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An update on COVID-19

University of Illinois at Chicago
School of Public Health
Division of Epidemiology and Biostatistics



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Outline

- UIC SPH COVID-related activities
- Background on COVID-19
- Update on global and US data
- Questions Some Are Asking
- Hopeful News and Advice
- Q and A

How UIC SPH Leads the Way

UIC School of Public Health is the **only accredited school of public health in Illinois.**

The school is leading the way during this pandemic by:

- **Providing assistance to the Illinois Department of Public Health** on the department's response through an intergovernmental agreement;
- Creating an **epidemiological model to track pediatric cases** of COVID-19 in Chicago
- Occupational Health Services Institute is **consulting on preparations for and mitigation of COVID-19 with major organizations and companies** including: Abbott, Baxter, Cook County Health, United Steelworkers Union, among others;
- **Using biostatistical modeling** to estimate the number of COVID-19 cases in Chicago, Cook County and the State of Illinois, and the number of tests needed daily to keep pace with the infection rate.

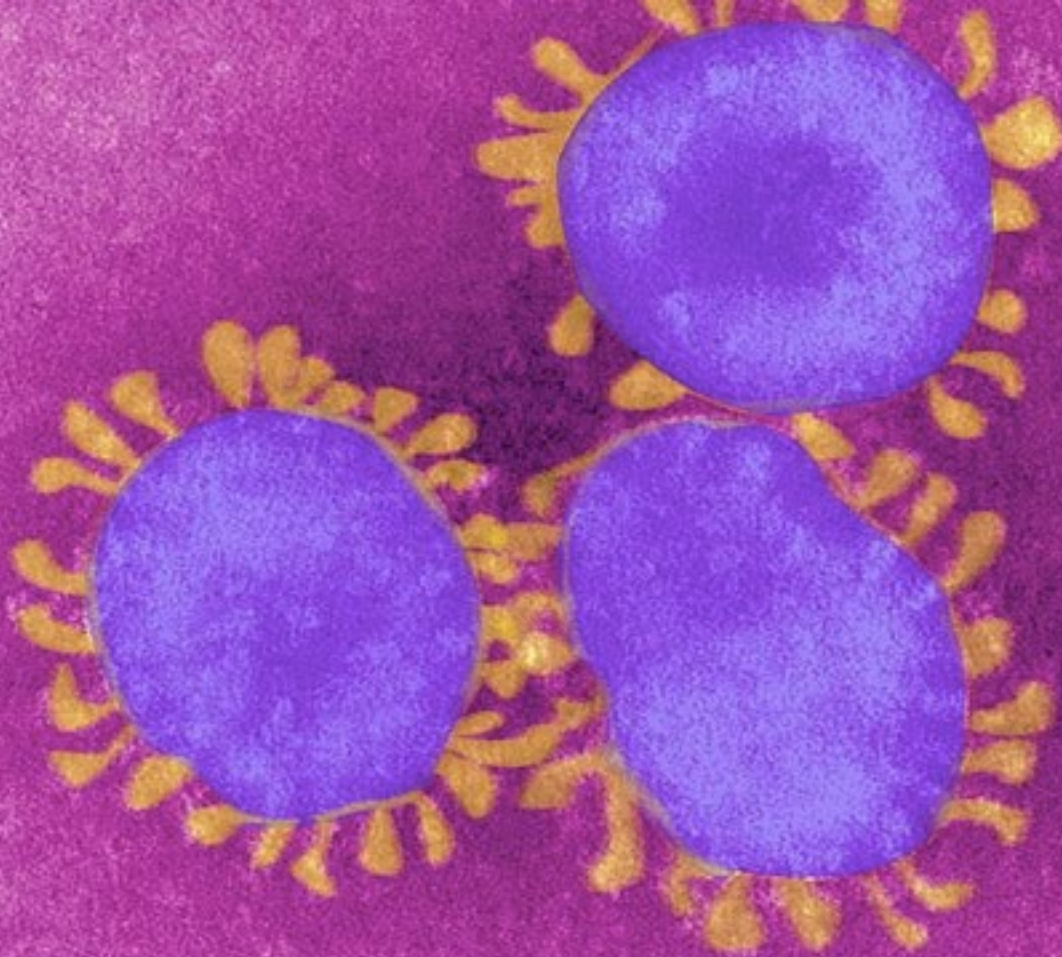
Background

COVID-19: 'CO' stands for 'corona,' 'VI' for 'virus,' and 'D' for disease.

There are other Coronaviruses

- Infect humans and animals (cattle, camels, bats and other animals)
- In humans, they cause illnesses as mild as a common cold





Ebola

A Multi-Country Coronavirus Outbreak is Not New

- SARS

- MERS

SARS-CoV:

When the Genie First Escaped the Bottle

SARS-CoV

- Severe acute respiratory syndrome – possibly bat origin

2003, 8422 cases, beginning in China and spreading to 28 countries

The case fatality rate (CFR) ranged from 0% to 50%

- Fatality was lowest in the young and highest in those 65 and older

Successful control measures – Returning the Genie to the bottle!

- Isolation, contact tracing, quarantine

MERS-CoV

MERS-CoV

- Middle East respiratory syndrome (MERS).
- A species of coronavirus that infects humans, bats, and camels

2012, 2000 cases, began in Saudi Arabia and spread to 21 countries

The case fatality rate (CFR) $\cong 34\%$

Successful control measures - isolation, contact tracing, and quarantine

COVID-19 Coronavirus Outbreak

April 22, 2020

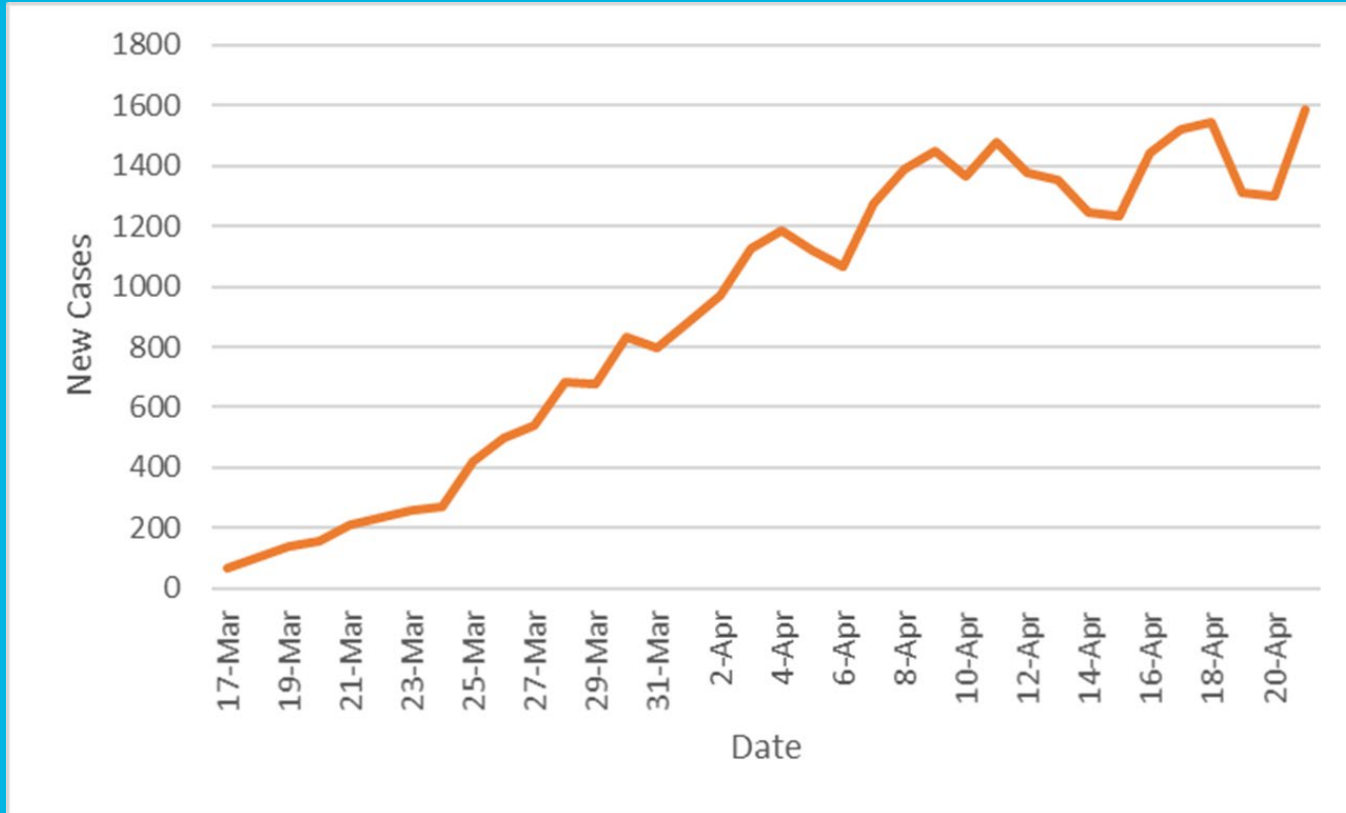
Worldwide

- Cases: 2,598,322
- 210 countries
- Deaths: 181,355

United States

- Cases 831,283
- 50 states and ≥ 4 territories
- Deaths 46,013

Illinois Daily Number of Reported COVID-19 Cases, March – April to date, 3-day Moving Average



Can Mailed Packages Transfer The COVID-19 Virus?

Coronaviruses are generally thought to be spread most often by respiratory droplets. Currently there is no evidence to support transmission of COVID-19 associated with imported goods and there have not been any cases of COVID-19 in the United States associated with imported goods.

Risk level: Theoretical only.

Experimental data suggests it does not survive 24 hours on cardboard.





Will Warm Weather Stop This Outbreak?

- Unknown
- Some other viruses, like the common cold and flu, spread more during cold weather months
- However, disease is being reported from India (>8000) and other tropical countries where current temperature highs are 100F



Can My House Pet Get The COVID-19 Virus And Give It To Me?

According to CDC at this point there is no evidence that companion animals, including pets, are spreading COVID-19.

Risk level: Theoretical only.

Action: If ill, avoid the pet if you live with others.

Who Should Wear a Mask?

- If you have respiratory symptoms
- If you are providing care to individuals with respiratory symptoms
- If you are a healthcare worker
- If you will be among people where you cannot guarantee social distancing



Why are some cities or regions experiencing a worse outbreak than other places?

Many factors can influence the impact of COVID-19

- How long ago COVID-19 was introduced to the area
- Population density
- Age distribution
- Prevalence of underlying medical conditions among COVID-19 patients
- The timing and extent of community mitigation measures
- Diagnostic testing capacity
- Public health reporting practices

If I have COVID-19, when can I get out of isolation?

- **Interim CDC Guidance recommends:**
- **If you were sick**
 - Wait at least 3 days since the fever resolved (w/out fever reducing agents)
 - Respiratory symptoms have improved and
 - It is at least 7 days since symptoms first appeared
 - OR – If you have 2 negative COVID-19 tests at least 2 days apart
- **If you were NOT sick but tested positive**
 - Wait 7 days since the tested positive and
 - No symptoms have developed and
 - Wear a mouth covering (mask/bandana) and social distance 6 feet for 3 more days

Basic Protective Measures Against The COVID-19

Wash your hands frequently

- Regularly and thoroughly
- Use alcohol-based hand rub or wash them with soap and water

Maintain social distancing

- 6 feet (CDC)

Avoid touching eyes, nose and mouth

- 2015 observational study, described college students touch their face with their own hands on average 23 times per hour.

Respiratory hygiene

- Covering your mouth and nose with your bent elbow or tissue when you cough or sneeze

Can Someone Spread The Virus Without Being Sick?

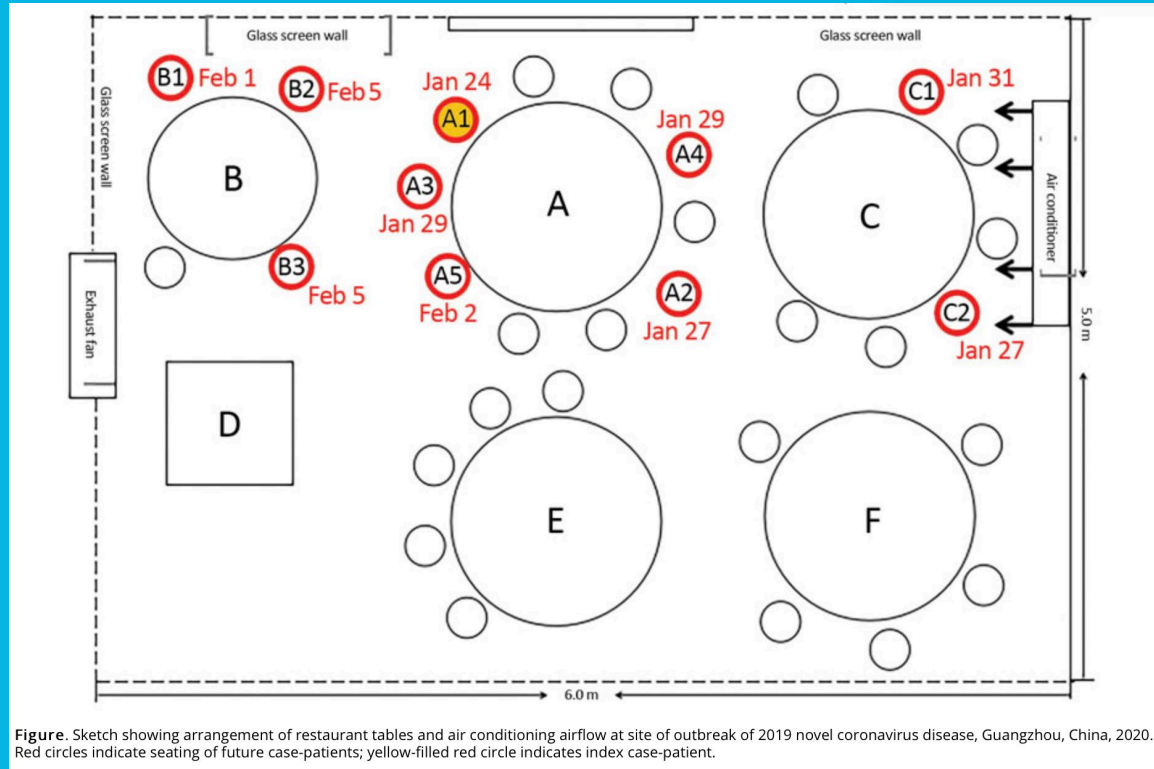
Yes: although symptoms often appear 2-14 days after exposure and that is when they are most contagious, transmission might occur a few days before the illness begins.



Just How Contagious Is COVID?

- A report of an outbreak among restaurant diners from China gives us an example to consider.
- 3 unrelated families were having lunch at a restaurant at the same time.
- 1 person at one of the tables developed symptoms later that day but was not coughing when dining.
- This person, 4 others at her table, 3 people at a nearby table, and 2 people at another nearby table were all diagnosed with COVID-19 in less than 2 weeks.

Tables in this air-conditioned restaurant were 3 feet apart



Persistence Of Coronavirus On Inanimate Surfaces

- Remains infectious from 2 hours up to 9 days, depending on the surface material
- Persists for more days at lower temperatures
- Persistence also longer if more of the virus contaminates the surface
- High humidity probably allows the virus to survive longer
 - We might lower the virus' survival indoors by lowering humidity

Persistence Of Coronaviruses On Different Types Of Inanimate Surfaces

Type of surface	Virus	Strain isolate	Inoculum (viral titer)	Temperature	Persistence
Steel	HCoV	Strain 229E	10^3	21°C	5 days
Aluminum	HCoV	Strains 229E and OC43	5×10^3	21°C	1-8 hours
Glass	HCoV	Strain 229E	10^3	21°C	5 days
Plastic	HCoV	Strain 229E	10^7	Room temp	2-6 days
PVC	HCoV	Strain 229E	10^3	21°C	5 days
Surgical glove (latex)	HCoV	Strain 229E	5×10^3	21°C	≤ 8 hours
Ceramic	HCoV	Strain 229E	10^3	21°C	5 days

Inactivation Of Coronaviruses By Different Types Of Biocidal Agents In Carrier Tests							
Biocidal agent	Concentration	Virus	Strain / isolate	Volume / material	Organic load	Exposure time	Reduction of viral infectivity (log ₁₀)
Ethanol (rubbing alcohol)	6/ \$	HCoV	Strain 229E	20 µl / stainless steel	5% serum	1 min	= 2-/-
Benzalkonium chloride	/ -/ 3\$	HCoV	Strain 229E	20 µl / stainless steel	5% serum	1 min	; 2-/-
Sodium hypochlorite (commonly known as liquid bleach)	/ -4\$	HCoV	Strain 229E	20 µl / stainless steel	5% serum	1 min	= 2-/-
Sodium hypochlorite	/ -0\$	HCoV	Strain 229E	20 µl / stainless steel	5% serum	1 min	= 2-/-
Glutardialdehyde (sold under the brand Glucol)	1\$	HCoV	Strain 229E	20 µl / stainless steel	5% serum	1 min	= 2-/-

Immediately Report to Your Local Health Department...

- Cases or clusters you learn about in any congregate living facility including long-term care, jail/prisons, group homes, and homeless shelters

Where Are We Going?



As case counts decline, policies on re-opening the economy and living a “new normal” will be guided by several factors

- Ability to determine **who has COVID** and needs isolation
- Ability to **identify close contacts** who need monitoring and maybe quarantine
- Ability to determine **who is immune** (past infection)
- **Regional burden** of disease
- **Public compliance** with prevention measures

What Might A “New Normal” Look Like

Until we get an effective safe vaccine:

- Continue social distancing for highest risk persons based on mortality risk factors
 - Elderly
 - Diabetes
 - Hypertension, and other conditions
- Open businesses in stages with modifications
 - Fever and symptoms screening
 - Masks for all when near others
 - Enhanced access to hand hygiene
 - Spacing out (restaurants, theaters, stadiums)
 - Disposable (paper) menus
 - Many in person meetings will continue to be held online
 - Airplanes may reduce seats available and enhance airflow

Hopeful News

- A Japanese drug may be effective at treating COVID-19
- **Favipirivir** (Avigan)
- Preliminary data suggests most useful to treat disease early, before becoming critically ill
- X-rays improved in about 91% of the patients who were treated versus in 62% in those not treated
- A US small clinical trial will begin in Massachusetts

This Is Temporary!

- This is all Temporary. The worst is probably occurring now.
- Our knowledge about this virus is improving every week.
- We need to be patient with those who are trying to provide guidance in the setting of something historically new. Guidance will change.
- Beware letting fear, discomfort, and exhaustion with this situation allow you to justify dismissing good advice or exercising reasoned judgement.
- Most people who have gotten the disease have or will recover and probably have some protection going forward.

Stress and Anxiety During Social Distancing

- Some of us are alone, keeping the TV or phone screen active all day.
- Some of us are living with children who are restless and bored.
- Some of us are living with adolescents or college students who are in conflict with their parents as we spend more time together than ever before.
- Some of us are trying to work in a home environment with distractions from others.
- Some of us are leaving the house every day to perform essential services like healthcare or grocery store work – concerned for our risk to ourselves and others.
- Most of us are watching television and hearing bad news every day.

Remember This Is Temporary

- We will get through this
- Treatment studies will help the sick
- A vaccine will be tested
- Expect another wave of cases at some point – don't be surprised – plan for it!
- Check on your neighbors
- Make use of technology to use your support systems (friends, family, or faith-based organizations)
- One day at a time



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Acknowledgments

Sinan Almukhtar, MBBS, MPH

Resources

For more information, please visit the links below or Google search the references:

- Centers for Disease Control and Prevention (CDC)
www.cdc.gov/coronavirus/2019-ncov/index.html
- Frequently asked questions and answers about COVID-19
www.cdc.gov/coronavirus/2019-ncov/faq.html
- Morbidity and Mortality Weekly Report (MMWR)
www.cdc.gov/mmwr/Novel_Coronavirus_Reports.html
- World Health Organization (WHO)
www.who.int/docs/default-source/coronaviruse/20200302-sitrep-42-covid-19.pdf?sfvrsn=d863e045_2
- Emergency Responders: Tips for taking care of yourself
emergency.cdc.gov/coping/responders.asp
- Coronavirus (COVID-19) across the world
github.com/CSSEGISandData/COVID-19
- Johns Hopkins COVID19 resource center
coronavirus.jhu.edu/map.html
- New England Journal of Medicine March 17, 2020
Correspondence DOI: 10.1056/NEJMc2004973
- Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents. G. Kampf, D. Todt, S. Pfaender, E. Steinmann. J Hospital Infection. DOI: <https://doi.org/10.1016/j.jhin.2020.01.022>
- Lu J, Gu J, Li K, Xu C, Su W, Lai Z, et al. COVID-19 outbreak associated with air conditioning in restaurant, Guangzhou, China, 2020. Emerg Infect Dis. 2020 Jul



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