

The post-pandemic legacy of COVID-19

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From left: Dr. Nazeem Muhajarine (PhD) is a professor in the Department of Community Health and Epidemiology in the USask College of Medicine. (Photo: Kristen McEwen). Dr. Cory Neudorf (MD) is a professor in the Department of Community Health and Epidemiology in the College of Medicine. Credit: Saskatchewan Health Authority

As the fifth wave of the pandemic—driven by the highly transmissible

omicron variant—begins to show some early indications of subsiding, USask researchers are pointing to the warning signs of the effects on distressed health-care systems in the province and across the country.

"After two years of dealing with this, there is a lot of health-care fatigue, coupled with really negative treatment by a small segment of the population, that has left health-care workers demoralized, with thoughts of leaving the industry," said Dr. Cory Neudorf (MD), a leading researcher in the Department of Community Health and Epidemiology in USask's College of Medicine. "So, between early retirements and the toll on the health of health-care workers who are the ones most exposed to the virus—there have been high rates of COVID-19 among health-care workers—you end up with a shortage in the workforce.

"So, just as we are coming out of the pandemic and will need to ramp up health-care services again to catch up on postponed surgeries and treatments, we are going to have to deal with the effects of long COVID and with the impacts of the pandemic and coping mechanisms on mental health. So all of this will have to be treated at the same time that we are going to be hit with a health-care worker shortage. So that is why a lot of people are concerned about the cumulative impact of all of this on the health-care system over the coming months."

Neudorf said dealing with five waves of a pandemic has been difficult enough to deal with for health-care workers. However, the system has also been overburdened by those who refuse to be vaccinated, and are making up the majority of intensive-care cases and deaths.

Neudorf noted inconsistent messaging from officials across the country, balancing preventative public-health measures with economic impacts and political considerations, also has not helped. However, he said the most frustrating for health-care workers is the lack of appreciation for the basic science of the safety of vaccines and the need for wearing

masks as proven measures to help protect against highly contagious respiratory disease.

"The challenge now is we have had two years of cementing of decisions by people, and behavioral scientists will tell you that it is much harder to change that perception in people once it is so entrenched," said Neudorf, who also serves as the interim senior medical health officer with the Saskatchewan Health Authority. "What I would like to be able to say is that the research is going to show the entire impact of this pandemic on people's health, not just on hospitalizations, ICU stays and deaths, and I would hope that information will help. But I have to say, cynically, that there is a significant portion of the public that has their mind made up and that data is not going to make a difference."

Neudorf recently led a research team tracking the impact of public-health measures across the country, and people's adherence and responses to them. He said that research should prove valuable to provide recommendations on how best to prepare for future pandemics and to improve messaging as well, with behavioral scientists having a role to play. The continued development of improved broad-based coronavirus vaccines, antivirals and other therapies will be vital to preparing for potential future variants of concern.

As the fifth wave wanes, Neudorf said more collaborative efforts between public health officials, university researchers and clinicians can help better prepare us for not only future outbreaks, but in dealing with the effects of long COVID. Neudorf said that while more research needs to be completed, early indications are that physiotherapy, occupational therapy and cognitive behavioral therapy will be required to play roles in treatment of people suffering with the long-term after-effects of infection.

While providing acute care has been the primary focus of [health-care](#)

[workers](#) throughout the pandemic, an increasing number of patients are also suffering chronic symptoms from the long-term effects of COVID-19 infection. Neudorf and his USask colleague, Dr. Nazeem Muhajarine (Ph.D.)—co-lead of the Public Health, Health Systems and Social Policy pillar of the national COVID Variant Rapid-Response Network—said more research is required to determine the extent of the problem, and best approaches to treatment.

"This is the unwanted legacy of COVID-19," said Muhajarine, a community health and epidemiology researcher in USask's College of Medicine. "COVID-19 is having two types of impacts: The immediate acute impact on people and health-care systems, and social service systems, and we are seeing that with omicron right now. And then there is also going to be a chronic impact, that long shadow that would be the demand for care for months, maybe even years, to come."

Muhajarine said he is not aware of any peer-reviewed studies conducted on post-COVID-19 conditions from the omicron wave as of yet. However, research from earlier waves has confirmed that up to one-third of individuals who recover from COVID-19 continue to experience a variety of symptoms, including headache, fatigue, shortness of breath, difficulty concentrating, and inability to exercise, for months in many cases and up to a year in others.

"We are still in the early stages of understanding the long-term effects of COVID-19," said Muhajarine. "We don't know why some people don't fully recover once they have COVID, and we haven't even settled on a standardized definition of long COVID, worldwide."

Muhajarine said the most recent data released in December 2021—compiled from 81 research articles on the delta and alpha waves—determined that 32 percent of all COVID-19 patients were still experiencing fatigue and cognitive impairment three months after.

"There are some effects on organ systems—kidney, heart, lung, and so on—that seem to correlate initially with severity of disease, but the cognitive impairment, brain fog, and fatigue seem to persist, regardless of how mild the original COVID case was. Another interesting finding was that the rate of fatigue and cognitive impairment—or brain fog—are equally seen among hospitalized as well as non-hospitalized patients. So that is very concerning."

Muhajarine and Neudorf both believe in-depth studies of the effects of post-COVID-19 should be initiated at the provincial and federal levels to determine the extent of the issue, the projected impact it will have on health-care systems, and what can be done to treat conditions.

"We have to work with the health authority, the government, in order to understand, province-wide, the extent of long COVID," said Muhajarine. "Who is having problems, how do they present, how does it impact their lives, their function, and how do we put in place a system of responses to help them deal with their impacts and help them recover fully? Other countries have committed resources to opening specialized clinics and treatment facilities for people experiencing long COVID, and that's what we need to do in Canada, and that's what we need to do in Saskatchewan."

Muhajarine said the university also has the expertise and the capacity to conduct its own long COVID research, by reaching out to USask campus community members who have battled COVID-19.

"We should be watching our young people and our older faculty and staff, everyone who might have contracted COVID and still suffering from symptoms, and we need to assist them and accommodate their conditions and their situations," said Muhajarine. "We could mount our own study, because we have more than 30,000 people here. That is a large population, the size of a small city in Saskatchewan, and could

serve well for our own understanding of long COVID.

"Our university is a place where scientists and scholars gather and society has invested in developing new knowledge and new understanding and new insights, so we are well positioned to take the lead on this. We can't simply say that people are going to have long COVID for the rest of their lives. We can't be resigned to that. We need to help them to regain function and move forward with their lives."

Provided by University of Saskatchewan

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