COVID-19 Science and Medicine Updates

Compiled by University of Maine faculty and students

Maine Updates – July 3, 2020
From Maine CDC:
https://www.maine.gov/dhhs/mecdc/infectious-disease/epi/airborne/coronavirus.shtml

A change in how Maine CDC reports data:

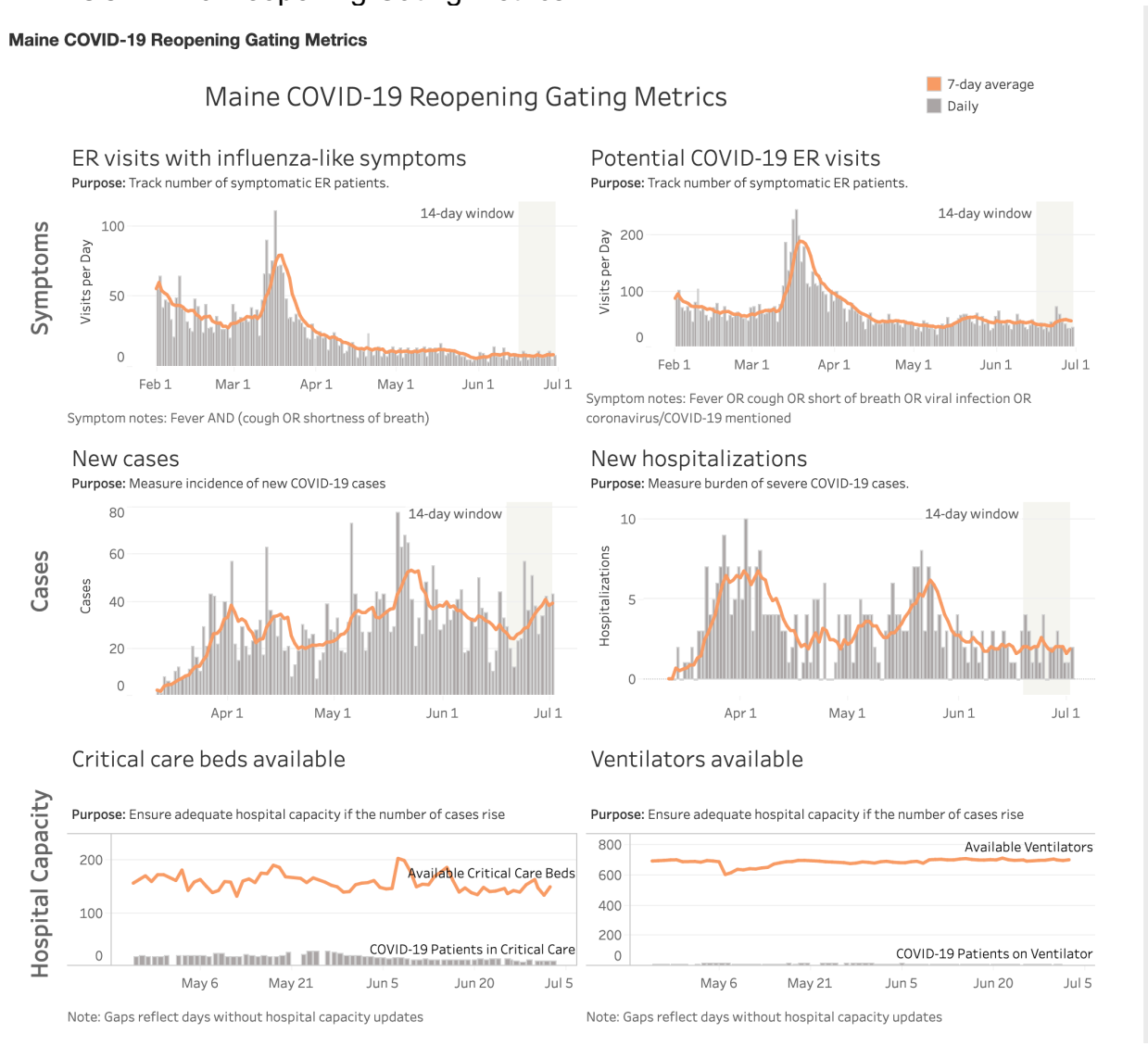
On June 23, 2020, Maine CDC changed how we show the dates of cases, deaths, recoveries, and hospitalizations. We now show events on the day they occurred, instead of the day the event was reported to us. As we investigate cases, we learn things that help our understanding of when events such as hospitalizations and recoveries occurred. For example, if a person reports on Friday that they recovered Wednesday, we now show this recovery on Wednesday. We do this to give the public a better picture of the spread of COVID-19 in the state.

This means updates on June 24 with data as of June 23 at 11:59 PM will be on trend charts on June 23. With this change, you may see that recoveries are higher for previous days. That is because our knowledge of who is released from isolation becomes better every day, as case investigators follow up with people with COVID-19.

New Link: https://www.maine.gov/dhhs/mecdc/infectious-disease/epi/airborne/coronavirus/data.shtml

Data updated July 3, 2020 (data through July 2, 11:59pm)
Total Cases: 3373
Confirmed cases: 2985
Probable cases: 388
Deaths: 105
Hospitalizations: 358
Recovered: 2731
Case rate (per 10k people) – NEW: 25.2
(These are statewide totals, county data also listed on this page)

NEW: COVID-19 Reopening Gating Metrics:



<u>Other data available at this site:</u>

- COVID-19 Case Trends
- COVID-19 Cases by Zip Code
- Tables of All Reported Tests vs Labs Reporting Electronically
- Table of Hospital Use and Capacity
- Table of Cumulative Cases by Age, Race/Ethnicity, Sex

Online Dashboard Links:

Desktop version:

https://arcg.is/1Knarr

Mobile version:

https://arcg.is/5qGGr

NEWS FROM MAINE:

Now found here on Maine CDC website: https://www.maine.gov/dhhs/mecdc/infectious-disease/epi/airborne/coronavirus/index.shtml
And at Governor Mills' COVID-19 website here: https://www.maine.gov/covid19/

July 1: Visitors from CT, NY, NJ also exempt from 14-day quarantine or negative test requirement starting July 3 (in addition to previous exemptions for NH and VT)
https://www.maine.gov/governor/mills/news/improving-public-health-metrics-mills-administration-exempts-connecticut-new-york-and-new

June 22: indoor bar service will NOT resume in Maine, as originally planned for July 1
https://www.maine.gov/governor/mills/news/protect-public-health-mills-administration-postpones-reopening-indoor-bar-service-across-maine

An executive order coming soon will increase mask-wearing requirements, including requirements for businesses to enforce mask-wearing indoors
https://www.pressherald.com/2020/07/01/maine-reports-41-new-cases-of-covid-19-no-additional-deaths/

Increase in Maine virus cases linked to spread among younger people
https://bangordailynews.com/2020/07/01/news/new-increase-in-maine-virus-cases-linked-to-spread-among-younger-people/

Bangor's "Mask Up for ME" Public Awareness Campaign, created through a partnership of local health care organizations called Community Health Leadership Board, aims to encourage people wearing face coverings to limit the spread of COVID-19:
https://bangordailynews.com/2020/07/04/news/bangor/bangors-face-covering-campaign-gains-statewide-attention-and-money/

OTHER COVID-19 NEWS:

COVID-19 By The Numbers:

1. Age:

American casualties are younger than ones in Europe

- The US has a younger median age
- The US has a less healthy population overall
- The median age of a COVID-19 sufferer in the US is 48

https://www.economist.com/graphic-detail/2020/06/24/when-covid-19-deaths-are-analysed-by-age-america-is-an-outlier

- A significant increase in COVID-19 severity starting around age 45, according to CDC data

  https://www.cdc.gov/nchs/nvss/vsrr/covid_weekly/index.htm
- California data indicate a big jump in cases at the 35-49 age group

https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/COVID-19/COVID-19-Cases-by-Age-Group.aspx

- Global data by age can be found here:
https://ourworldindata.org/mortality-risk-covid

- People in their 20s, 30s, and 40s make up a growing proportion of COVID-19 cases
https://www.nytimes.com/2020/06/25/us/coronavirus-cases-young-people.html

2. Health Disparities:

Navajo Nation surpasses New York state for highest Covid-19 infection rate in the US – CNN

- "The Navajo Nation, which spans parts of Arizona, New Mexico and Utah, reported a population of 173,667 on the 2010 census. As a result, with 4,002 cases, the Native American territory has 2,304.41 cases of Covid-19 per 100,000 people.
- By contrast, New York state now has a rate of 1,806 cases per 100,000 and New Jersey is at 1,668 cases per 100,000, according to data from Johns Hopkins University."

https://www.cnn.com/2020/05/18/us/navajo-nation-infection-rate-trnd/index.html

The fullest look yet at the racial inequity of Coronavirus:

- Cases per 10,000 people:
  - All: 38
  - White: 23
  - Black: 62
  - Latino:73

https://www.nytimes.com/interactive/2020/07/05/us/coronavirus-latinos-african-americans-cdc-data.html

3. How many of us have actually caught the virus?

How many of us are likely to have caught the coronavirus so far? | New Scientist

- Up to 25% of the US population may have had coronavirus already, but estimates vary widely with current data

https://www.newscientist.com/article/mg24632873-000-how-many-of-us-are-likely-to-have-caught-the-coronavirus-so-far/

4. Fatality Rate:

- Infection fatality rate currently estimated around 0.5-1% with current data. So, 5-10 people per 1000 globally will get COVID-19.

https://www.nature.com/articles/d41586-020-01738-2

5. COVID-19 may have affected 10 times more people than originally thought

- CDC director indicates 5-8% of the population may have had disease already
- Instead of the 2.3 Million cases reported in the US so far, it may be closer to 20 Million cases thus far

https://www.usnews.com/news/health-news/articles/2020-06-25/cdc-coronavirus-has-infected-10-times-more-people-than-previously-thought

What is Herd Immunity and How Can We Achieve It With COVID-19?

When the coronavirus that causes COVID-19 first started to spread, virtually nobody was immune.

Meeting no resistance, the virus spread quickly across communities. Stopping it will require a significant percentage of people to be immune. But how can we get to that point?

What is herd immunity?

When most of a population is immune to an infectious disease, this provides indirect protection—or herd immunity (also called herd protection)—to those who are not immune to the disease.

For example, if 80% of a population is immune to a virus, four out of every five people who encounter someone with the disease won't get sick (and won't spread the disease any further). In this way, the spread of infectious diseases is kept under control. Depending how contagious an infection is, usually 70% to 90% of a population needs immunity to achieve herd immunity.

How have we achieved herd immunity for other infectious diseases?

Measles, mumps, polio, and chickenpox are examples of infectious diseases that were once very common but are now rare in the U.S. because vaccines helped to establish herd immunity. We sometimes see outbreaks of vaccine-preventable diseases in communities with lower vaccine coverage because they don't have herd protection. (The 2019 measles outbreak at Disneyland is an example.)

What will it take to achieve herd immunity with SARS-CoV-2?

As with any other infection, there are two ways to achieve herd immunity: A large proportion of the population either gets infected or gets a protective vaccine.

Based on early estimates of this virus's infectiousness, we will likely need at least 70% of the population to be immune to have herd protection.

- In the worst case (for example, if we do not perform physical distancing or enact other measures to slow the spread of SARS-CoV-2), the virus can infect this many people in a matter of a few months. This would overwhelm our hospitals and lead to high death rates. It is predicted to lead to upwards of 2 million deaths in the US alone (Randolph and Berrero, 2020; https://doi.org/10.1016/j.immuni.2020.04.012).
- In the best case, we maintain current levels of infection—or even reduce these levels—until a vaccine becomes available. This will take concerted effort on the part of the entire population, with some level of continued physical distancing for an extended period, likely a year or longer, before a highly effective vaccine can be developed, tested, and mass produced.
- The most likely case is somewhere in the middle, where infection rates rise and fall over time; we may relax social distancing measures when numbers of infections fall, and then may need to re-implement these measures as numbers increase again. Prolonged effort will be required to prevent major outbreaks until a vaccine is developed. Even then, SARS-CoV-2 could still infect children before they can be vaccinated or adults after their immunity wanes. But it is unlikely in the long term to have the explosive spread that we are seeing right now because much of the population will be immune in the future.

Why is getting infected with SARS-CoV-2 to "get it over with" not a good idea?

With some other diseases, such as chickenpox before the varicella vaccine was developed, people sometimes exposed themselves intentionally as a way of achieving immunity. For less severe diseases, this approach might be reasonable. But the situation for SARS-CoV-2 is very different: COVID-19 carries a much higher risk of severe disease and even death.

The death rate for COVID-19 is unknown, but current data suggest it is 10 times higher than for the flu. It's higher still among vulnerable groups like the elderly and people with weakened immune systems. Even if the same number of people ultimately get infected with SARS-CoV-2, it's best to space those infections over time to avoid overwhelming our doctors and hospitals. Quicker is not always better, as we have seen in previous epidemics with high mortality rates, such as the 1918 Flu pandemic.

Adapted from a Q&A with Johns Hopkins faculty Gypsyamber D'Souza is a professor and David Dowdy an associate professor in Epidemiology at the Bloomberg School posted at:
https://www.jhsph.edu/covid-19/articles/achieving-herd-immunity-with-covid19.html

https://www.washingtonpost.com/health/2019/08/24/tourist-infected-with-measles-visited-disneyland-other-southern-california-hotspots-mid-august/

https://globalepidemics.org/key-metrics-for-covid-suppression/

https://www.sciencemag.org/news/2020/05/why-do-some-covid-19-patients-infect-many-others-whereas-most-don-t-spread-virus-all

https://www.nature.com/articles/d41591-020-00026-w

https://www.nature.com/articles/d41586-020-01891-8

https://www.nature.com/articles/d41586-020-01834-3

By Rob Wheeler, UMaine Scientific Advisory Board
https://umaine.edu/president/science-advisory-board/

Read More About Herd Immunity:
Have deaths from COVID-19 in Europe plateaued due to herd immunity? - The Lancet
https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31357-X/fulltext

The Maine CDC has changed its definition of "close contact" to mirror U.S. CDC guidance.

A close contact is now being defined as "someone who was within 6 feet of an infected person for at least 15 minutes starting from 2 days before illness onset (or, for asymptomatic patients, 2 days prior to positive specimen collection) until the time the patient is isolated." Previously the Maine CDC was using "within 6 feet of an infected person for at least 30 minutes." This may mean more people being identified as close contacts during contact tracing now.

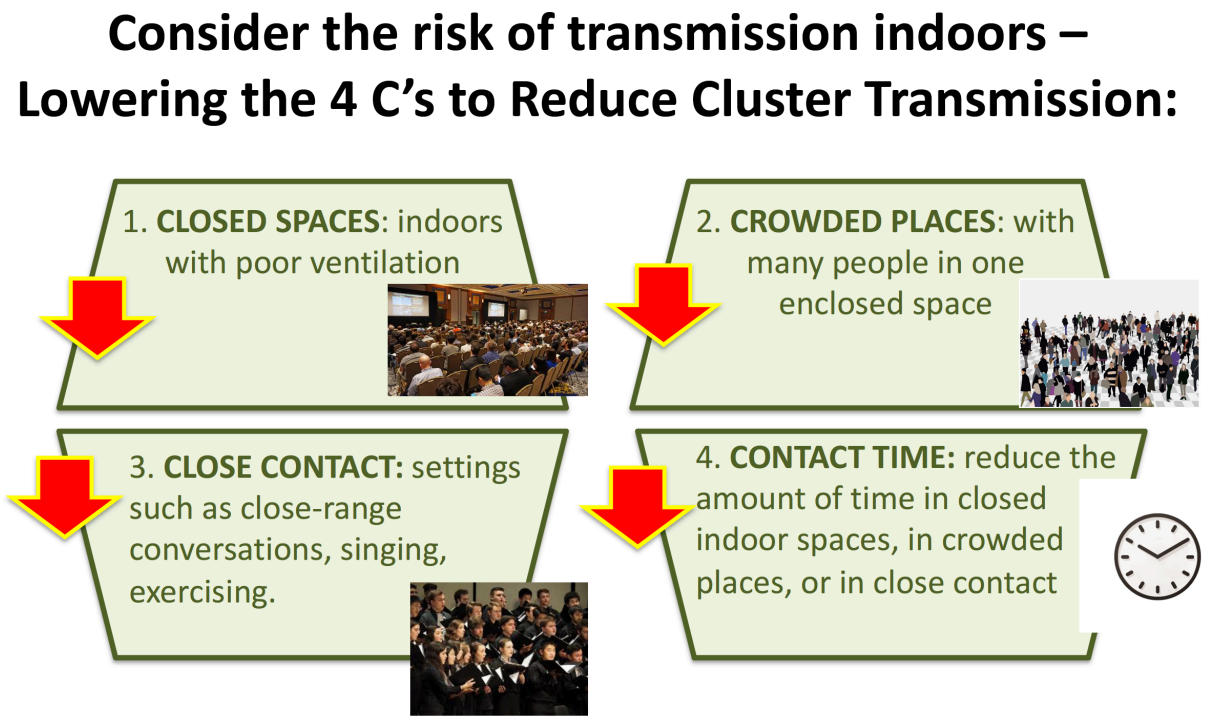
Also, the U.S. CDC guidance clearly states that "This determination should be made irrespective of whether the person with COVID-19 or the contact were wearing a cloth face covering at the time of exposure." So, while there is evidence that the use of face coverings can reduce the risk of transmission, that's not being factored in to who is being considered a close contact at this point.

More information on the U.S. CDC website here: https://www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/contact-tracing-plan/investigating-coivd-19-case.html#anchor_15900
and here: https://www.cdc.gov/coronavirus/2019-ncov/php/public-health-recommendations.html

Information provided by Sara Huston, UMaine Scientific Advisory Board
https://umaine.edu/president/science-advisory-board/

The Four C's: Reducing Transmission Indoors

As more than 200 leading scientists are preparing to submit a letter to the WHO classifying SARS-CoV-2 as an airborne virus, it is important to consider the Four C's to reduce transmission indoors. The graphic below was based on a public health campaign in Japan, and re-worked by the UMaine Science Advisory Board.
https://www.nytimes.com/2020/07/04/health/239-experts-with-one-big-claim-the-coronavirus-is-airborne.html



Graphic by Kristy Townsend, UMaine Scientific Advisory Board
https://umaine.edu/president/science-advisory-board/

Worth a Read: The following articles in lay or science news publications do a good job of explaining the science:

Using science to pick out your mask:
https://fivethirtyeight.com/features/what-to-look-for-in-a-face-mask-according-to-science/

Key Takeaways:

- WHO recommending 3 layers of cloth
- More thread count isn't necessarily better
- Do not use masks with an exhalation vent/valve

Interactive Visual Special from Scientific American: Inside the Coronavirus
https://www.scientificamerican.com/interactive/inside-the-coronavirus/

- Shows visuals of how the virus invades, how the immune system responds, how drugs and vaccines could work to fight the virus and its effects in the body

How Coronavirus Escapes the Evolutionary Trade-Off that Helps Keep Other Pathogens in Check:
https://theconversation.com/how-the-coronavirus-escapes-an-evolutionary-trade-off-that-helps-keep-other-pathogens-in-check-140706

What parents should know as kids return to babysitters, daycares and camps:
https://www.propublica.org/article/what-parents-should-know-about-coronavirus-as-kids-return-to-babysitters-day-cares-and-camps

PBS Newshour: Essential Coronavirus FAQ
https://www.pbs.org/newshour/health/the-essential-coronavirus-faq

How to avoid the virus as the world reopens
https://www.ft.com/content/2418ff87-1d41-41b5-b638-38f5164a2e94

COVID-19 RESOURCES AND RECOMMENDED READINGS:

Clinical and Administrative Guidance on COVID-19 shared by UW Hospitals:
As an early hot-spot in the US, Washington has been providing leadership and guidance around handling clinical cases of COVID-19. Documents are shared at this site, and constantly updated:
https://covid-19.uwmedicine.org/Pages/default.aspx

UMaine's Fogler Library COVID-19 Lib Guide:
https://libguides.library.umaine.edu/coronavirus/maine

Calculate your Pandemic Footprint, based on your behaviors:
https://www.pandemic-footprint.com/

NIH is Enrolling for a New Study to Quantify Undetected Cases of Coronavirus
Blood samples from healthy volunteers are needed, learn more here:
https://www.niaid.nih.gov/news-events/nih-begins-study-quantify-undetected-cases-coronavirus-infection

Maine Small Business Resources during COVID
http://www.mainestreamfinance.org/covid-19-updates/small-business-updates-and-resources-during-covid-19-outbreak/

COVID-19 Literature Searches MLA Net (Medical Library Association)

https://www.mlanet.org/page/covid-19-literature-searching

CDC Research Guide
https://www.cdc.gov/library/researchguides/2019novelcoronavirus/databasesjournals.html

LitCOVID:
https://www.ncbi.nlm.nih.gov/research/coronavirus/

Nature – Pick of the papers (COVID)
https://www.nature.com/articles/d41586-020-00502-w

Mayo Clinic
https://news.mayocliniclabs.com/covid19/

Norwegian evidence map may be one of the world's most systematic overviews of research on COVID-19

https://sciencenorway.no/epidemic-virus/norwegian-evidence-map-may-be-one-of-the-worlds-most-systematic-overviews-of-research-on-covid-19/1676520

COVID-19 Diagnostic Criteria
https://www.idsociety.org/practice-guideline/covid-19-guideline-diagnostics/

NIH's Coronavirus page:
https://www.nih.gov/coronavirus

Science/AAAS Coverage: Tools to stay on top of COVID-19 research papers
https://www.sciencemag.org/news/2020/05/scientists-are-drowning-covid-19-papers-can-new-tools-keep-them-afloat

Infectious Disease Society of America – COVID-19 Resource Center:
https://www.idsociety.org/public-health/COVID-19-Resource-Center/

BioME Panel of Maine Experts on COVID-19 (May 28, 2020) – video:
https://biomaine.org/events/webinar-on-demand-the-science-of-covid-19/

REPUTABLE ONLINE RESOURCES WITH COVID-19 DATA:

IHME Health Data and Projections:
https://covid19.healthdata.org/united-states-of-america
https://covid19.healthdata.org/united-states-of-america/maine

- *Now including more data for Maine!*

Johns Hopkins
https://coronavirus.jhu.edu/map.html

Comparison of COVID testing results, false positive and false negative rates across platforms:
https://covidtestingproject.org/

COVID-19 Projections Using Machine Learning. Taking a data-driven approach rooted in epidemiology to forecast infections, deaths, and recovery timelines of the COVID-19 / coronavirus epidemic in the US and around the world
https://covid19-projections.com/about/

COVID-19 Simulator
https://www.covid19sim.org/

Questions about the production of these bulletins?
Contact kristy.townsend@maine.edu

All bulletins posted publicly online, with a full list of contributors, at:
https://umaine.edu/coronavirus/umaine-science-and-medicine-updates/