

# COVID-19 and flu, a perfect storm

The world is in uncharted waters for the 2020 respiratory virus season. For the first time in modern history, the Northern Hemisphere faces the prospect of the coronavirus disease 2019 (COVID-19) pandemic and a simultaneous epidemic of seasonal influenza. Each causes life-threatening illness and death, especially in older adults, people with chronic diseases, and other vulnerable populations. How can we prepare for this convergence?

The timing and severity of a COVID-19 wave in the fall and winter are uncertain, but past experiences with the 1918 and 1957 influenza pandemics point to the possibility of a resurgence. Almost nothing is known about the interaction of influenza virus and severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2, the cause of COVID-19) within individuals. Does coinfection increase the risk of severe illness or amplify virus shedding? Few coinfections have been reported from China during the early phase of the pandemic. The Southern Hemisphere influenza season is just beginning, and it may provide some clues as to what can be expected in the Northern Hemisphere later this year.

Much of the population remains susceptible to SARS-CoV-2, and the stress on hospitals will be greatest if the COVID-19 and influenza epidemics overlap and peak around the same time. It is possible that the number of individuals infected with each virus will peak at different times, reducing the peak demand for hospital beds. If a surge in COVID-19 cases occurs this fall, tightening mitigation strategies will be necessary. Social distancing and stay-at-home orders are socially and economically disruptive, but can reduce demand on hospitals and protect vulnerable populations. They will also reduce transmission of other respiratory viruses, including influenza and respiratory syncytial virus. Supplies of personal protective equipment must sufficiently meet the projected demand of a severe influenza season along with COVID-19.

There are important differences in the epidemiology of COVID-19 and seasonal influenza, but symptoms overlap. Molecular diagnostic testing for SARS-CoV-2 is critical for all patients with acute respiratory illness, especially during periods of co-circulation. Rapid-turn-around testing is necessary to distinguish between influenza and COVID-19, guide patient care, and support a comprehensive COVID-19 control program (including isolation of cases and rapid identification and quarantine of contacts). Every effort should be made to ensure

that resources will be available for combined testing for COVID-19 and influenza. These tests should be without charge to patients because they serve a dual purpose for public health and patient care.

We do not yet have a COVID-19 vaccine, but safe and moderately effective influenza vaccines are available. Their widespread use is more important now than ever, and we encourage health care providers, employers, and community leaders to promote vaccination. Vaccine effectiveness varies by season and subtype, but vaccination offers similar protection against laboratory-confirmed influenza hospitalization and outpatient illness. Widespread misinformation on social media includes the false claim that influenza vaccination increases the risk of SARS-CoV-2 infection. Scientists, health care providers, and public health leaders must counter these claims with clear, evidence-based information on the importance of influenza vaccination during the COVID-19 pandemic.

The prospect of a second COVID-19 wave requires planning to ensure optimal delivery of influenza vaccines starting in the early fall. Community vaccination sites are often set up for maximum volume and efficiency, and alternative approaches will be needed to maintain physical distancing and minimize the risk of SARS-CoV-2 transmission, particularly because

many influenza vaccine recipients are at high risk for both influenza and COVID-19 complications. Randomized trials have shown that some enhanced influenza vaccines (e.g., high-dose inactivated vaccine and recombinant vaccines) generate greater protection in older adults compared to standard-dose inactivated vaccine. The optimal timing of influenza vaccination in patients with confirmed COVID-19 is uncertain. There are no clinical studies on the effects of influenza vaccination in patients with COVID-19, but it may be prudent to delay vaccine administration until after the acute illness has resolved.

Over 400,000 COVID-19 deaths were reported worldwide by 6 June, including over 109,000 in the United States. The actual death count is almost certainly higher, and we are still in the early phase of the pandemic. The U.S. Centers for Disease Control and Prevention estimates that influenza has killed 12,000 to 61,000 each season over the past decade. Will there be a perfect storm of COVID-19 and influenza during the 2020–2021 season? We do not yet know, but we must start preparing in the coming months.

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# Science

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