


Beyond the Beltway:  
Health Webinars for Journalists

**COVID-19 Webinar Miniseries**

**Flattening the Curve**

Wednesday, March 18, 2020





**NIHCM**  
FOUNDATION



**ALLIANCE**  
FOR HEALTH POLICY

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# Agenda

12:00 –12:05

Introduction

- Sarah J. Dash, MPH, Alliance for Health Policy

12:05 – 12:15

Opening Remarks

- Kathleen Winter, Ph.D., University of Kentucky

12:15-12:30

Moderated Discussion

12:30

Conclude

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# Materials

At [allhealthpolicy.org](https://allhealthpolicy.org)

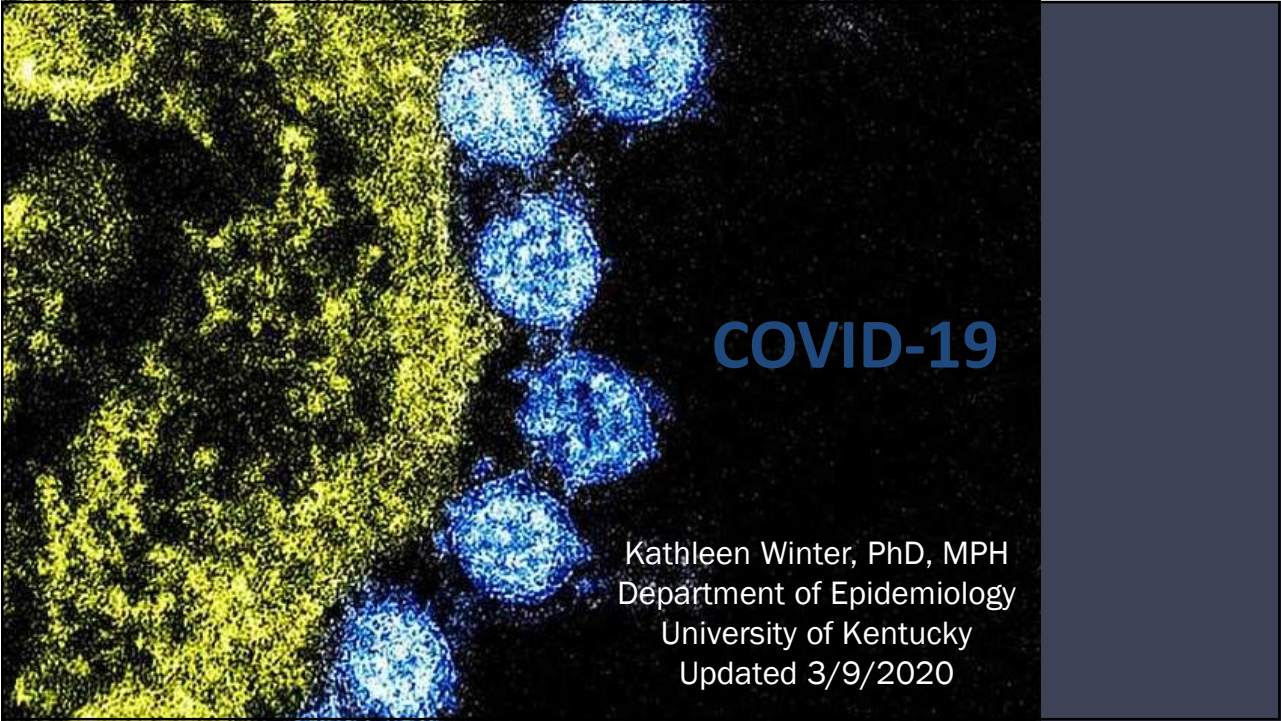
- Agenda and Speaker Bios
- Selected Resources List
- Selected Experts List
- Video (posted later)



## Kathleen Winter, Ph.D.

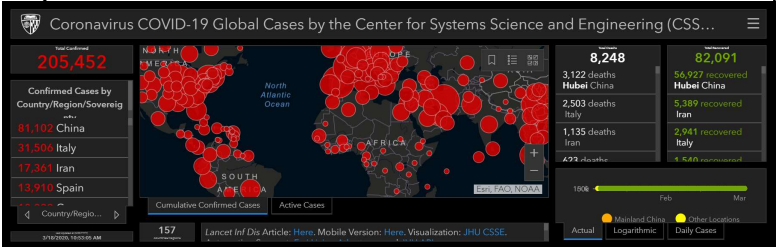
Assistant Professor,  
Department of Epidemiology,  
College of Public Health,  
University of Kentucky





Globally – as of 3/18/2020

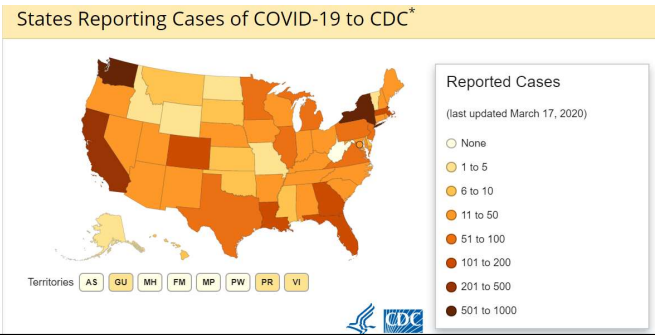
- >205,000 cases
- 157 countries/regions
- 8,248 fatalities (CFR 4.0%)



- <https://coronavirus.jhu.edu/map.html>
- Major epidemics with sustained local transmission in China, Italy, Spain, France, Iran, South Korea, U.S.A. ....

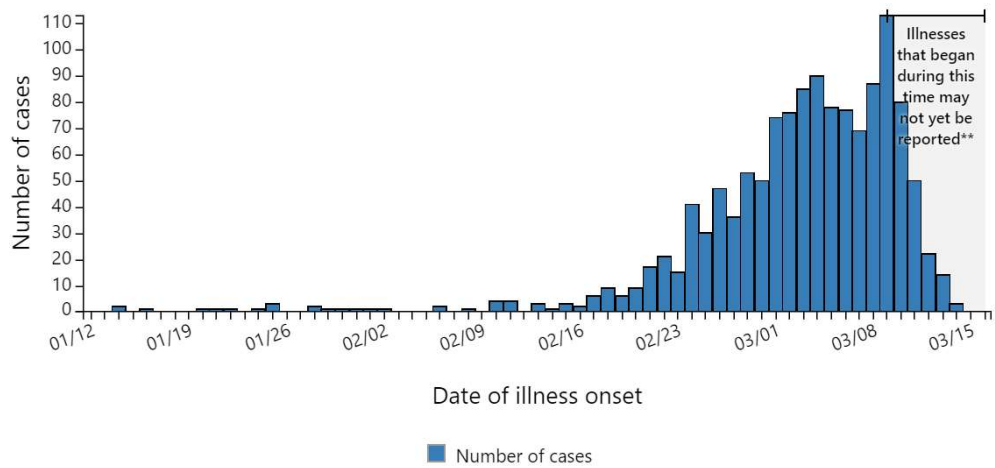
# In the U.S. – as of 3/17/2020

- 4,226 confirmed COVID-19 cases in the U.S.
- 75 deaths
  - 17 deaths associated with LTC facility in Seattle, WA
- 49 states



<https://www.cdc.gov/coronavirus/2019-ncov/cases-in-us.htm>

COVID-19 cases in the United States by date of illness onset, January 12, 2020, to March 16, 2020, at 4pm ET (n=1,295)\*\*

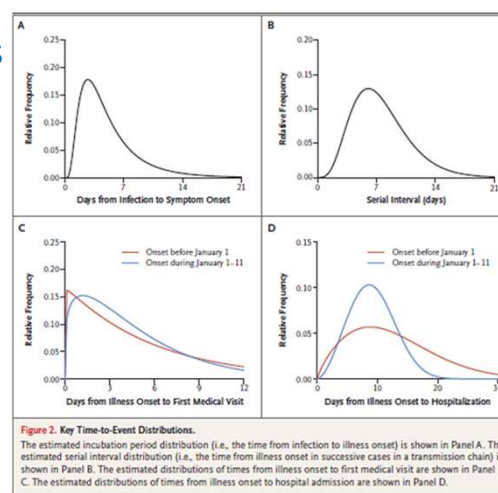


## Current data on COVID-19: Infectiousness

- R0 estimates for **COVID-19**:
  - **2.2** (95% CI: 1.4-3.9)  
[Early disease reporting data (Li et al. NEJM. 2020)]
  - **2.24** (95% CI: 1.96-2.55) when assuming 8-fold increase in reporting rate
  - **3.58** (95% CI: 2.89-4.39) when assuming 2-fold increase in reporting rate  
[Modeling paper using data from Jan 10-24<sup>th</sup> in China (Zhao et al. International Journal of Infectious Diseases, 2020)]
  - **2.8-3.9**  
[Modeling paper using data before 1/26 in China (Zhou et al. Journal of Evidence Based Medicine. 2020)]
- Probably as infectious as **SARS**
  - R0 estimates: **2.2-4.2** [Lipsitch et al. Science. 2003; Riely et al. Science 2003; Wallinga & Teunis. AJE. 2004]
- More infectious than **influenza**
  - R0 estimates **pandemic flu**: **1.46-1.8**
  - R0 estimate for **seasonal flu**: **1.28** [Biggerstaff et al. BMC ID. 2014]

## Current data on COVID-19: Incubation Period

- Incubation period most likely **2-14 days** (CDC)
  - **5.1 days** [Chan et al. Lancet. 2020]
  - **5.2 days** (95% CI: 4.1-7.0)[Li et al. NEJM. 2020]
- Similar to SARS which was 6.4 days (5.2-7.7 days) [Donnelly et al. Lancet. 2003]
- Serial interval (onset-to-onset): **7.5 days** (95% CI: 5.3-19 days) [Li et al. NEJM. 2020]



Li et al. Early Transmission Dynamics in Wuhan, China of Novel Coronavirus–Infected Pneumonia. NEJM. 2020

# Current data on COVID-19: Clinical Course

- Initial symptoms of fever, cough, shortness of breath (ILI)
- Can progress to viral pneumonia over the course of several days; seems to have a characteristic “ground glass” appearance
- Infections can be completely asymptomatic
  - Seems to be more common among children and young adults
- Asymptomatic transmission (before symptoms or in completely asymptomatic people) is known to occur [Rothe et al. NEJM. 2020; Bai et al. JAMA. 2020]

## Zhou et al. Lancet. 2020

- 191 hospitalized COVID-19 cases from Wuhan
  - 54 fatal
  - 91 (48%) w/ comorbidity; [30% HTN, 19% DM, 8% CHD]
- Hospital LOS 11 days (7-14)
- 26% ICU admit; LOS 8 days (4-12)
- Onset => ICU 12 days (8-15 days)
- Onset => death/discharge 21 days (17-25 days)
- Onset => viral clearance 20 days (IQR 17-24 da

	Total (n=191)	Non-survivor (n=54)	Survivor (n=137)	p value
Demographics and clinical characteristics				
Age, years	56.0 (46.0-67.0)	69.0 (63.0-75.0)	52.0 (45.0-58.0)	<0.0001
Sex	–	–	–	0.15
Female	72 (38%)	16 (30%)	56 (41%)	–
Male	119 (62%)	38 (70%)	81 (59%)	–
Previous history	73 (38%)	14 (26%)	59 (43%)	0.018
Current smoker	11 (6%)	5 (9%)	6 (4%)	0.21
Comorbidity	91 (48%)	36 (67%)	55 (40%)	0.0010
Hypertension	58 (30%)	26 (48%)	32 (23%)	0.0008
Diabetes	36 (19%)	17 (31%)	19 (14%)	0.0051
Coronary heart disease	15 (8%)	13 (24%)	2 (1%)	<0.0001
Chronic obstructive lung disease	6 (3%)	4 (7%)	2 (1%)	0.047
Carcinoma	2 (1%)	0	2 (1%)	0.37
Chronic kidney disease	2 (1%)	2 (4%)	0	0.024
Other	22 (12%)	11 (20%)	11 (8%)	0.016
Respiratory rate ≥24 breaths per min	56 (29%)	34 (63%)	22 (16%)	<0.0001
Pulse ≥125 beats per min	2 (1%)	2 (4%)	0	0.024
White blood cell count ≤4.0 × 10 <sup>9</sup> /L	1 (1%)	0	1 (1%)	0.53
Core temperature ≥37.3°C	180 (94%)	51 (94%)	129 (94%)	0.94
Cough	151 (79%)	39 (72%)	112 (82%)	0.15
Sputum	44 (23%)	14 (26%)	30 (22%)	0.55
Myalgia	29 (15%)	8 (15%)	21 (15%)	0.93
Fatigue	44 (23%)	15 (28%)	29 (21%)	0.33
Dyspnoea	9 (5%)	2 (4%)	7 (5%)	0.67
Nausea or vomiting	7 (4%)	3 (6%)	4 (3%)	0.40
SOFA score	2.0 (1.0-4.0)	4.5 (4.0-6.0)	1.0 (1.0-2.0)	<0.0001
qSOFA score	1.0 (0.0-3.0)	1.0 (1.0-3.0)	0.0 (0.0-1.0)	<0.0001
CURB-65 score	0.0 (0.0-2.0)	2.0 (1.0-3.0)	0.0 (0.0-1.0)	<0.0001
0-1	142 (75%)	16 (30%)	125 (91%)	<0.0001
2	37 (19%)	23 (43%)	14 (10%)	–
3-5	15 (8%)	15 (28%)	0 (0%)	–
Disease severity status	–	–	–	<0.0001
General	72 (38%)	0	72 (53%)	–
Severe	66 (35%)	12 (22%)	54 (39%)	–
Critical	53 (28%)	42 (78%)	11 (8%)	–
Time from illness onset to admission	11.0 (8.0-14.0)	11.0 (8.0-15.0)	11.0 (8.0-13.0)	0.53
Imaging features				
Consolidation	112 (59%)	40 (74%)	72 (53%)	0.0065
Ground-glass opacity	136 (71%)	44 (81%)	92 (67%)	0.049
Bilateral pulmonary infiltration	143 (75%)	45 (83%)	98 (72%)	0.090

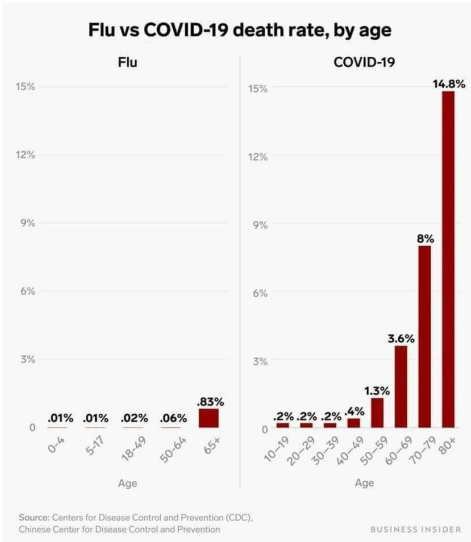
Data are median (IQR), n (%), or n/N (%). p values were calculated by Mann-Whitney U test,  $\chi^2$  test, or Fisher's exact test, as appropriate. SOFA=Sequential Organ Failure Assessment; qSOFA=Quick SOFA; ALT=alanine aminotransferase; IL-6=interleukin-6;  $\chi^2$  test comparing all subcategories.

Table 1: Demographic, clinical, laboratory, and radiographic findings of patients on admission

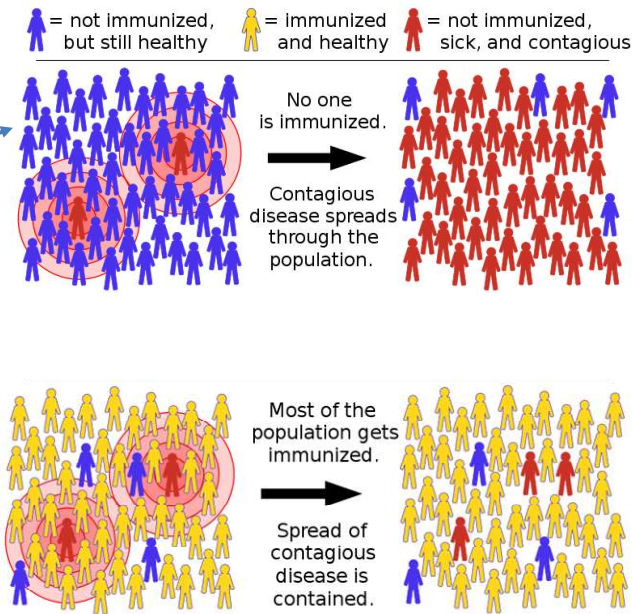


# Current data on COVID-19: Severity

- Study of 72,000 Covid-19 cases in China. [Wu et al. JAMA 2020] Of the ~45K (62%) lab-confirmed:
  - 2.3% fatal (Severity: 81% mild/moderate disease; 14% severe disease; 5% critically ill)
    - Fatality higher among those with preexisting conditions: 10.5% CVD; 7.3% DM; 6.3% chronic respiratory disease; 6% HTN; 5.6% cancer
    - Fatality higher among elderly: 14.8% among ≥80y; 8% among 70-79y
  - Age: Only 2% of cases were <20 years of age
  - HCW: 3.8% of confirmed cases, including 5 deaths



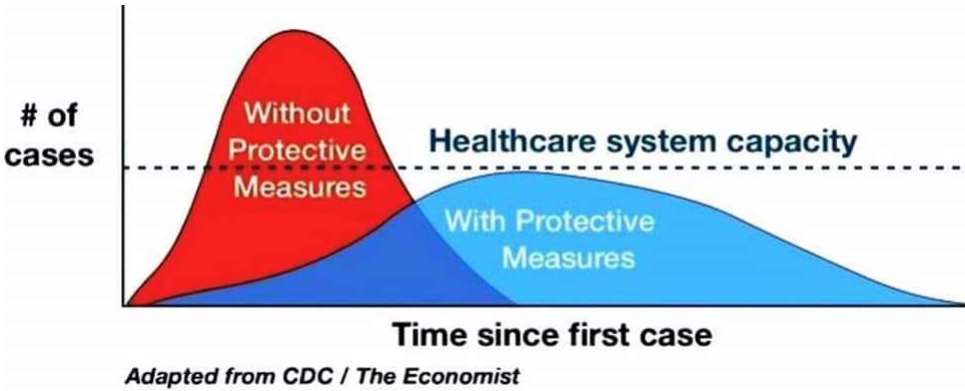
Novel viruses are of particular concern because of the lack of herd immunity





# Why it is important to “flatten the curve”

- Even if widespread transmission is inevitable, it is important to slow the spread



# Containment & Mitigation Strategies

## Isolate the sick

- Infection Control
- Case investigation
- Case identification
- Isolation

## Quarantine the exposed

- Contact tracing
- Quarantine

## Reduce social mixing

- Closing schools
- Cancelling public events
- Closing public spaces/restaurants
- Travel restrictions
- Public transit closures

## Social distancing during 1918 influenza pandemic

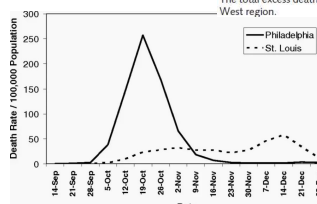
Markel et al. JAMA

- Historical mortality and census data from 43 large U.S. cities from waves II and III of pandemic
- News reports on use/timing of social distancing measures (isolation, quarantine, school closure, public gathering ban)
- Implementation of multiple measures was more effective at reducing excess death rate (EDR) than individual measures

**Figure 2.** Aggregate Weekly Excess Death Rates for 43 US Cities by Region From September 8, 1918, Through February 22, 1919



The total excess death rate is 555 for the East region; 413 for the Midwest and South region; and 529 for the West region.

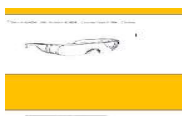


## Laboratory testing

- Testing kits
  - State and some local PHLs have capacity to run testing, but criteria and capacity vary by site
  - Commercial labs offering testing, turnaround time ~3-4 days
- Specimen collection kits: nasopharyngeal swabs, viral transport media
- Personal protective equipment for healthcare workers
  - N95 respirator; surgical mask acceptable where supplies limited (and they are)
  - Eye protection (goggles or face shield)
  - Gown
  - Gloves



## Personal Protective gear



## Vaccine development

- NIH working closely with researchers to fast-track development
- Candidate immunogen: receptor-binding domain of the “spike protein”
- Animal studies to assess safety ongoing
- First Phase I trial just beginning



## In conclusion

- This pandemic is unprecedented in modern history
- We are just at the beginning of this outbreak in the U.S.
- Efforts to slow disease spread will help reduce the burden on the healthcare system
- There is still a lot that is unknown about this virus, modes of transmission, why children seem to be largely spared, and how much asymptomatic disease is occurring

## Moderated Discussion



**Kathleen Winter, Ph.D.**

Assistant Professor, Department of  
Epidemiology, College of Public Health,  
University of Kentucky



**Moderator: Sarah J. Dash, MPH**

President and CEO,  
Alliance for Health Policy  
@allhealthpolicy



## SAVE THE DATE

### COVID-19 Webinar Miniseries

- Session 2:  
At the Front Line: Public Health and Health System Challenges  
Thursday, March 19 | 12:00 -12:30 p.m. E.T.
- Session 3:  
Leading Through Crisis with Gov. Mike Leavitt  
Friday, March 20 | 12:00 -12:30 p.m. E.T.

*Visit [allhealthpolicy.org](https://allhealthpolicy.org) to register or learn more*



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