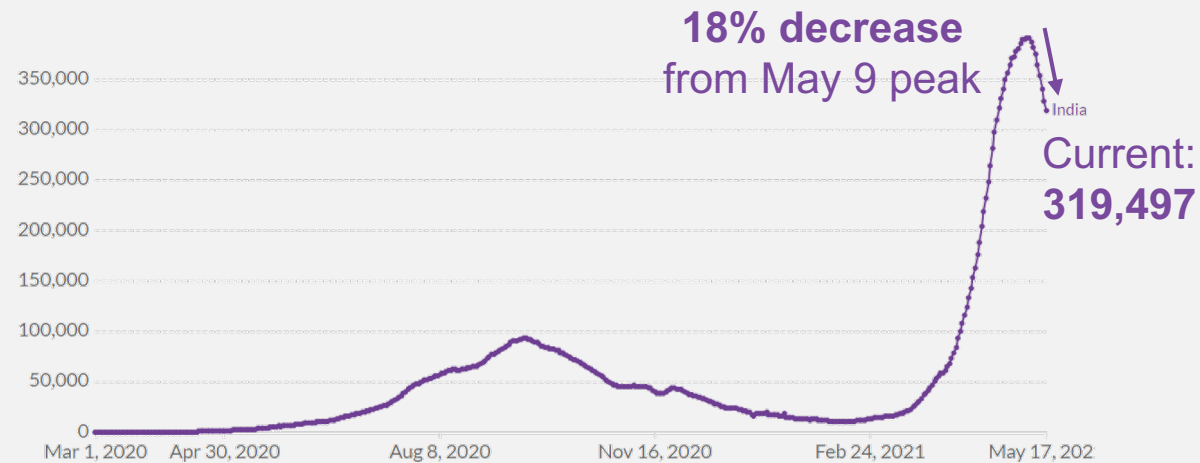


- 37% fully vaccinated
- 48% at least one dose

India

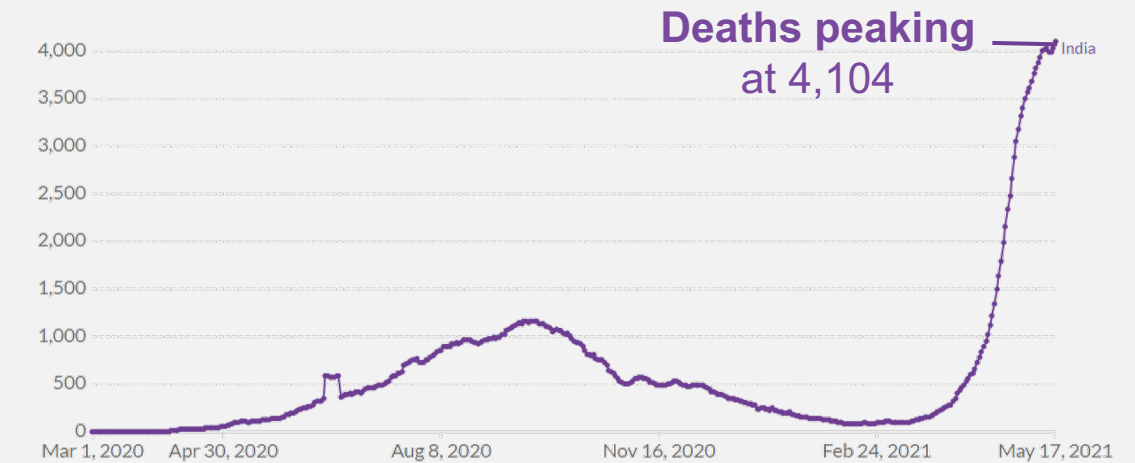
Daily cases in India

Rolling 7-day average



Daily deaths in India

Rolling 7-day average



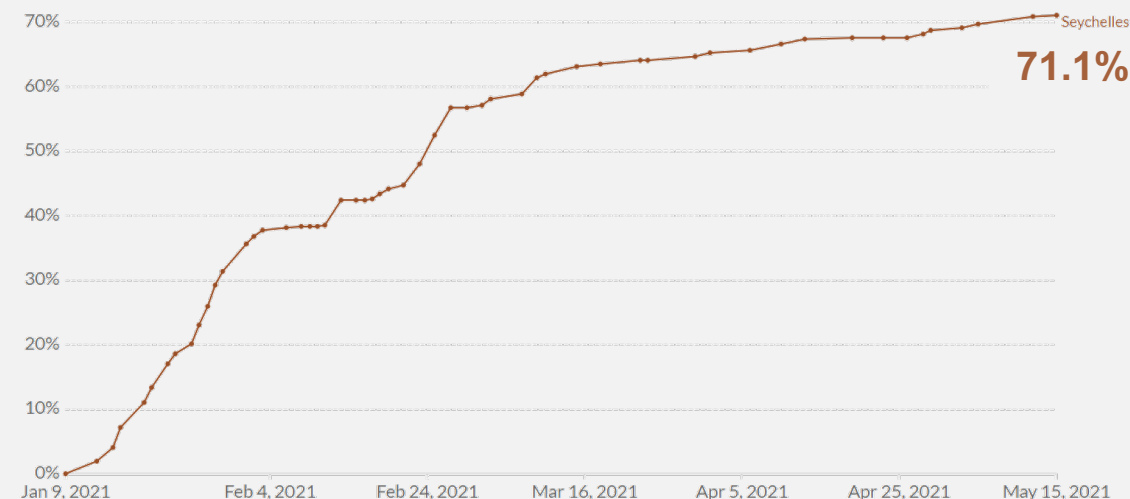
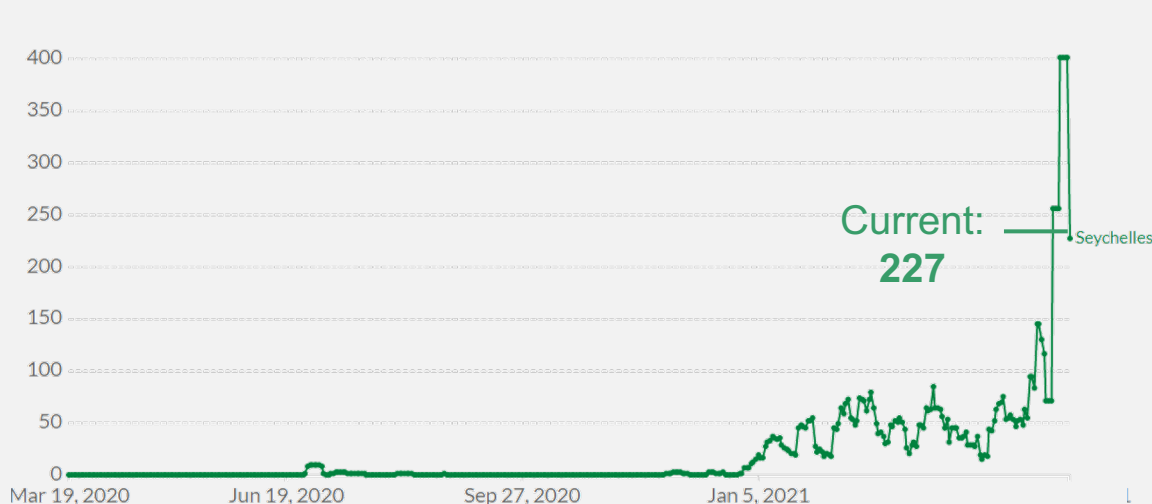
Lack of testing potentially contributing to drop in cases

- Experts claim that due to limited testing, the total number of cases is a "huge underestimate" – Reuters, 5/17
- Reported that 45% of testing capacity is lying unused – New Delhi Television, 5/18

Seychelles: Surge in cases despite high percentage of population vaccinated with Sinopharm & AZ

Daily cases in Seychelles

Rolling 7-day average



"Roughly 60 percent of the doses administered in Seychelles are vaccines made by the Chinese company Sinopharm... the remaining doses are of the vaccine developed by AstraZeneca" – Washington Post, 5/6

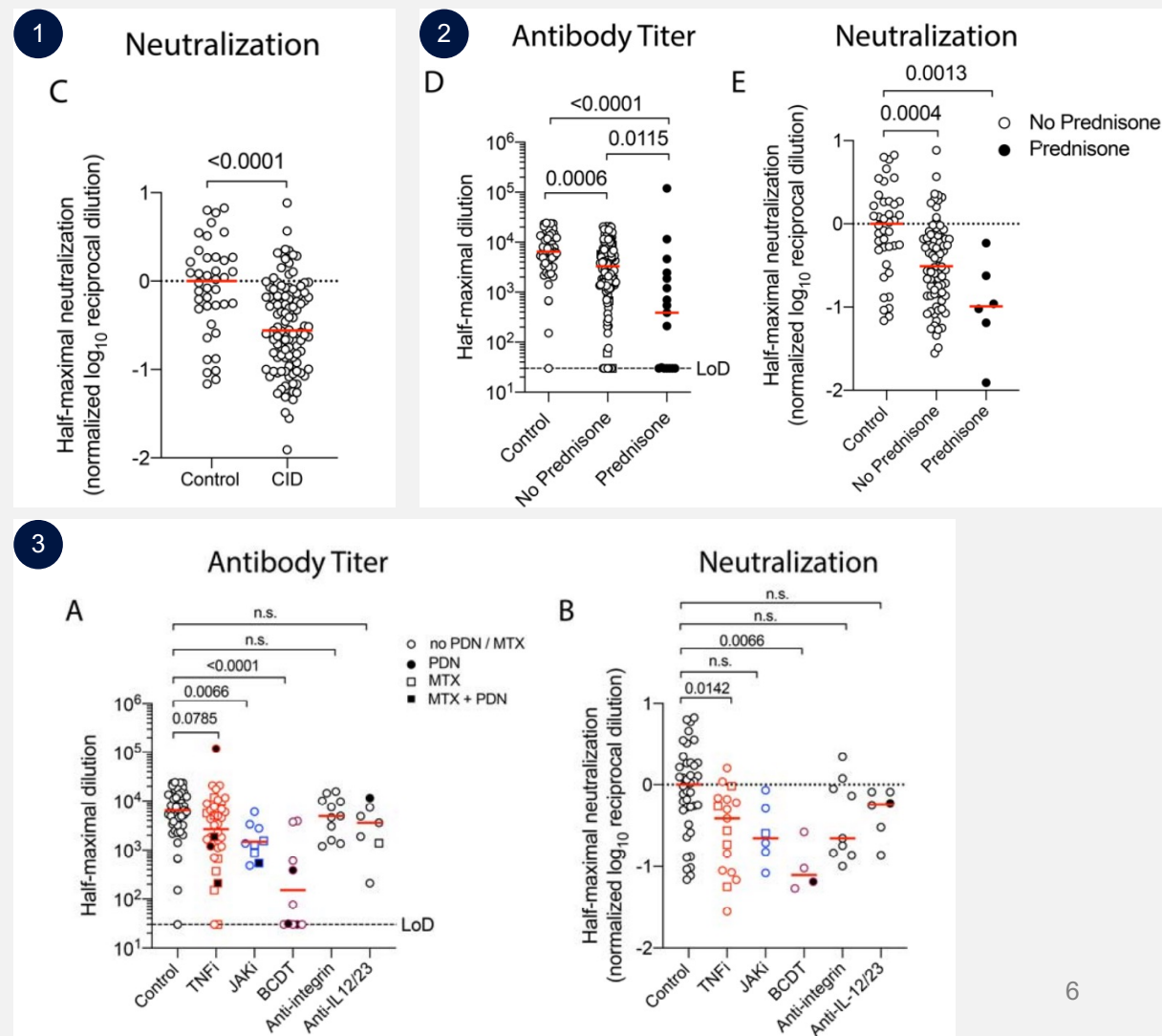
Global Response Conclusions

- Need a global vaccination campaign to manufacture, distribute and administer 10-14B doses
- Creates the opportunity to transform global vaccination

Patients treated with immunosuppressive therapies exhibit impaired mRNA vaccine-induced immunity

Individuals with chronic inflammatory diseases (CID) are frequently **treated with immunosuppressive medications that can increase their risk of severe COVID-19**

- 1 Compared to immunocompetent controls, **a 3-fold reduction in neutralization were observed in CID patients**
- 2 **B cell depletion and glucocorticoids had the strongest effect** with a 36- and 10-fold reduction in neutralization
- 3 Other targeted therapies, such as **TNF inhibitors and integrin inhibitors, had only modest impacts** on antibody formation and neutralization

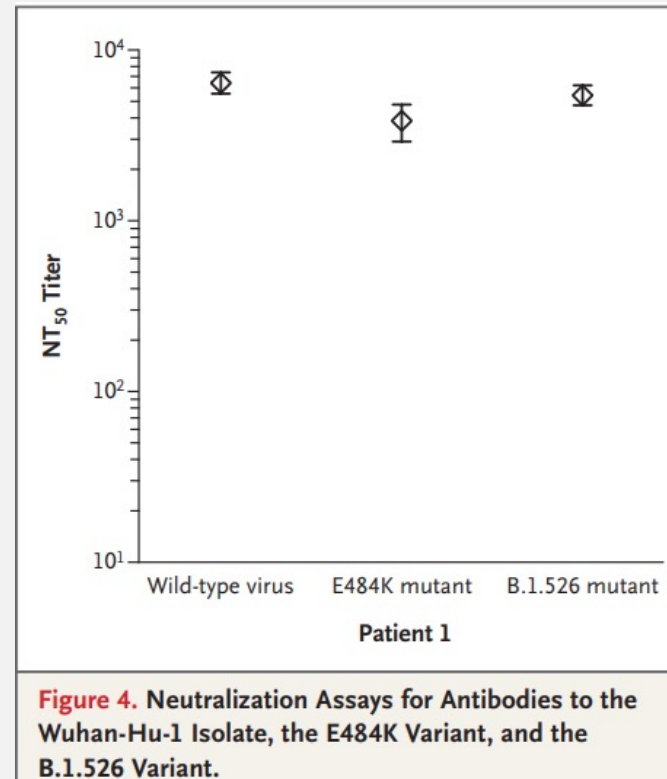
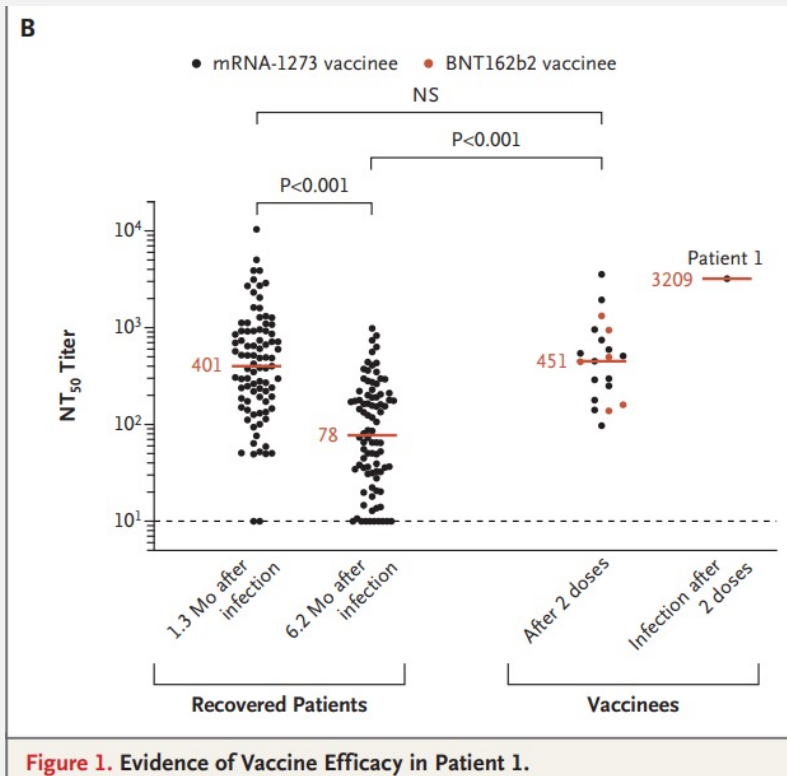


COVID-19 Outbreak Associated with a SARS-CoV-2 R.1 Lineage Variant in a Skilled Nursing Facility After Vaccination Program — Kentucky, March 2021

Alyson M. Cavanaugh, DPT, PhD^{1,2}; Sarah Fortier, MPH²; Patricia Lewis²; Vaneet Arora, MD²; Matt Johnson²; Karim George²; Joshua Tobias, PhD²; Stephanie Lunn, MPH²; Taylor Miller, MPH²; Douglas Thoroughman, PhD^{2,3}; Kevin B. Spicer, MD, PhD^{2,4}

- Although **90% of residents and 53% of HCPs were vaccinated**, an outbreak of COVID-19 occurred after introduction from an unvaccinated, symptomatic HCP – **high infection rate among vaccinated residents**
- **Vaccine was 86.5% protective against symptomatic illness among residents and 87.1% protective among HCP**
 - 26 facility residents were infected, including 18 who had been vaccinated, and 20 HCPs were infected, including 4 who had been vaccinated. Two unvaccinated residents also died.
- **Identified variant was R.1**, which has multiple spike protein mutations:
 - D614G, which demonstrates evidence of increased transmissibility
 - E484K which is also seen in B.1.351 and P.1.
 - W152L, which might reduce effectiveness of neutralizing antibodies

Vaccine Breakthrough Infections with SARS-CoV-2 Variants



- Cohort of 417 individuals who received Moderna or Pfizer identified 2 women with vaccine breakthrough infection (symptomatic, mild)
- Sequencing revealed E484K in Patient 1 and S477N on Patient 2
- Data from Patient 1 indicate that infection with variant virus can be sustained with a high viral load despite high levels of neutralizing antibodies to variants



Commencement

Friday, May 21, 2021

3 p.m. at John F. Savage Arena (ticket required)

Also live streamed at utoledo.edu/med

    **#UToledoMed21**



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