

# COVID-19 PANDEMIC

## RAEB'S Evidence Update

Highlights of health research synthesized by the Research, Analysis and Evaluation Branch

January 31, 2022

### Featured

[Research Evidence and Jurisdictional Experience](#)  
[Trusted Resources](#)

### Research Evidence and Jurisdictional Experience

The research evidence profiled below was selected from highly esteemed academic journals and grey literature sources, based on date of publication and potential applicability or interest to the Ontario health sector.

#### Understanding the Disease

##### ***Science Immunology: New laboratory research reveals more than one path toward robust immunity from COVID-19***

**January 25, 2022.** This study found the human immune sera following breakthrough infection and vaccination following natural infection, broadly neutralize SARS-CoV-2 variants to a similar degree. While age negatively correlates with antibody response after vaccination alone, no correlation with age was found in breakthrough or hybrid immune groups. This data suggests that the additional antigen exposure from natural infection substantially boosts the quantity, quality, and breadth of humoral immune response regardless of whether it occurs before or after vaccination. [Article](#).

#### Case Testing and Screening

##### ***Nature: A blood test may someday help determine a person's risk for long COVID***

**January 25, 2022.** This small-sized study found an immunoglobulin (Ig) signature, based on total IgM and IgG3 levels, which – combined with age, history of asthma bronchiale, and five

symptoms during primary infection of COVID-19 – is able to predict the risk of long COVID independently of timepoint of blood sampling. [Article](#).

***Centres for Disease Control and Prevention (CDC): Early evidence of the Omicron variant in the US***

**January 21, 2022.** This report indicated that health departments in four states (California, Colorado, New York, and Texas) were the first wastewater surveillance programs to detect evidence of Omicron in community wastewater. The detection of Omicron-associated mutations in community wastewater provides strong early evidence that the Omicron variant was likely present or more widely distributed in these communities than originally indicated by clinical testing alone: Omicron-associated mutations were documented during November 2021, at least a week before the first US case identified via clinical testing on December 1, 2021.

[Article](#).

## Disease Management

***Journal of the American Medical Association (JAMA): Clinical outcomes among patients with one-year survival following intensive care unit (ICU) treatment for COVID-19 in Netherlands***

**January 24, 2022.** This study found that physical, mental, and cognitive symptoms were frequent one year after ICU treatment for COVID-19 in 246 patients at 11 hospitals. Many survivors also experienced a weakened condition or musculoskeletal problems and had work-related problems as a result of the critical illness episode. [Article](#).

***The Lancet: Heterologous versus homologous COVID-19 booster vaccination in previous recipients of two doses of CoronaVac COVID-19 vaccine in Brazil***

**January 19, 2022.** This phase four study found antibody concentrations were low at six months after previous immunization with two doses of CoronaVac. However, all four vaccines administered as a third dose induced a significant increase in binding and neutralizing antibodies, which could improve protection against infection. Heterologous boosting resulted in more robust immune responses than homologous boosting and might enhance protection.

[Article](#).

***Canadian Medical Association Journal (CMAJ): Remdesivir for the treatment of patients in hospital with COVID-19 in Canada***

**January 19, 2022.** This study found that across 52 Canadian hospitals (1,267 patients; August 14, 2020 to April 1, 2021), in-hospital mortality among patients assigned to receive remdesivir was 18.7%, compared with 22.6% in the standard-of-care arm, and 60-day mortality was 24.8% and 28.2%, respectively. For patients not mechanically ventilated at baseline, the need for

mechanical ventilation was 8.0% in those assigned remdesivir and 15.0% in those receiving standard of care. Remdesivir, when compared with standard of care, has a modest but significant effect on outcomes important to patients and health systems, such as the need for mechanical ventilation. [Article](#).

***New England Journal of Medicine (NEJM): Immunogenicity and reactogenicity of vaccine boosters after Janssen vaccine priming***

**January 19, 2022.** This study involving 434 health care workers examined the effects of no boosting or boosting with one of three COVID-19 vaccines approved in the European Union (Janssen, Moderna, or Pfizer) three months after the primary vaccination. Both homologous and heterologous boosters led to an increase in levels of S-specific binding antibodies and neutralizing antibodies and an increase in T-cell responses, but these increases were highest in participants who received heterologous regimens with mRNA-based vaccines. [Article](#).

***Nature: Effectiveness of COVID-19 booster vaccines in England***

**January 14, 2022.** This study of the relative vaccine effectiveness (VE) against symptomatic disease 14-34 days after a Pfizer or Moderna booster, following a primary course of either AstraZeneca or Pfizer vaccines, ranged from around 85-95%. Against hospitalization or death, absolute effectiveness of a Pfizer booster ranged from around 97-99% in all age groups irrespective of the primary course with no evidence of waning up to 10 weeks. [Article](#).

## Health Equity and Vulnerable Populations

***Clinical Nutrition: Strategies to ensure continuity of nutritional care in patients with COVID-19 on discharge from hospital***

**February 2022.** This review indicated that older patients with COVID-19 infection are at risk of malnutrition (e.g., due to reduced oral intake, swallowing disorders post-extubation) and addressing this may be important in recovery. Additional research is required on the most effective nutritional interventions, and more detailed guidance on nutritional management post-discharge to support long-term recovery is needed. [Article](#).

***JAMA: Changes in COVID-19 vaccine hesitancy among Black and White individuals in the US***

**January 21, 2022.** This study of 1,200 US adults found that COVID-19 vaccine hesitancy has decreased more rapidly among Black individuals than among White individuals since December 2020. A key factor associated with this pattern appears to be that Black individuals more rapidly came to believe that vaccines were necessary to protect themselves and their communities.

Ongoing efforts to increase vaccine uptake among Black individuals in the US should attend to a range of vaccination barriers beyond vaccine hesitancy. [Article](#).

***Journal of Post-Acute and Long-Term Care Medicine (JAMDA): Antibody responses to third-dose mRNA vaccines in nursing home/assisted living residents in Ontario***

**January 15, 2022.** Consistent with non-frail populations, this study shows that residents mount a robust humoral response to a third mRNA vaccination, with greater neutralization capacity compared to a second-dose series. Continued monitoring of neutralization titers over time will determine the rate of degradation. Neutralization performance for the Beta variant may not mimic performance for the Omicron variant, which at the time of writing remains a concern. Overall, these data strongly support third-dose vaccine recommendations, and equivalent polices for nursing homes and assisted living settings. [Article](#).

***Psychiatry Research: Widening mental health and substance use inequities among sexual and gender minority (SGM) populations in Canada***

**January 2022.** Based on data collected from 6,027 Canadian adults in 2020, this study found that a greater proportion of SGM participants reported mental health and substance use impacts of the COVID-19 pandemic compared to non-SGM respondents, including deterioration in mental health, poor coping, suicidal thoughts, self-harm, alcohol and cannabis use, and use of substances to cope. Among SGM respondents, various risk factors were identified, including having a pre-existing mental health condition. [Article](#).

***Disability and Health: COVID-19 positivity rates, hospitalizations, and mortality of adults with and without intellectual and developmental disabilities (IDD) in Ontario***

**January 2022.** This study found COVID-19 positivity rates were 1.28 times higher for adults with IDD and 1.42 times higher for adults with Down syndrome. Adults with IDD were more than twice as likely to be hospitalized following COVID-19 and to die, and mortality rates were 6.59 times higher for adults with Down syndrome than those without IDD. Findings should inform vaccination strategies that often prioritize older adults, resulting in people with IDD, who are often in younger age groups, being overlooked. [Article](#).

## Frontline Workers

***JAMA: Physician health care visits for mental health and substance use during the pandemic in Ontario (March 11, 2020 to March 10, 2021)***

**January 21, 2022.** This study of 34,055 physicians found the rate of their outpatient visits for mental health and substance use increased on average by 13% per physician during the first 12 months of the pandemic compared with the prior 12 months. Although not statistically

significant, greater increases in the frequency of visits were observed among female physicians and physicians in rural areas. There was not a large difference in changes in visits between physicians who did or did not care for patients with suspected or confirmed COVID-19 in the emergency department or hospital. The largest relative increases in the rate of visits occurred in physicians without a mental health and substance use history, which was significantly greater than increases in physicians with a mental health and substance use history. [Article](#).

## Public Health Measures

### ***JAMA: Association of child masking with COVID-19-related closures in US childcare programs***

**January 27, 2022.** In this study of 6,654 childcare professionals from all 50 states, child masking at baseline (May 22 to June 8, 2020) was associated with a 13% reduction in program closure within the following year, and continued child masking throughout the one-year study period was associated with a 14% reduction in program closure. These results suggest that masking of children in childcare programs is associated with reduced program closures, supporting the current masking recommendation in younger children provided by the Centers for Disease Control and Prevention. [Article](#).

### ***JAMA: Association of major depressive symptoms with endorsement of COVID-19 vaccine misinformation***

**January 21, 2022.** In this study including 15,464 US adults, people with moderate or greater major depressive symptoms on an initial survey were more likely to endorse at least one of four false statements about COVID-19 vaccines on a subsequent survey, and those who endorsed these statements were half as likely to be vaccinated. These findings suggest another potential benefit of public health efforts to address depressive symptoms, namely reducing susceptibility to misinformation. [Article](#).

## Health System Impacts

### ***JAMA: Trends in health service use for Canadian adults with dementia and Parkinson disease during the first wave of the COVID-19 pandemic***

**January 21, 2022.** This study found large declines in hospital use and nursing home admission across community-dwelling persons with dementia or Parkinson disease and older adults without neurodegenerative disease. After the first wave, most services returned to historical levels, with physician visits elevated and mostly virtual, nursing home admissions reduced, and excess all-cause mortality. [Article](#).

## Trusted Resources

- The Evidence Synthesis Network (ESN) is a collaborative COVID-19 response initiative by Ontario’s research and knowledge production community. The [ESN website](#) is a portal where research evidence requests can be made and includes previously completed ESN briefing notes.
- The [Ontario COVID-19 Science Advisory Table](#) is a group of scientific experts and health system leaders who evaluate and report on emerging evidence relevant to the COVID-19 pandemic, to inform Ontario’s response to the pandemic.
- COVID-19 Evidence Network to support decision-making (COVID-END) in Canada:
  - COVID-END is a time-limited network that brings together more than 50 of the world's leading evidence-synthesis, technology-assessment, and guideline development groups to support decision-making. In addition to Living Evidence Profiles, COVID-END hosts an inventory of best COVID-19 evidence syntheses from around the world. An up-to-date and comprehensive list of sources, organized by type of research evidence, is available on McMaster Health Forum’s COVID-END [website](#).
  - The COVID-19 Evidence Spotlights from COVID-END provide updated information on COVID-19 responses with three types of products from COVID-END in Canada: 1) Canadian spotlights; 2) global spotlights; and 3) horizon scans. To receive an email containing hyperlinks to these products twice a month, [subscribe here](#).
    - In the first half of January 2022, contributing Canadian evidence synthesis teams produced 14 newly completed evidence syntheses. One synthesis provides insight on three domains of the COVID-END taxonomy (public health measures, clinical management, and health-system arrangements), and one synthesis provides insight on two of the domains (public health measures and health system arrangements). The remaining focus on public health measures (n=12). Please visit [Canadian Spotlight 13.1](#) to view the evidence, or browse past [Canadian evidence spotlights](#). A complete list of the products is available [here](#).

## About RAEB

Through research funding, brokering, translating, and sharing, we promote an enhanced evidence use capacity that supports all aspects of health policy, programming, and investment decision-making. Services include:

- Literature reviews
- Jurisdictional scans
- Economic analysis
- Evaluation planning

Research fund management  
Knowledge translation services

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