

# COVID-19 Update: What Healthcare Providers Caring for Children Need to Know: A Virtual Town Hall

Benjamin Lee, MD

William V. Raszka, MD

Department of Pediatrics

Larner College of Medicine University of Vermont

The Vermont Children's Hospital



*[Please note: the COVID-19 situation continues to evolve very rapidly – so the information we're providing may also change quickly]*

# Objectives

- Describe the biology of SARS-CoV2
- Describe the national and local epidemiology of COVID
- Compare and contrast signs and symptoms of COVID-19 in adults and children
- Discuss COVID-19 testing
- Review two hot button issues:
  - Management of HCW with ill contacts
  - Transmission of COVID and strategies to prevent transmission including PPE
- Answer questions

*[Please note: the COVID-19 situation continues to evolve very rapidly – so the information we’re providing may also change quickly]*

# Disclosures

- Neither of us have anything to disclose

*[Please note: the COVID-19 situation continues to evolve very rapidly – so the information we're providing may also change quickly]*

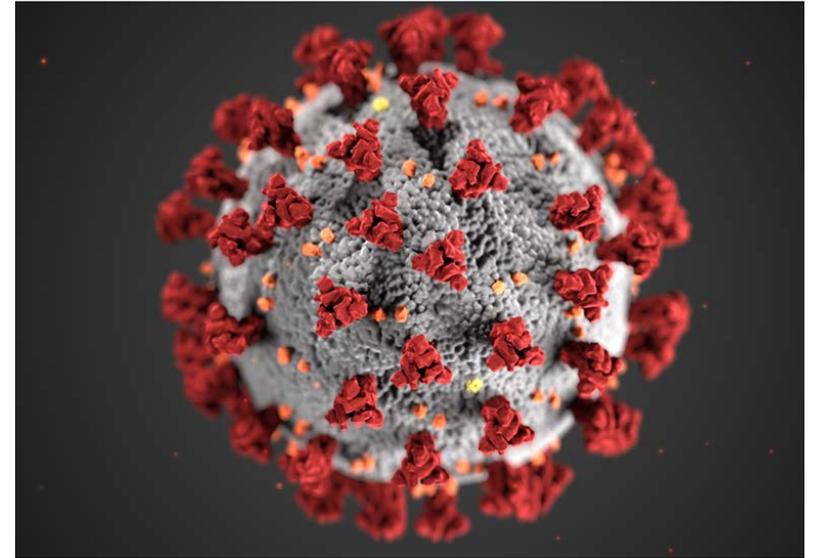
# Ground rules

- All will be muted
- Ask questions in chat box
- Whoever is not presenting will try to answer questions in chat box
- Q and A at end- use raise hand icon
  - Can also use chat box
- Will answer all questions not addressed during the session afterwards and distribute

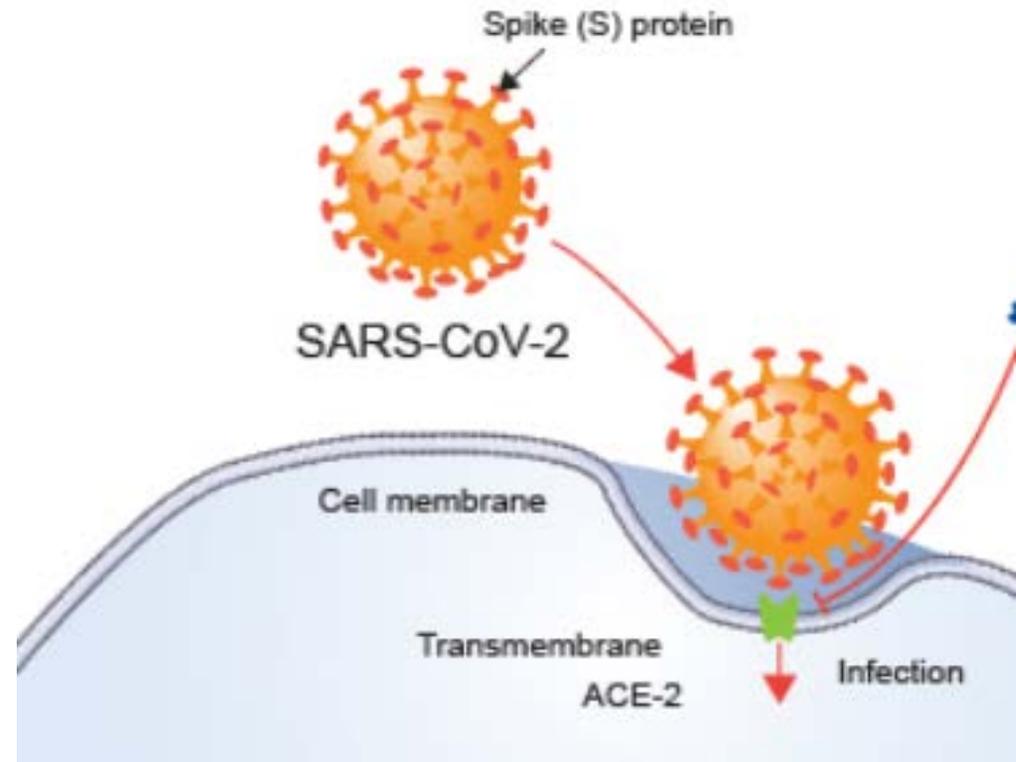
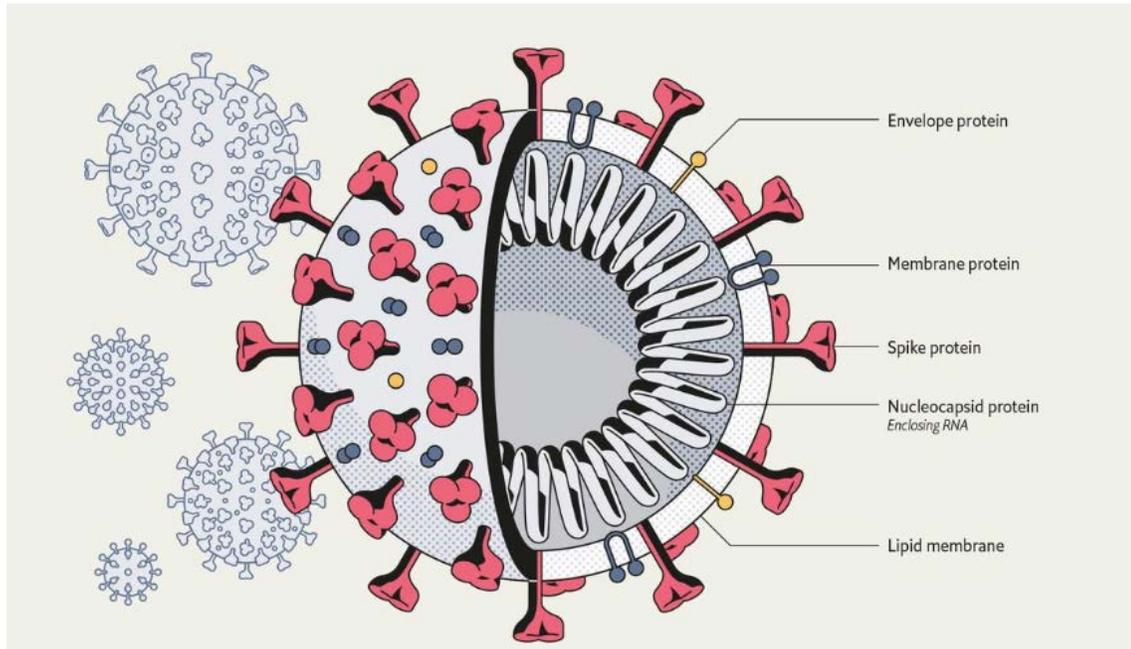
*[Please note: the COVID-19 situation continues to evolve very rapidly – so the information we’re providing may also change quickly]*

# Coronaviruses

- Common viruses
  - Infect humans
    - Common cold
    - Mild to moderate lung disease
  - Many animal reservoirs
  - Spillovers can occur
    - Sometimes with severe consequences
      - SARS: Severe acute respiratory syndrome coronavirus (SARS-CoV) 2003
      - MERS: Middle East respiratory syndrome coronavirus (MERS-CoV) 2012
      - COVID-19: Coronavirus disease of 2019 (SARS-CoV-2) 2019



# SARS-CoV-2: pathophysiology



Angiotensin-converting enzyme 2 (ACE2) membrane protein expressed in lungs, heart, kidneys, and intestine

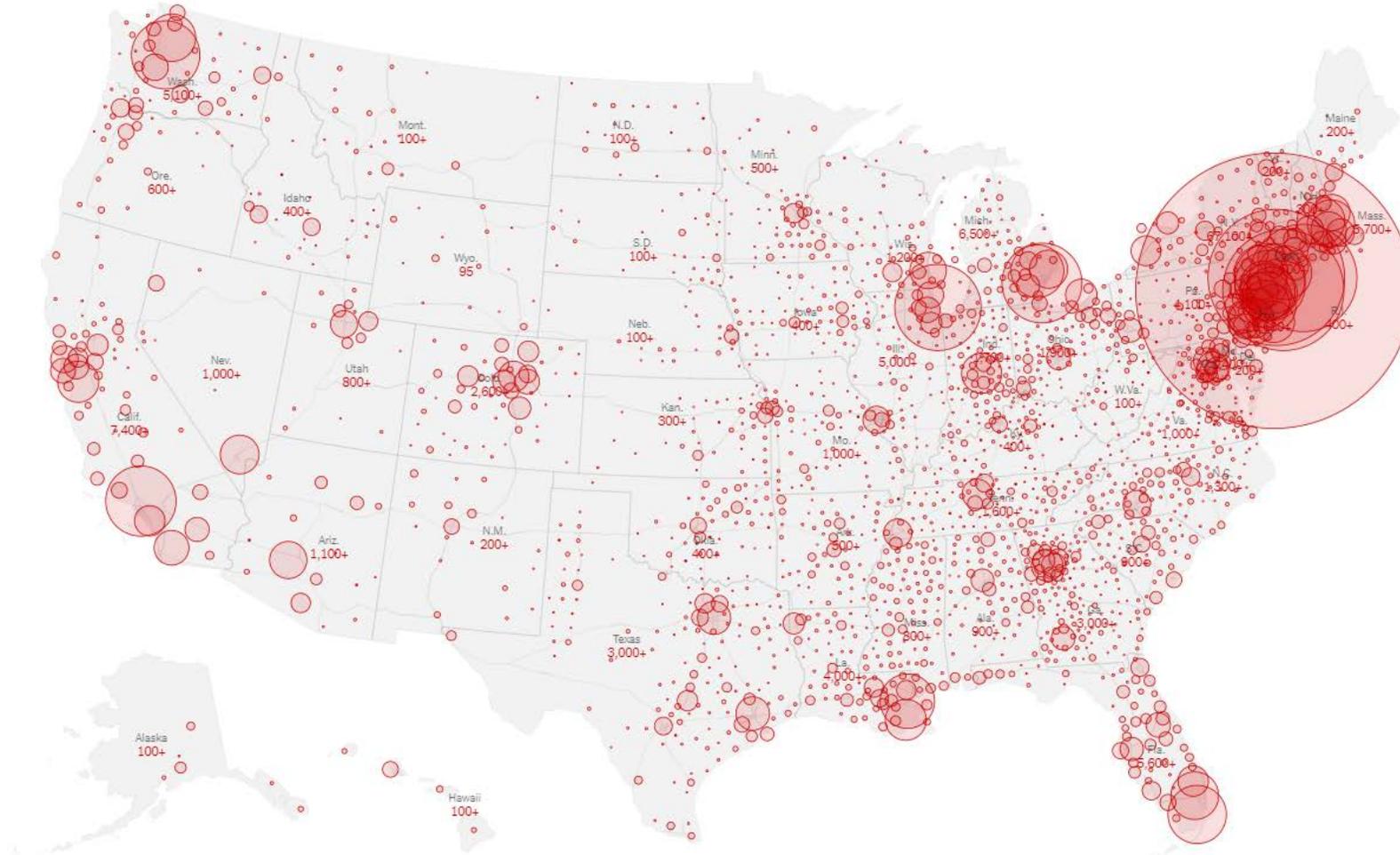
# COVID-19 epidemiology: timeline

- Dec 31, 2019 Chinese government acknowledged cases
- Jan 20, 2020 1<sup>st</sup> US case
- Jan 23, 2020 Wuhan cut off
- Feb 28, 2020 Community transmission in Seattle
- March 26, 2020 US has more cases than any other country



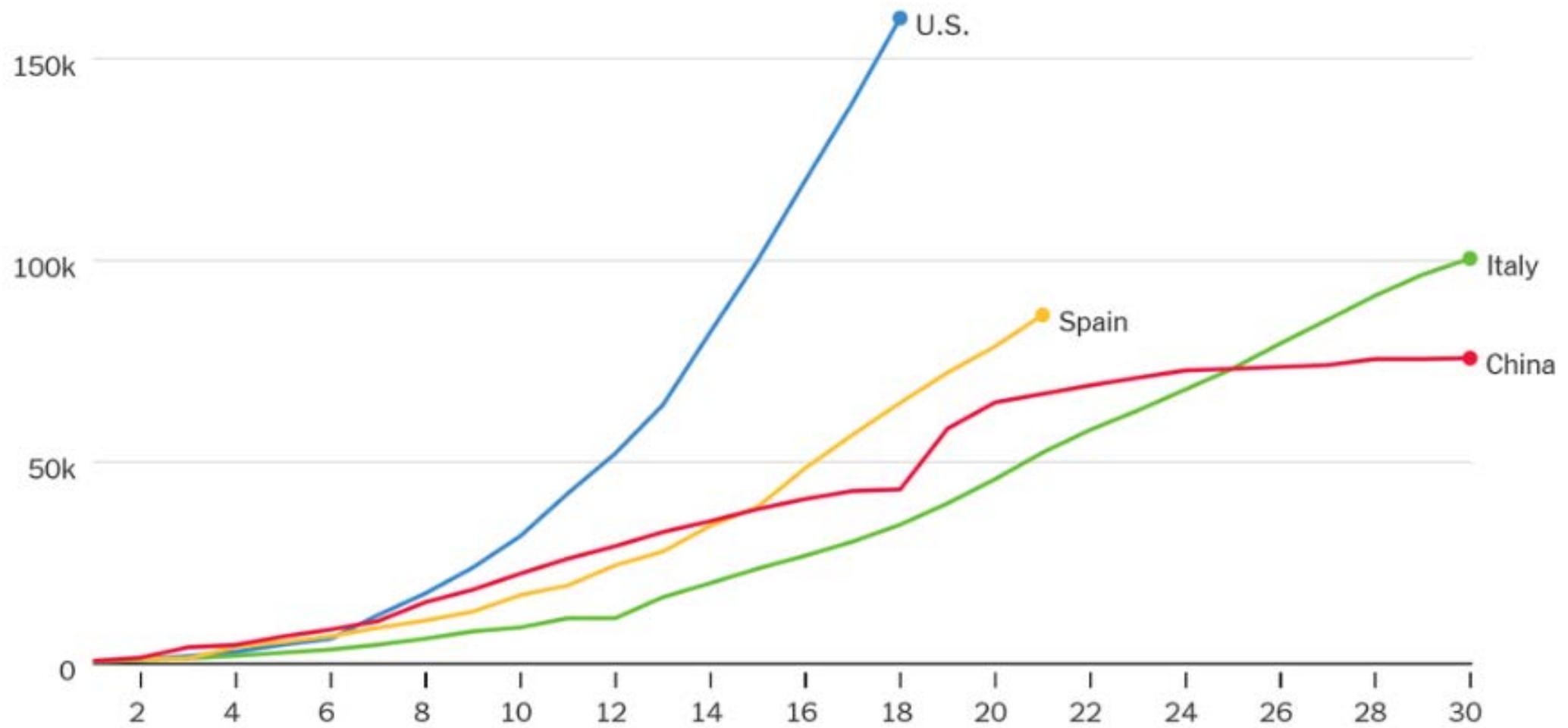
Dr. Li Wenliang

# COVID-19: Epidemiology



N=163,575

Total cases, in the first 30 days after a country surpassed 500 confirmed cases



By The New York Times | Source: Center for Systems Science and Engineering, Johns Hopkins University

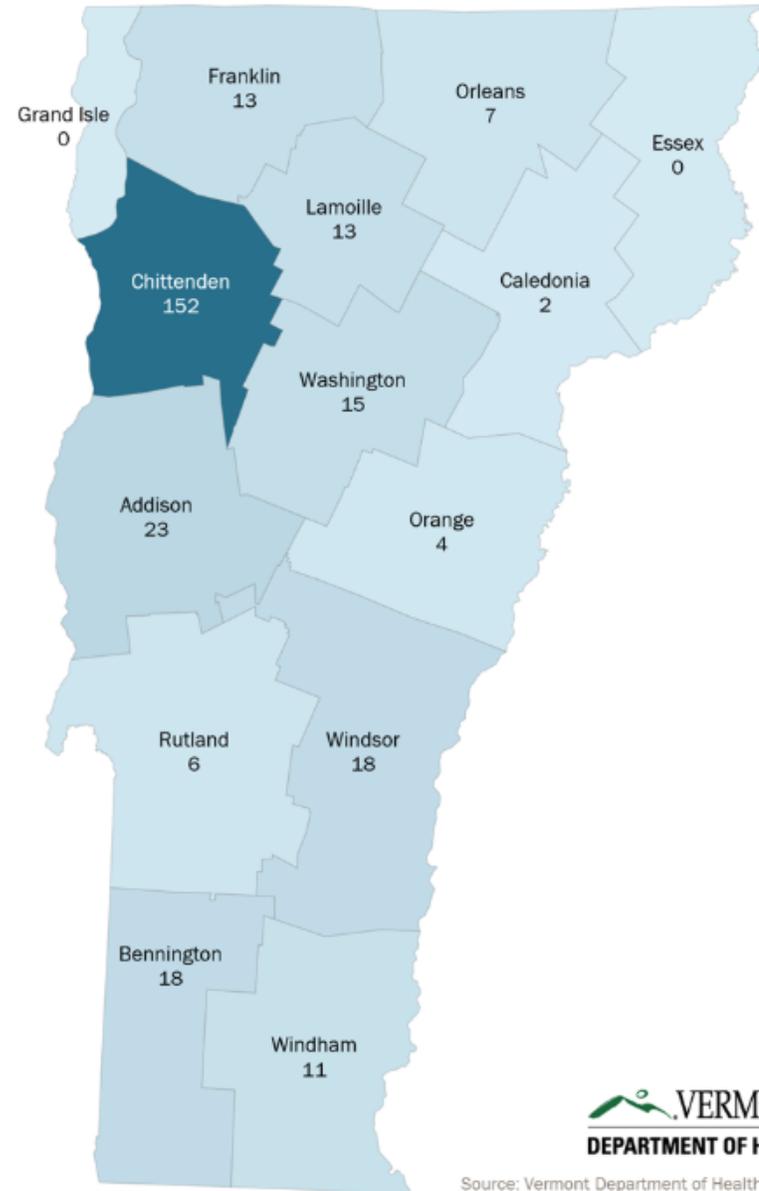
Positive test results*	293
Total tests conducted	4,250
Deaths <sup>+</sup>	13
People being monitored	237
People who have completed monitoring	556

March 31, 2020

### Vermont Case Count - March 31, 2020

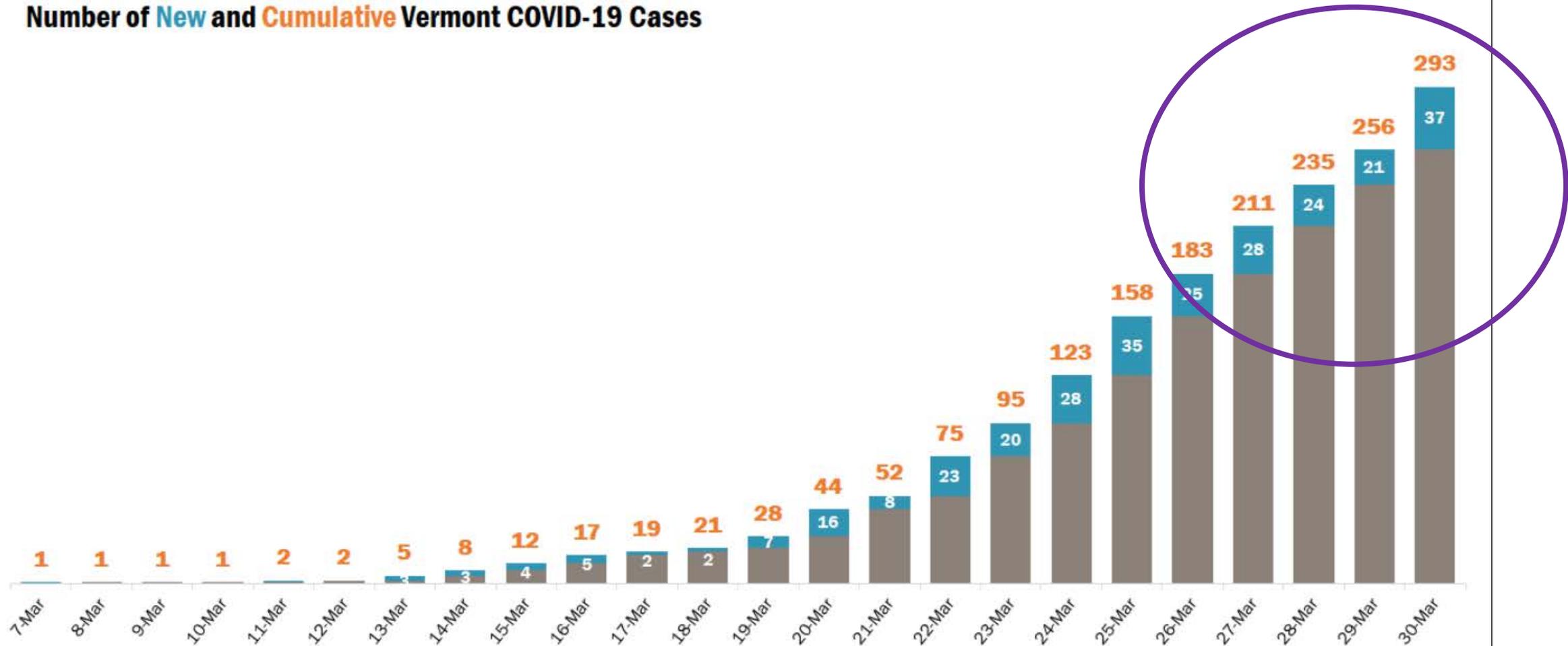
\*People who tested positive for COVID-19 in Vermont while visiting or seeking care are included in the Vermont county where they were identified.

\*\*Some cases may be still under investigation and county not assigned yet.



Source: Vermont Department of Health, 2020

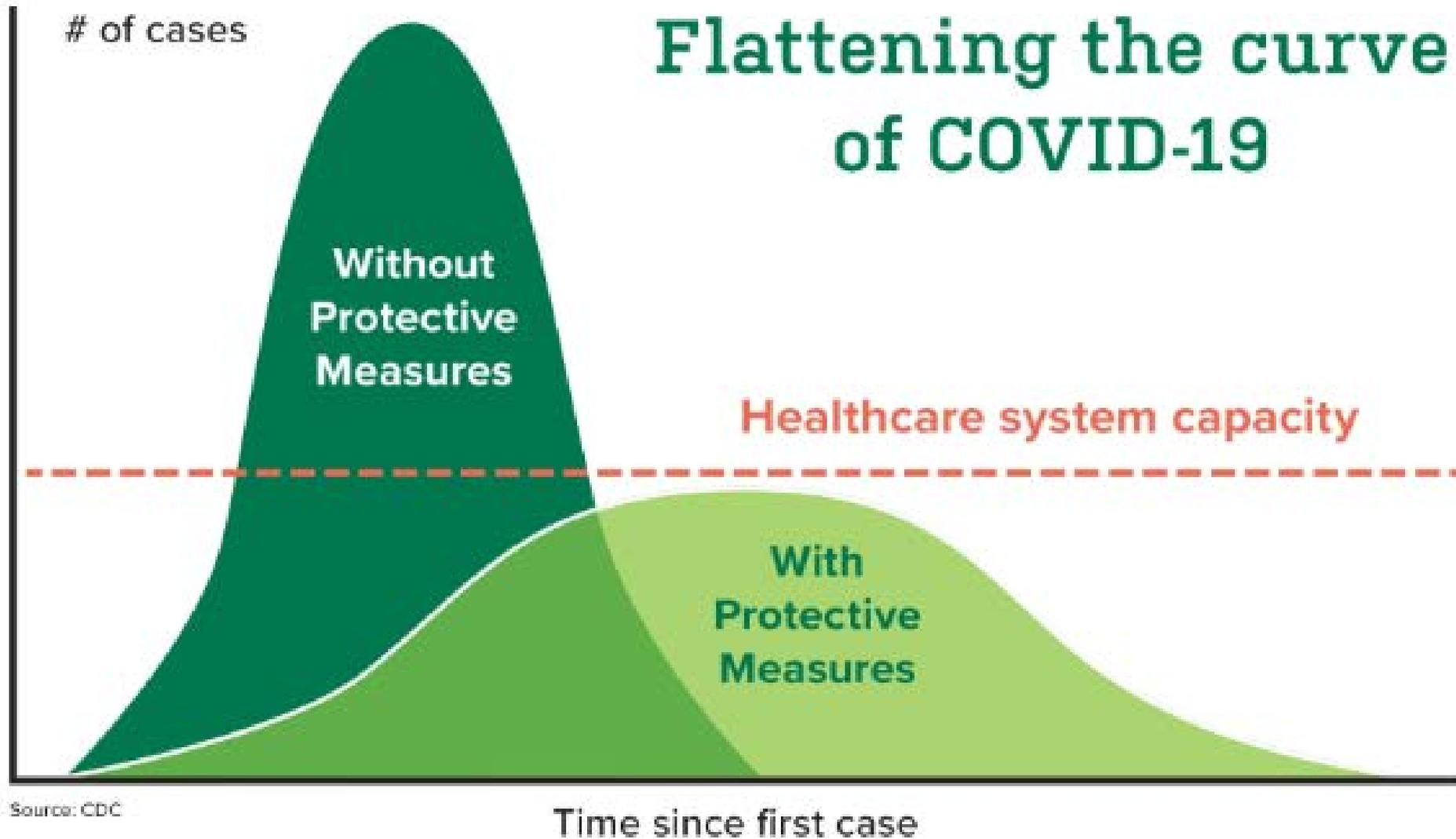
# Number of New and Cumulative Vermont COVID-19 Cases



Source: Vermont Department of Health, 2020.



# Flattening the curve of COVID-19



Source: CDC

# Epidemiology of COVID-19: Germany (18,610)

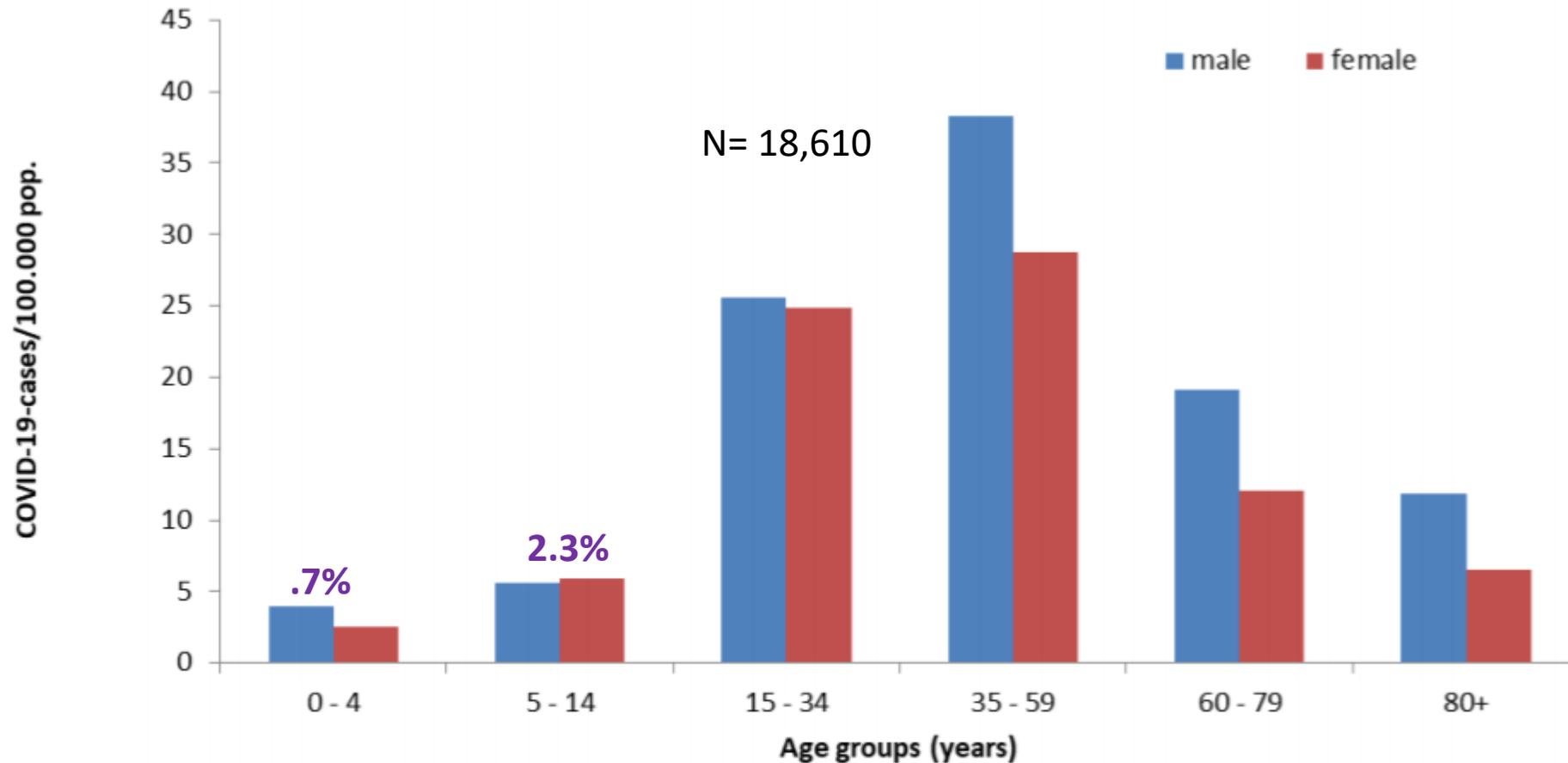
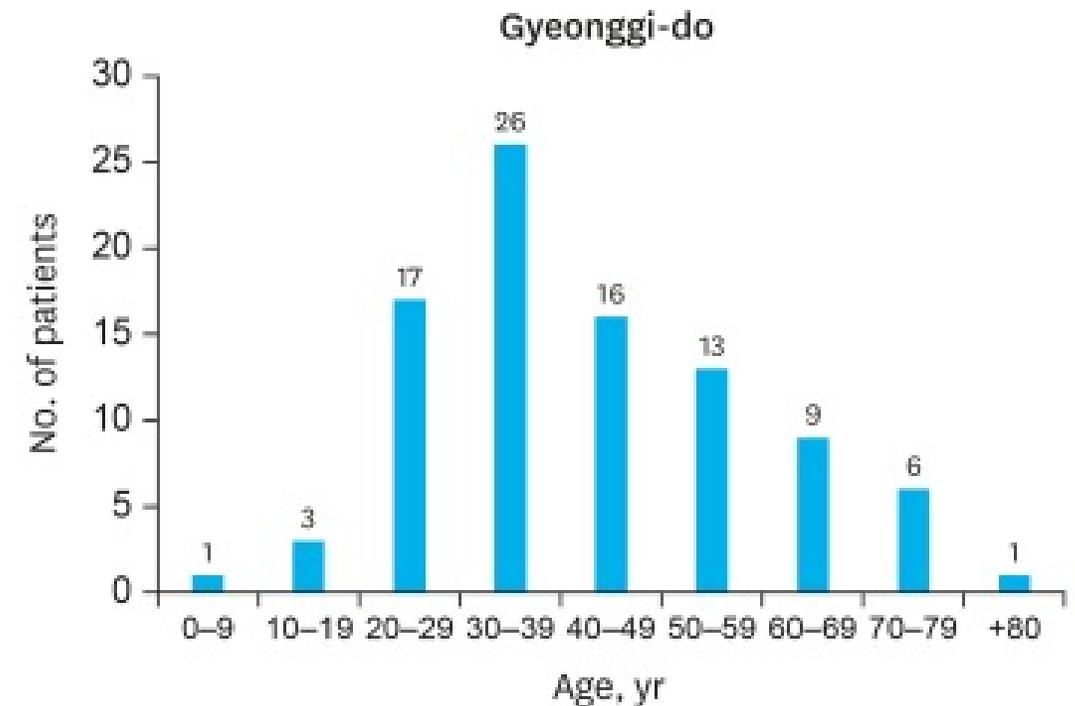
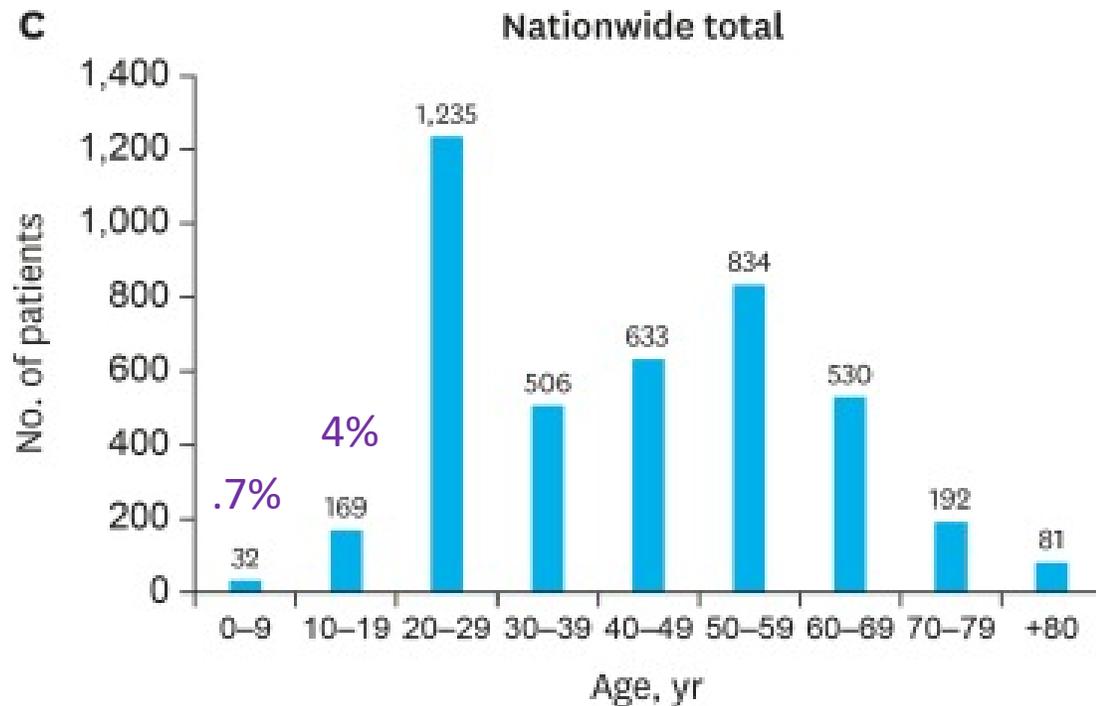
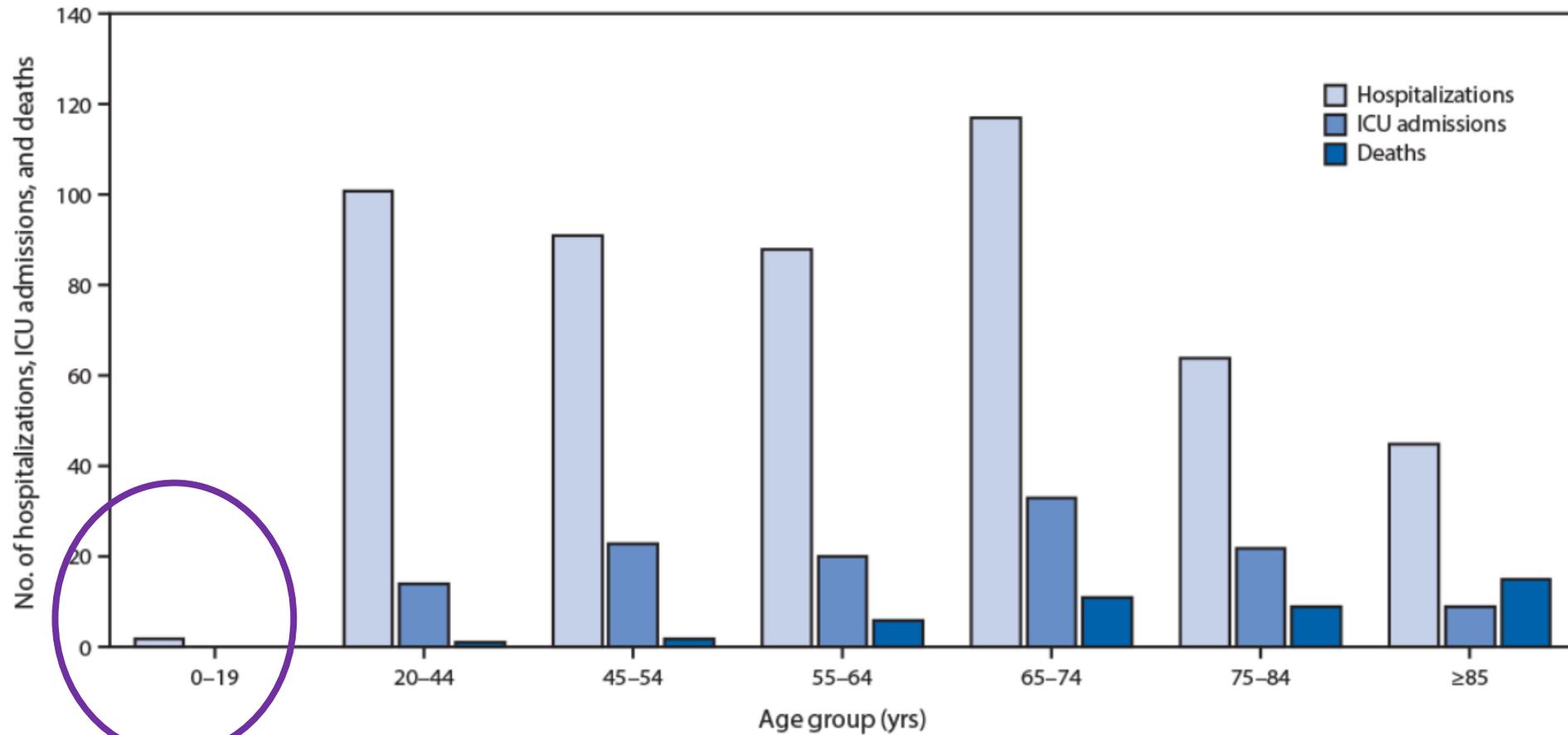


Figure 2: Electronically reported COVID-19-cases/100,000 population in Germany by age group and sex (n=18,538 cases with data available; 22/03/2020, 12:00 AM)

# Epidemiology of COVID-19: Korea (N=4212)



**FIGURE 2. Coronavirus disease 2019 (COVID-19) hospitalizations,\* intensive care unit (ICU) admissions,† and deaths,§ by age group — United States, February 12– March 16, 2020**



\* Hospitalization status missing or unknown for 1,514 cases.

# US Pediatric Population

- Seattle Children's Hospital (as of Wednesday, March 25):
  - Tested 919 symptomatic pediatric patients
  - Six patients positive (.7%)
    - Two hospitalized
      - Both with underlying conditions
- Vermont (preliminary data as of March 31, 2020)
  - Tested 150 symptomatic pediatric patients 0-15 years
  - One patient positive (.7%)

# Incubation period

- 2-14 days
  - Mean is five days
- Infectiousness drops fairly quickly after day 7
  - For most
  - Drives CDC guidelines

# Clinical findings: adults

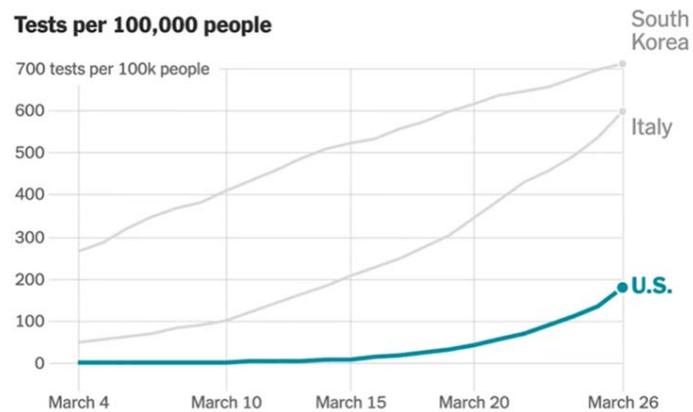
- Fever
- Malaise and fatigue
- Sore throat
- Cough
- Shortness of breath
- Loss of taste or smell (not sure what percent complain of that)
- Often worsens in adults on day 7
- Very roughly\*
  - 80% “mild”
  - 20% moderate to severe

# Clinical findings: Pediatrics

	Confirmed cases
Age	
<1	86 (11.8)
1-5	137 (18.7)
6-10	171 (23.4)
11-15	180 (24.6)
>15	157 (21.5)
Severity	
Asymptomatic	94 (12.9)
Mild	315 (43.1)
Moderate	300 (41)
Severe	18 (2.5)
Critical	3 (0.4)
Missing	1 (0.1)

# Testing

- Extremely problematic in the US
  - Lack of test kits
  - Only testing symptomatic
  - Highly variable approaches by states that changes over time
  - Characteristics of the tests not known



The pace of testing in the United States has seen a meteoric rise in the past week. But the country still lags in tests relative to its population, despite having the world's most reported coronavirus cases. Weiyi Cai

# Testing in Vermont (children)

- Prioritized for
  - Those with moderate to severe disease (e.g. hospitalized)
  - Health care workers with s/s
  - High risk groups
    - Immunocompromised
    - Underlying medical conditions
  - Recommend centralized testing (conserves PPE)



# Prevention

- If ill, do not go out!
- Keep your distance
- Wash hands
- Wash surfaces

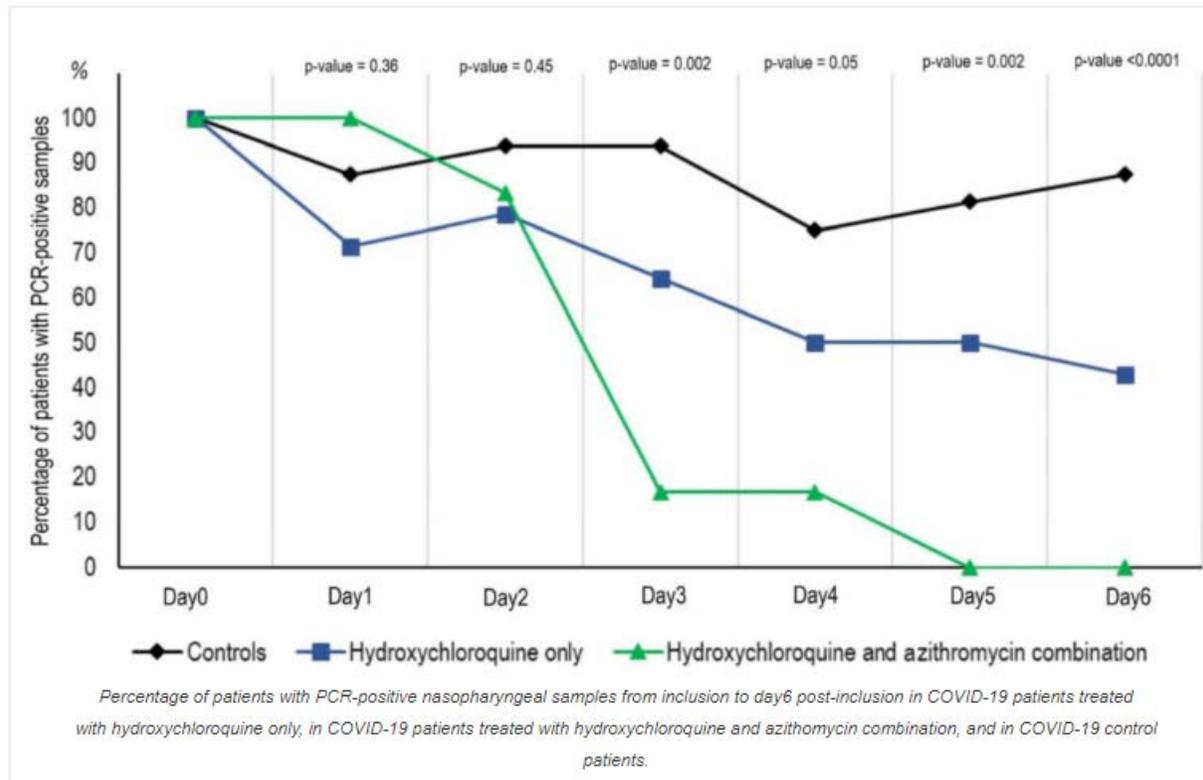


# Social distancing



# Treatment

- No approved treatment for COVID-19
  - Many ongoing trials



# Hot topics:

- Management health care workers with ill contacts
- Management of PPE supplies

# Management of ill contacts of HCW

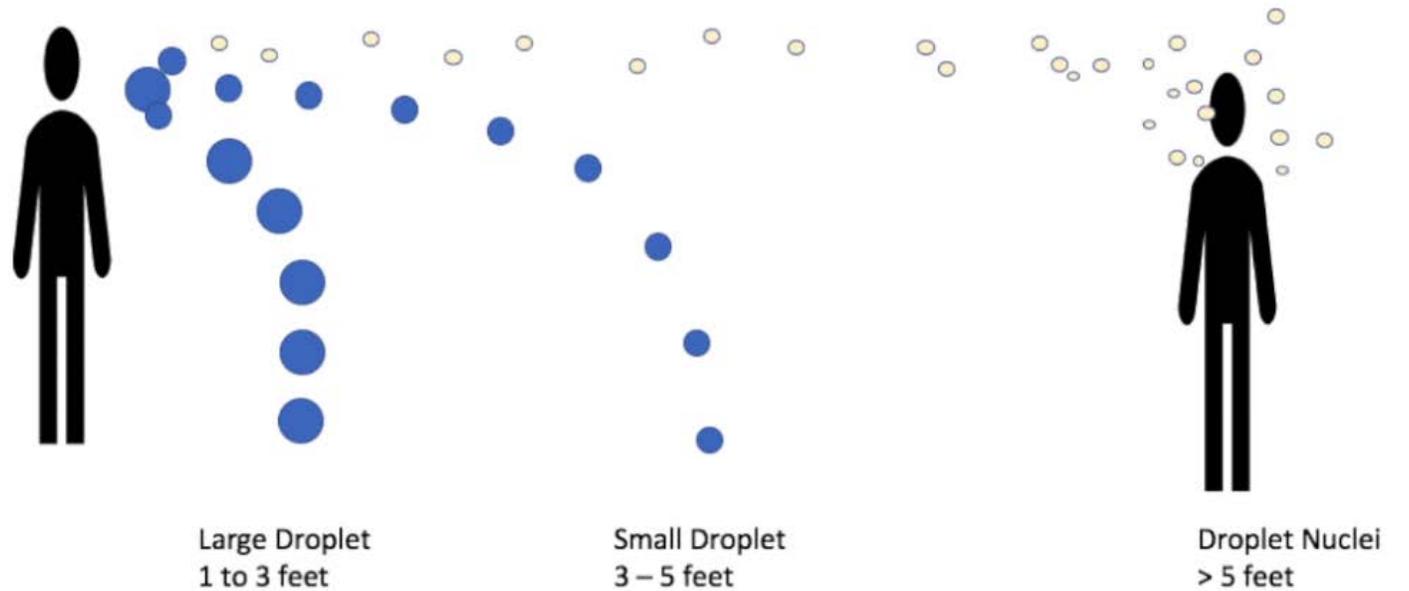
- Exposure to ill children
  - Low background rate of SARS-CoV2
  - Not generally recommending testing of children with s/s
  - HCW exposure to child with respiratory illness of unknown etiology
    - Can work without restrictions if asymptomatic
    - Self monitor
  - HCW exposure to child known to be COVID+
    - Work while wearing a surgical mask if asymptomatic
    - Self monitor

# Management of ill contacts of HCW

- Exposure to ill adult
  - 7% of symptomatic adults positive for COVID 19
  - Expanded recommendations for testing adults with s/s
- HCW exposure to adult with respiratory illness of unknown etiology
  - Testing of contact reasonable
  - Can work without restrictions if asymptomatic
  - Self monitor
- HCW exposure to adult known to be COVID+
  - Work while wearing a surgical mask if asymptomatic\*\*
  - Self monitor

# Transmission

- Respiratory droplet
- Close contact
- Fomites
  
- Airborne
  - Aerosols
  - Droplet nuclei



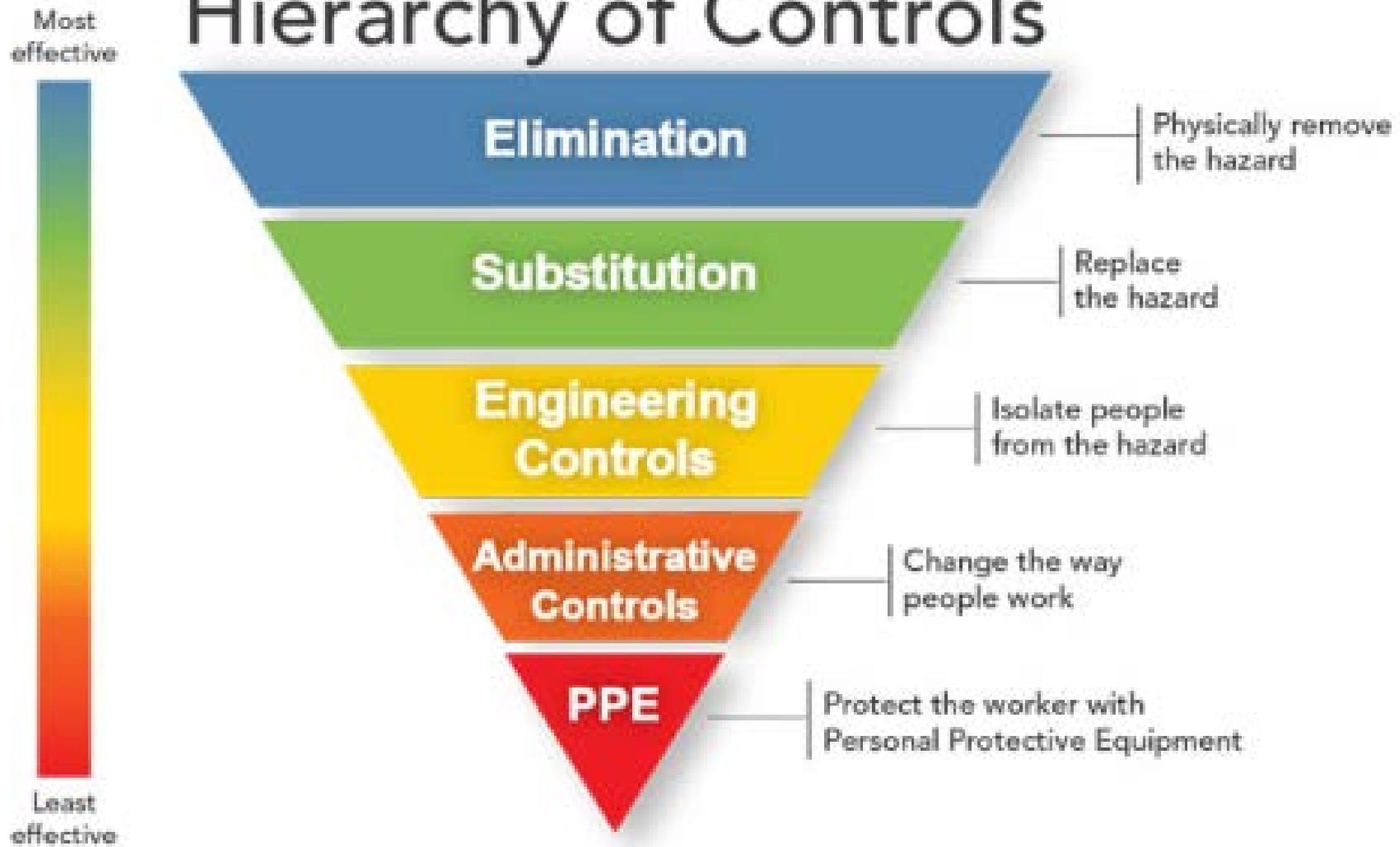
# Transmission (all data is from Adults)

- Asymptomatic and never symptomatic
  - Asymptomatic and pre-symptomatic
  - Mildly symptomatic
- } Often conflated
- Likelihood of transmission from asymptomatic infections remains unknown but much debated\*
  - Viral burden in asymptomatic infections similar to symptomatic
    - Dissemination via contact, fomites vs droplets, aerosols?



Should I wear a surgical mask?

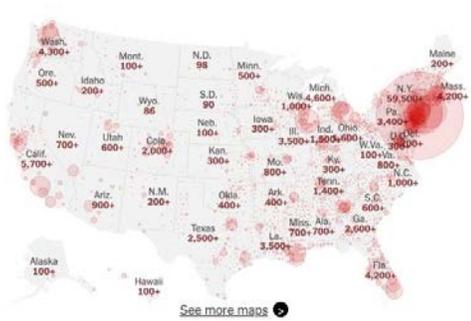
# Hierarchy of Controls



## N.Y. Warns Medical Supplies Running Low as Governors Plead for Help

### Updates: Deaths Jump as Mayor Warns Supplies May Last a Week

- Mayor Bill de Blasio issued the warning as deaths in New York State rose by 237. The C.D.C. advised residents to refrain from non-essential travel.
- Several Democratic governors warned that hospitals in their states would soon be overwhelmed with patients and pleaded for federal help.
- Spain reported an overnight record toll — 838 dead — bringing the total to about 6,500 with almost 79,000 registered coronavirus cases. Follow updates.



### How China's Fail-Safe System to Track Contagions Failed

After SARS, health officials built a reporting system to track political meddling. But when the coronavirus emerged, so did fears of upsetting Beijing.

1h ago



### The U.S. Tried to Build a New Fleet of Ventilators. The Mission Collapsed.

As the coronavirus ravages America's health care system, a canceled federal contract helps explain the acute shortage of medical equipment.

5h ago

### THE CORONAVIRUS CRISIS

## Should We All Be Wearing Masks In Public? Health Experts Revisit The Question

March 31, 2020 - 5:00 PM ET

- [HUO JINGNAN](#)
[ALLISON AUBREY](#)
[CARMEL WROTH](#)



## Nurses Die, Doctors Fall Sick and Panic Rises on Virus Front Lines

The pandemic has begun to sweep through New York City's medical ranks, and anxiety is growing among normally dispassionate medical professionals.



## Frightened Doctors Face Off With Hospitals Over Rules on Protective Gear

Many hospitals bar doctors and other staff members from wearing protective masks in public areas. Some have been disciplined for pushing back.

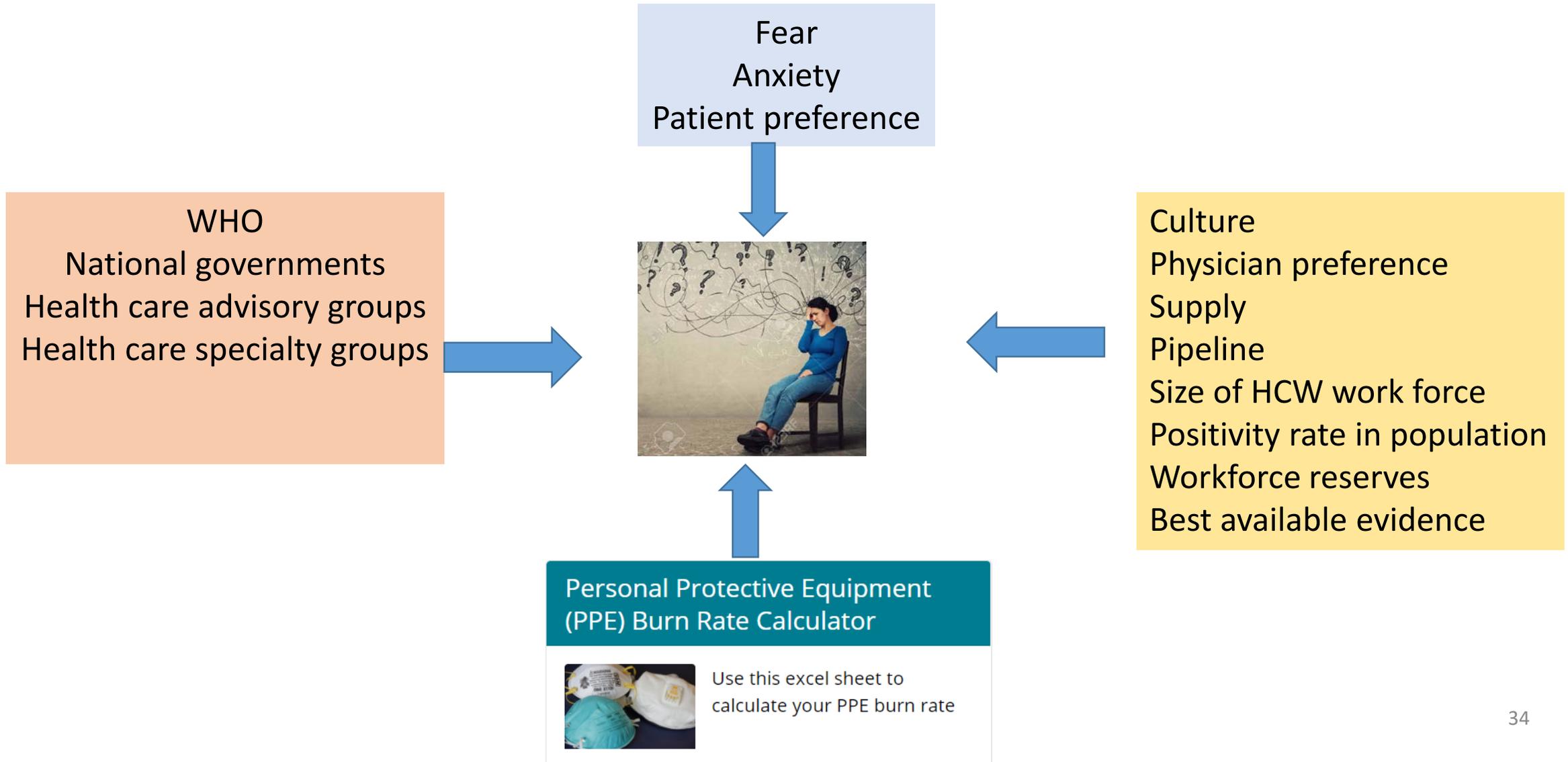


# Survey of Infection Control Specialists

- Face shields:
  - 50% lack enough face shields
  - 36.5% almost out
  - 12.6% completely out
- Surgical masks
  - 31.7% completely or nearly out of face masks



# Making a rationale decision regarding masks



# Radically different approaches

- Seattle Children's Hospital
  - Universal masking of workforce members is not warranted
- Boston Children's Hospital (a member of the Partner's Group)
  - Universal masking for all employees (1 mask/day)

# PPE Issues (pediatrics)

- How effective are masks at preventing transmission?
- What is the probability that any child is infected with SARS-CoV2?
- How significant is asymptomatic transmission?
- How does the critical national shortage of PPE influence my decision making
  - Currently, a zero sum game
- How effective are my environmental, engineering, and administrative controls?
- How do I manage ambiguity?
- What level of risk am I willing to accept?

# The Vermont Children's Hospital Approach

- Assumes
  - Must protect health care workers
  - Reflect preference of the Network
  - PPE shortage\*\*
  - Low background rate of SARS CoV2 in the pediatric community
  - Unclear role for homemade masks^^
  - Rigorous environmental and administrative controls
- Use surgical masks as indicated
  - Not universal
- Identify low risk situations



\*\*as of noon March 31, 2020

^^ as of 4:30 PM March 31, 2020

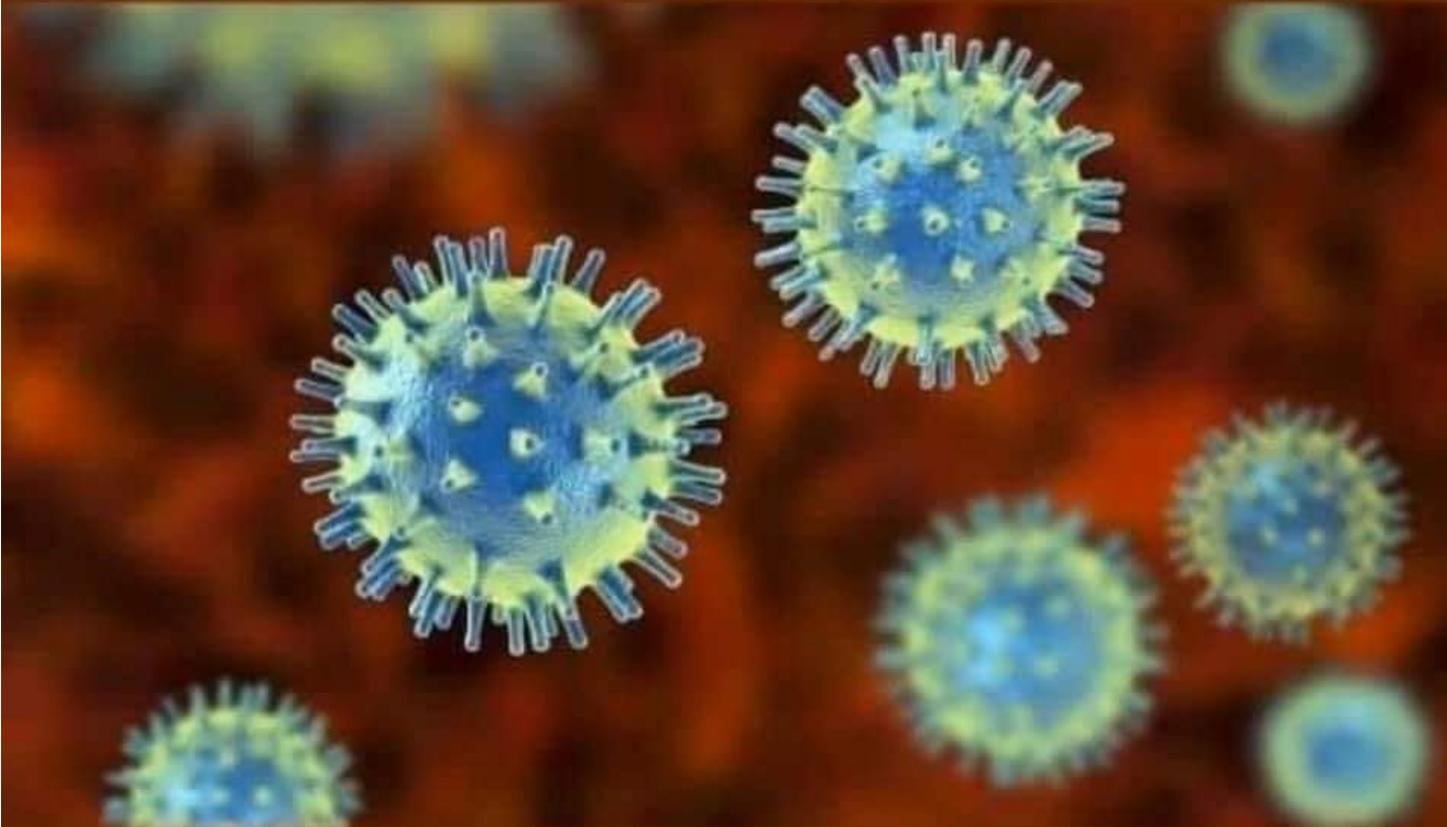


COVID19 OUTPATIENT PEDIATRICS PPE PLAN - UVMMC Pediatric Primary Care					
Type of Visit	Screening		Family	Providers/staff providing direct care	Notes
<b>AM Well Visit Families</b>	Screen patient and accompanying parent (current policy allows single adult visitor) for any infectious illness. - Front door screener	If no illness at all	No masks	No mask	
		If any infectious illness	direct to afternoon sick visit clinic		- If patient or family is symptomatic we would want to schedule at a different time
<b>PM Sick Visit Families</b>	Screen patient and accompanying parent for reason for sick visit and current symptoms.	Symptoms of respiratory tract illness (cough, runny nose, sore throat, fever)	Surgical mask for parent and child	- Surgical mask (only upper symptoms; no cough) - Special droplet precautions (cough)	- These families would ideally be referred to Acute Respiratory Clinic - Oropharyngeal swab (strep) does not require special droplet precautions (not aerosolizing test)
		Symptoms of non-respiratory symptoms (diarrhea, vomiting, rash)	No masks	No mask	

**Infection Control Strategies for all visits:**

1. Triage patients to keep patients with respiratory symptoms to a more appropriate location (care at home or in acute respiratory clinic)
2. Frequent good quality hand hygiene with all visits
3. Wipe down surfaces frequently, including exam rooms, keyboards, mouse, etc
4. PPE (as above)

**ANYONE HEARD FROM JCAHO? LAST WEEK I  
COULDN'T PUT SCOTCH TAPE ON THE WALL**



**THIS WEEK IT'S OK TO USE MY SOCK AS A  
MASK.**

**ANNOUNCEMENT:**  
**Joint Commission**  
**Statement on Use of**  
**Face Masks Brought**  
**From Home**

March 31, 2020

1. Hospitals must conserve personal protective equipment (PPE) when these items are in short supply ...
2. The degree to which privately-owned masks and respirators will increase the protection of healthcare workers is uncertain, but the balance of evidence suggests that it is positive.
3. No Joint Commission standards or other requirements prohibit staff from using PPE brought from home.
4. Homemade masks are an extreme measure and should be used only when standard PPE of proven protective value is unavailable.

# Thanks

- The Vermont Department of Health
  - Breena Holmes
  - Sally Cook
- VCHIP/CHAMP
  - Wendy Davis
- Adult Infectious Diseases
  - Cindy Dion
  - Kemp Alston
- Infection Prevention
  - Carolyn Terhune
- All of you
  - Flexibility

# Questions



*[Please note: the COVID-19 situation continues to evolve very rapidly – so the information we’re providing may also change quickly]*