



COVID-19 Science and Medicine Updates

Compiled by University of Maine faculty and students

Maine Updates – May 25, 2020

From Maine CDC:

<https://www.maine.gov/dhhs/mecdc/infectious-disease/epi/airborne/coronavirus.shtml>

Data updated May 25, 2020 at 11:30AM:

Total Cases: 2074

Confirmed cases: 1858

Probable cases: 216

Recovered: 1290

Hospitalizations: 257

Deaths: 78

Maine CDC, as with the U.S. CDC, is now listing test results in table-format, with antibody and PCR-based tests listed separately:

– [View a Table of All Reported COVID-19 Tests in Maine](#) **New as of 5/20/2020**

Result	Antibody	PCR	Total
Positive	177	2,201	2,378
Negative	2,704	35,450	38,154
Indeterminate	3	74	77
Total	2,884	37,725	40,609

Maine CDC will publish the total number of tests once a week on Wednesdays. Because of the number of outside labs that are testing samples from Maine, it is not currently possible to post a complete count of tests on a daily basis.

Updated May 20, 2020 at 2:30 PM

Penobscot County Data from Maine CDC (as of May 25):

Cases: 99

Recovered: 83

Deaths: 1

Online Dashboard Links:

Desktop version:

<https://arcg.is/1Knarr>

Mobile version:

<https://arcg.is/5qGGr>

News from Maine:

- **Maine Eliminates Testing Prioritization; Expands Testing to Anyone Suspected of Having COVID-19**

<https://www.maine.gov/governor/mills/news/maine-eliminates-testing-prioritization-expands-testing-anyone-suspected-having-covid-19-2020>

This change removes the previous criteria that prioritized testing for the individuals at highest risk. With the expanded testing capabilities due to IDEXX test kits in Maine, this prioritization is no longer necessary.

- **Mills Administration Updates Plan to Restart Maine's Economy**

<https://www.maine.gov/governor/mills/news/mills-administration-updates-plan-restart-maines-economy-2020-05-19>

Changes include:

- 1) Maine residents may enjoy campgrounds beginning Memorial Day weekend
- 2) The Administration is delaying the full reopening of gyms, fitness centers, and nail salons in light of emerging research and experiences in other states of COVID-19 transmission related to these establishments.

- **Governor Mills Announces New Major Federal Funding Will Be Used To Expand Lab and Testing Capacity Across Maine**

<https://www.maine.gov/governor/mills/news/governor-mills-announces-new-major-federal-funding-will-be-used-expand-lab-and-testing>

This \$52.7 million federal grant from the U.S. CDC will be used toward three primary goals:

□□□ **Expanding the State's Lab Capacity:** The State is aiming to expand, both in the short-and longer-term, capacity at the State's Health and Environmental Testing Laboratory (HETL), including expanding physical space and increasing staffing to increase the number of testing options. In the longer-term, the State intends to accelerate the construction of its new laboratory in Augusta, which broke ground prior to COVID-19. Investing in a state-of-the-art laboratory facility in Maine will facilitate COVID-19 response, innovation, and public health generally.

2. **Bolstering Rural Hospital Lab Capacity:** COVID-19 has underscored the long-standing challenges rural residents face in accessing timely health care. Building on the Mills Administration's initiative on [rural health transformation](#), the Maine Center for Disease Control and Prevention (Maine CDC) will work with rural hospitals to expand laboratory capacity to help them respond to COVID-19 and other infectious disease outbreaks.

3. **Establishing Drive-Through Testing Sites:** As the State lab ramps up testing capacity, the State of Maine also aims to increase the number of testing sites outside of health care office settings. Currently, Maine has [38 testing sites](#) outside of office settings. The State is exploring options to partner with businesses and others to establish new so-called drive-through "swab and send" sites in Maine. This would allow primary care providers to recommend patients get testing in sites that are both accessible and safe

Other COVID-19 News:

As U.S. COVID-19 deaths pass 100,000, here are some 'fast facts':

<https://ourworldindata.org/coronavirus-usa?country=USA>

1. **COVID-19** is the disease caused by the novel coronavirus called SARS-CoV-2
2. Other viruses in the same **coronavirus family** have included SARS, MERS, and some common cold viruses
3. COVID-19 appears to be **more deadly** than other viruses, including influenza (which already increases mortality each flu season). Estimates are that COVID-19 is 4-20x more deadly, but until testing is widespread to allow for more accurate calculations of mortality, these numbers are only estimates.
4. Since **SARS-CoV-2** had never been in the human population before, nobody had protective antibodies, there were no available vaccines or treatments, and healthcare was uncertain what clinical complications would arise and how best to treat them. Even months later, new clinical complications like stroke and inflammatory disease in children are coming to light. **Changes in clinical practices** have come from clinical observations and formal studies, like optimizing ventilation procedures, placing patients in the prone position to decrease intubations, and determining which anti-viral treatments work best (for example: Remdesivir looks promising, convalescent serum may work but needs more testing, hydroxychloroquine is not successful and increases rate of death).
5. Numerous aspects of **viral transmission and infection** are still unknown and being actively researched, while other information has become more clear from the existing data
6. **SARS-CoV-2 is transmitted** via respiratory droplets, and potentially also smaller aerosols that may travel further in the air. These droplets/aerosols are released by coughing, sneezing, and potentially also breathing and talking. The virus contained in these droplets could land on surfaces and survive as 'fomites' that could remain active virus for hours to days, depending on the surface materials. Ventilation, as well as

how many people are in close proximity and for how long, are likely also important factors in transmission.

7. Based on what is known about transmission, **procedures** like social and physical distancing (including reducing time indoors in close proximity with other people), wearing a cloth face covering, disinfecting commonly touched surfaces, not touching your face, and practicing good hand hygiene, are key to reducing transmission of SARS-CoV-2. The risk of infection will never be zero, but these precautions will each lower your risk, and together can lower your risk significantly.

8. **Cloth face coverings and respirators** (like N95 masks) are still being studied for efficacy. Cloth face coverings do appear to reduce the spread of droplets and aerosols that could be carrying virus by creating an additional barrier, but the material (2-3 layers of tightly woven, breathable cotton) and design of the mask (snugly fitting around mouth and nose), as well as whether or not it is kept clean and consistently worn properly, will affect the success. N95 masks, which can protect the wearer from the virus, may actually still release the virus through the vent, and thus are not recommended in some settings.

9. With COVID-19, **even people who are infected but appear healthy can be contagious**. This may be around 30-50% of people, but data continue to be analyzed. Patients with active infection may not have symptoms because they are pre-symptomatic (they haven't started symptoms yet, given that the incubation period is 2-14 days), or will remain asymptomatic (no symptoms) during the entire period of infection. In other cases, people develop some symptoms, but not all of the classical symptoms like fever. The CDC keeps an updated list of known COVID-19 symptoms. It is not yet clear what the full timeline is for being contagious with COVID-19, and this is still being actively investigated. Thus, behavioral changes as listed above are good precautions in order to safely assume that you may have COVID-19, and anyone around you may have it as well.

10. It appears that nearly 100% of people with previous SARS-CoV-2 infection will **develop antibodies**, but it is still unclear what this means for immunity. Immunity may be similar to the common cold or flu, where you can still get the virus again after a certain amount of time, or may get it again but less severely. Or the immunity may be like that for smallpox, where previous infection confers full protection from re-infection. Research is ongoing in this area.

11. The strategy of **test-trace-isolate** has been successful across the globe at reducing transmission of this virus. This means: widespread diagnostic testing, contact tracing of positive cases and quarantining anyone in contact with an infected patient, and isolating those with active infection to reduce spread of viral particles.

12. To do this properly, PPE and materials, reagents and equipment for diagnostic testing **need to be more widely available**.

13. Certain people are at **higher risk of COVID-19 complications and increased mortality** with this disease. Some of these risk factors have become clear, like being immunocompromised, having respiratory or kidney disease, obesity/diabetes, or being older in age. However, there are many examples of cases with complications and death

in individuals who otherwise appear healthy. In addition to these health risks, socioeconomic factors also clearly increase COVID-19 severity. (see coverage below)

14. It will take time **to develop a vaccine** that is 1) safe, 2) effective for large percentages of the population), 3) can be manufactured in high enough numbers, and 4) can be distributed and utilized widely enough to confer 'herd immunity' (or, the combination of those with either antibodies from a prior infection, or protection with a vaccine, at about 70-80% of the population). Herd immunity on its own, without a vaccine, does not appear to be happening, even in populations like Sweden where social/physical distancing have not been as widespread.

(Sources: CDC, WHO, previous Bangor Public Health Bulletins, and the resources listed at the end of this bulletin)

Excess Deaths:

- Since testing rates make it difficult currently to accurately estimate the number of deaths due to COVID-19, an alternative approach is to look at the excess deaths being reported due to all causes in the months during this pandemic, and comparing to the same timeframes as last year
- These estimates indicate that COVID-19 death rates are actually higher than being reported
- Analyzing excess deaths is complicated, when a pandemic is accompanied by numerous other societal changes that may also affect death rates (less driving and car accident fatalities, but also fewer people seeking healthcare for non-COVID illness)
- Medical examiner reports are helping to report likely COVID-19 deaths
- <https://www.scientificamerican.com/article/how-covid-19-deaths-are-counted1/>
- A recent study in Sweden found 75% higher death rates for males and 50% higher for females over the previous years
<https://www.medrxiv.org/content/10.1101/2020.05.10.20096909v1>
- From a similar study in Italy: "estimates suggest that the number of infected people greatly exceeds the number of positive tests, e.g., by a factor of 35 in Lombardia."
<https://www.medrxiv.org/content/10.1101/2020.04.15.20067074v3>

Viral particles in speaking droplets can remain in the air for 8-14 minutes

- Using laser light scattering measurements, loud speaking was shown to generate thousands of oral fluid droplets per second, and in a closed, stagnate environment these droplets remained in the air for 8-14min.
- This may represent an important route of transmission for asymptomatic individuals.
<https://www.pnas.org/content/early/2020/05/12/2006874117>

Health Disparities and COVID-19

- COVID-19 is more prevalent in communities of color. For example, in Michigan black people make up 14% of the population, but account for 32% of COVID-19 cases and 41% of deaths.
- These observations are being made in the US and the UK, and appear to have underlying socioeconomic implications
<https://www.nature.com/articles/d41586-020-01470-x>

- Racial disparities are even being observed in Maine, with testing data reported by race and ethnicity starting on April 29 (*notably we were the last state to report data this way and remain the only state not reporting deaths by race and ethnicity*)
<https://www.pressherald.com/2020/05/16/racial-disparity-in-maines-covid-19-cases-deepens/>
- According to the Portland Press Herald: “Nationally, blacks/African Americans and whites each account for nearly 39 percent of hospitalizations, according to U.S. Centers for Disease Control data. However, blacks and African Americans account for only 13.4 percent of the population.”
- Black Mainers are getting COVID-19 at 10x the rate of white Mainers
<https://bangordailynews.com/2020/05/24/news/state/black-mainers-are-getting-the-coronavirus-more-than-10-times-the-rate-of-white-mainers/>

Clinical Settings Create a Culture of Safety – an example for the rest of us

Debbie Saber, PhD, RN, CCRN-K

- As we work towards a new normal during the COVID-19 pandemic, behavioral changes are needed. Much like registered nurses that constantly practice consistent and deliberate behaviors to ensure the safety of patients and themselves, behaviors in response to the COVID-19 pandemic require adoption of behavioral modifications.
- For example, in healthcare, standard precautions are used with all patient care and include hand hygiene and the use of PPE when infection spread is possible (Center of Disease Control, 2016). These behaviors are practiced every day with every patient.
- As in healthcare, a culture of safety needs to be adopted by everyone, and this requires behavior modification.
- Culture is described as the beliefs and assumptions that drive behavior (Scott-Cawiezell, Jones, & Moore, 2005). To adopt behavior towards a “new normal” culture, Lewin’s theory of change behavior can be employed to unfreeze behaviors, change behaviors and then refreeze behaviors (Burnes, 2017). Our newly adopted culture of safety will drive change behaviors as we move through this pandemic that include vigilant hand hygiene, face-coverings and social distancing.

References:

Burnes, B. & Bargal, D. (2017). Kurt Lewin: 70 years on. *Journal of Change Management*, 17(2), 91-100. doi: 10.1080/14697017.2017.1299371

Center of Disease Control. (2016). *Standard precaution for all patient care*. Retrieved May 20, 2020 from <https://www.cdc.gov/infectioncontrol/basics/standard-precautions.html>

Scott-Cawiezell, J., Jones, K., & Moore, L. (2005). Nursing home culture: A critical component of sustained improvement. *Journal of Nursing Care Quality*, 20(4), 341-348.

Relevant Reading: Why making a vaccine for SARS-CoV-2 slowly, is really doing it fast

<https://advances.sciencemag.org/content/early/2020/05/22/Sciadv.abc7428.full>

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.mainstreamfinance.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/>

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/>

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