Variolation
POSSIBILITY OF TRANSMISSION

COVID-19 carrier (without mask) → Healthy person (with mask) 70%

COVID-19 carrier (with mask) → Healthy person (without mask) 5%

COVID-19 carrier (with mask) → Healthy person (with mask) 1.5%

Source: Johns Hopkins University
Masks and Disease Severity

- **Principle that** severity of disease is proportionate to the viral inoculum received
  - Studied in animal models including with SARS-CoV-2
  - Lower inoculum = less severe potentially asymptomatic disease
  - Strong cell-mediated immunity results from even mild or asymptomatic SARS-CoV-2 infection
- **So can facial masks reduce viral inoculum?**
  - Asymptomatic rates in:
    - US and EU asymptomatic rate estimated at 40-50%
    - Cultures with history of widespread masking – asymptomatic rate is 80%
    - Supported by animal models
Defeating SARS-CoV-2

Driving down both transmission rates and severity of disease

**Transmission Rates**
- Physical distancing
- Masks
- Test and isolate
- Vaccines

**Disease Severity**
- Physical distancing
- Masks
- Vaccines
Vaccines

- Of the leading contenders:
  - 3 in Phase 3, 2 in Phase 2, 3 in phase 1, and 8 in preclinical
- AZ/Oxford
  - Stage 3 clinical trial was stopped because of a serious neurological condition
- 9 CEOs signed a pledge stating that any vaccine developed will meet “High ethical standards and sound scientific principles.”
Young adults age 18 to 34 years hospitalized with COVID-19

- 21% required ICU admission
- 10% required mechanical ventilation
- **2.7% died**
- 57% were Black or Hispanic
- Morbid obesity, hypertension, and diabetes were associated with greater risks of adverse events

https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2770542
Eating in Restaurants

- Symptomatic COVID+ outpatients were approximately twice as likely to have reported dining at a restaurant than were matched controls with negative SARS-CoV-2 test results.
  - Cases were 2.8 times more likely to have dined at a restaurant.
  - 3.9 times more likely to have visited a bar or coffee shop.

[Link to CDC report](https://www.cdc.gov/mmwr/volumes/69/wr/mm6936a5.htm?s_cid=mm6936a5_x)
Monoclonal Antibodies (MAb)

- 70 antibody therapies are being developed to treat and prevent COVID-19
- The UK trial will test a mixture of 2 Mab’s made by the US biotech company Regeneron
- South Korea’s Celltrion passed safety test
- Complex to manufacture and therefore higher cost
Weekly Dive into the Data
307,930 new cases yesterday
Questions