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Impact of a Pandemic on Disease Reporting

The ongoing COVID-19 pandemic has strained public health and healthcare systems. Directly or indirectly this may have impacted the routine reporting of notifiable communicable diseases.

Disease Surveillance

Communicable disease surveillance systems rely on timely and accurate reporting of cases. The systems identify and report cases that meet criteria for state or national case definitions.



Several contingencies must be met for a case to be received by a surveillance system. Most conditions notifiable to the Office of Communicable Disease Epidemiology require laboratory testing for cases to be classified as confirmed. A small number of rare conditions do not require laboratory confirmation, including paralytic polio, shellfish poisoning, and tick paralysis. Some case definitions, such as that for hepatitis A, include probable cases that have consistent symptoms and are epidemiologically linked to confirmed cases; often, laboratory testing is one step away.

In order for a person's illness to meet testing criteria for a case definition, a series of steps are necessary. Generally, symptoms are present and induce a person to seek health care. There are exceptions, including screening of close contacts of a case (for diseases ranging from typhoid to tuberculosis), but typically reported cases are symptomatic. A healthcare visit is necessary for clinical evaluation and patient specimens must be collected in a timely manner for correct diagnostic testing to take place. Laboratory capacity must be available, results must be reported to a public health agency, and the proper investigation must be conducted.

Limitations to surveillance result in underreporting of notifiable conditions. Each year foodborne disease due to a known pathogen is estimated to affect one in thirty persons. In Washington that would amount to 250,000 cases each year while only 2,000 to 3,000 cases of enteric infections are actually reported annually. Surveillance may capture as little as 1% of actual cases. Similarly, reports of hepatitis A are estimated to represent only half the actual number of cases.



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Potential Effects from the COVID-19 Pandemic

The ongoing COVID-19 pandemic had the potential to influence communicable disease reporting at multiple points. While the effects could vary considerably, the results would be expected to reduce the number and the detection of notifiable cases. Included would be changes in exposures, diagnostic testing, reporting to public health agencies, and public health investigations.

Individuals restricting their activities could result in fewer exposures to communicable diseases. Closure of schools and public areas could reduce the risk of exposure to respiratory diseases such as influenza and pertussis. Closure of restaurants could reduce large foodborne disease outbreaks. Reduced domestic and international travel could in turn reduce a wide range of exposures.

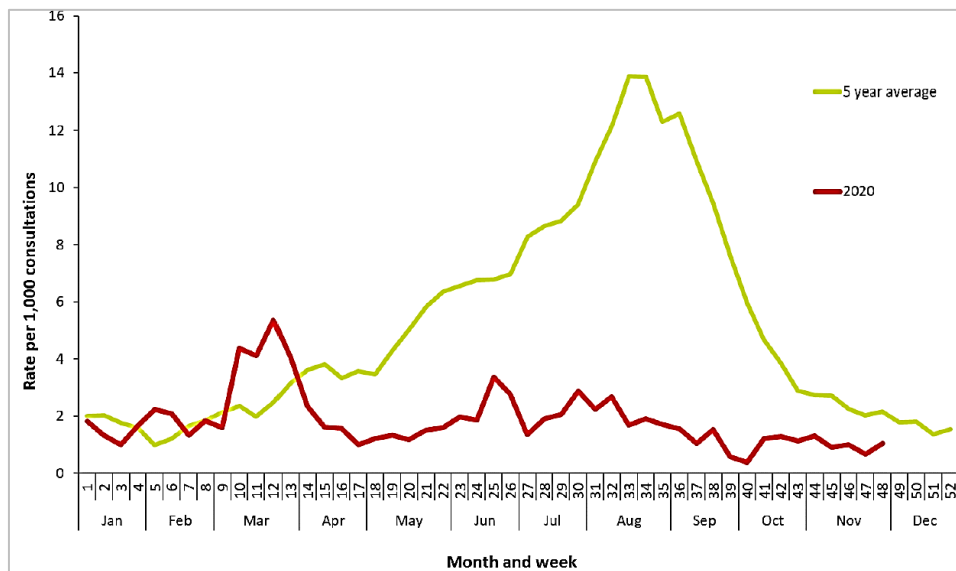
The pandemic led to in fewer in-person visits to healthcare facilities including for non-respiratory symptoms. Telehealth visits may correctly identify that a person has diarrhea and provide the patient with correct interventions such as hydration, but diagnostic testing would not take place as might occur during an in-person visit. Without laboratory testing, the cause of the enteric infection would remain undetermined and unreported. Even for respiratory complaints, a negative test for COVID-19 might be the only result, without more testing for other pathogens such as influenza.

Public health systems have been stretched. Communicable Disease Epidemiology receives 5,000 to 6,000 confirmed or probable case reports in most years, each report reflecting work by the local health jurisdiction. As a crude measure of the pandemic impact on local health jurisdictions, during 2020 there have been over 200,000 confirmed COVID-19 cases reported in Washington or a 40-fold increase in workload. Local health jurisdictions focused on COVID-19 may not have capacity for other routine case investigations. Another impact was suspension of Public Health Laboratories’ capacity for strain typing for a while, interfering with the ability to detect outbreaks.

Impact on Surveillance Data

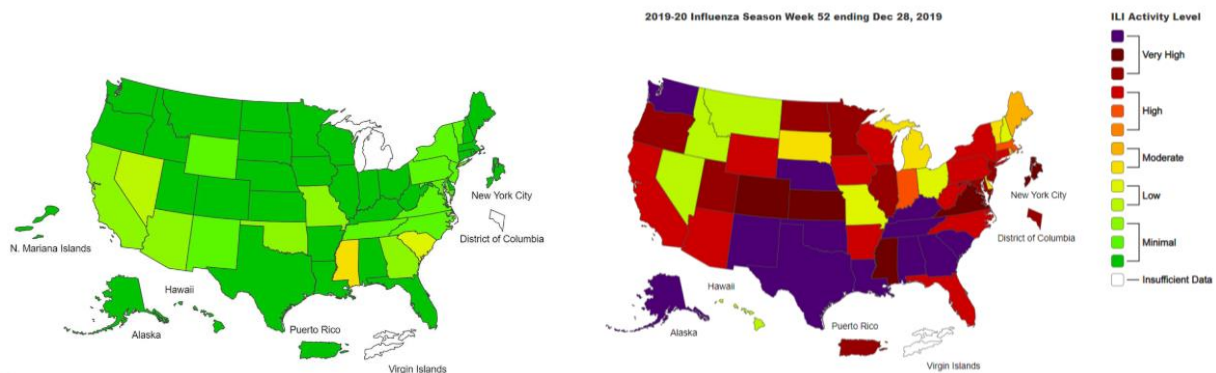
Australia had increased influenza-like illness visits in March of 2020 but much less activity for the remainder of their winter (Figure 1). The decrease could represent fewer cases, less testing, or

Influenza-like illness presentations to sentinel general practitioners, Australia 2020



[https://www1.health.gov.au/internet/main/publishing.nsf/Content/03943F9CD20D2CCCCA2586410078F296/\\$File/National-Influenza-Season-Summary2020.pdf](https://www1.health.gov.au/internet/main/publishing.nsf/Content/03943F9CD20D2CCCCA2586410078F296/$File/National-Influenza-Season-Summary2020.pdf)

decreased reporting, but the atypical surveillance data clearly align with the development of the pandemic. Other countries such as Chile and South Africa also had low detection of influenza even when there were adequate levels of testing, as determined by the percent of respiratory specimens positive for influenza. Recent influenza activity in the United States is also unusually low. The maps below compare weekly influenza activity by state in late December 2020 (left) with activity in late December 2019 (right).



Factors influencing notifiable conditions reporting have a complex interplay, but a combination of reduced exposures, reduced detection, and reduced reporting and investigation may affect results for most surveillance data for 2020 in Washington. Conditions with respiratory transmission in crowded settings, such as influenza or pertussis spreading in schools, may have lower case counts. Fewer people eating out and travelling could result in a reduction in reports for many diseases including enteric infections and malaria. Symptomatic persons who do not seek healthcare will not have necessary tests to confirm infections. Staff at local health agencies jurisdictions may not have resources to do full investigations, leading to abbreviated reports. In the end, it may be necessary to mark 2020 by adding an explanatory footnote to notifiable conditions surveillance results for the year.

Cases for the 2020 reporting year will be closed out in the next couple of months. Local health jurisdictions are encouraged to finish any pending investigations and case reports, thus completing notifiable conditions reporting for an unusual year. Please contact our office (206-418-5500) if we can be of assistance with surveillance reporting.

Resources

Estimated national foodborne cases: <https://www.cdc.gov/foodborneburden/2011-foodborne-estimates.html>

Estimated national hepatitis A cases: <https://www.cdc.gov/hepatitis/statistics/2018surveillance/pdfs/2018HepSurveillanceRpt.pdf>

Australia influenza data: <https://www1.health.gov.au/internet/main/publishing.nsf/Content/ozflu-surveil-season-summary-2020.htm>

Influenza activity in United States, Australia, Chile, and South Africa: https://www.cdc.gov/mmwr/volumes/69/wr/mm6937a6.htm#F1_down

National weekly influenza surveillance: <https://www.cdc.gov/flu/weekly/>