

COVID-19 PANDEMIC

RAEB'S Evidence Update

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

April 4, 2022

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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

The Lancet: Risk of SARS-CoV-2 reinfections in children in England from January 2020 to July 2021

March 26, 2022. This national surveillance study found SARS-CoV-2 reinfections in children were uncommon and closely followed community infection rates in England, with most reinfections occurring during the Delta wave in the summer of 2021. Children had a lower risk of reinfection than did adults overall, especially when compared with unvaccinated younger adults. Reinfections were not associated with more severe disease or fatal outcomes (e.g., hospital or intensive care unit admissions, death) in children. [Article](#).

BioMed Central Geriatrics: Telehealth analysis of functional performance, frailty, quality of life, and mental health after COVID-19 hospitalization

March 26, 2022. This study examined the recovery of patients (n=109; 18+ years) who were hospitalized for ≥24 hrs due to COVID-19. Over 18 weeks, the average time to complete a 10-time chair rise test improved by six seconds; those age ≥ 60 had greater improvements. At weeks two to six, 67% of participants reported a worse Clinical Frailty Scale category compared to their pre-hospitalization levels, whereas 42% reported a worse frailty score at 18 weeks.

Participants who did not return to pre-hospitalization levels were more likely to be female, younger, and report a pre-hospitalization category of 'very fit' or 'well'. [Article](#).

International Journal of Medical Science Research: Musculoskeletal (MSK) symptoms in patients with post-COVID-19 syndrome (PCS) and opportunities for increased functional activity

March 25, 2022. This review identifies the main MSK symptoms in PCS (i.e., fatigue; myalgia; back, waist and neck pain; arthralgia) and reports on the physical interventions that may have a beneficial effect in increasing functional activity in PCS. Individually targeted physical interventions are recommended, including: multimodal programs; exercises for overall muscle strengthening; increasing joint stability; cycling training; and electrical modalities (e.g., transcutaneous electrical nerve stimulation for pain symptoms). [Article](#).

Case Testing and Screening

Annals of Internal Medicine: A SARS-CoV-2 genotyping panel for prompt Omicron variant identification

March 29, 2022. This study demonstrates that a nucleic acid amplification test (NAAT)-based SARS-CoV-2 genotyping panel is an accurate and practical tool for real-time identification of mutations associated with Omicron; clinical use of these assays should be considered to help inform therapeutic decisions, particularly when effective therapy is in short supply. [Article](#).

Disease Management

Clinical Nutrition: Clinical significance of micronutrient supplements in patients with COVID-19

April 2022. This systematic review and meta-analysis found that individual micronutrient supplementations, including vitamin C, vitamin D, and zinc, were not associated with a mortality benefit in COVID-19. Vitamin D may be associated with lower intubation rate and shorter length of stay, but vitamin C did not reduce intubation rate or length of stay. Further research is needed to validate these findings. [Article](#).

Clinical Nutrition: The modified NUTRIC score (mNUTRIC) is associated with increased 28-day mortality in critically ill COVID-19 patients

April 2022. When assessed with the mNUTRIC screening tool, this study found critically ill COVID-19 patients admitted in ICU (n=98; median age 66 years) had a high prevalence of malnutrition. A 28-day mortality rate in these patients was associated with a high mNUTRIC score and high-sensitivity C-reactive protein value levels. The study suggests that nutritional risk

assessment is essential for the management of critically ill COVID-19 patients, as well as for outcome prediction. [Article](#).

Nature: COVID-19 symptoms are reduced by targeted hydration of the nose, larynx, and trachea

March 29, 2022. This study, involving 464 participants in Germany, the US, and India, found that respiratory droplet generation increases by up to four orders of magnitude in dehydration-associated states of advanced age, elevated BMI-age, strenuous exercise, and SARS-CoV-2 infection, and falls with hydration of the nose, larynx, and trachea by calcium-rich hypertonic salts. [Article](#).

Journal of the American Medical Association (JAMA): Association of SARS-CoV-2 vaccination during pregnancy with pregnancy outcomes in Sweden and Norway

March 24, 2022. This study found SARS-CoV-2 vaccination during pregnancy, compared with no SARS-CoV-2 vaccination during pregnancy, was not significantly associated with risk of preterm birth, stillbirth, small for gestational age, low Apgar score, or neonatal care admission. [Article](#).

Health Equity and Vulnerable Populations

JAMA: Trends in suicide in Japan following the pandemic

March 29, 2022. This study examined national suicide data in Japan through September 2021 and found that the COVID-19 pandemic was associated with an increase in suicide overall, and a specific increase among younger women. [Article](#).

JAMA: Racial disparities in COVID-19 outcomes among Black and White patients with cancer in the US

March 28, 2022. In this study of 3,506 patients, Black patients with cancer experienced significantly more severe COVID-19 outcomes compared with White patients with cancer, after adjustment for demographic and clinical risk factors. These findings suggest that, within the framework of structural racism in the US, having cancer and COVID-19 is associated with worse outcomes among Black patients compared with White patients. [Article](#).

Data Analytics, Modelling and Measurement

Nature: Modeling of waning immunity after SARS-CoV-2 vaccination and influencing factors

March 25, 2022. This study examined antibody levels and T-cell gamma-interferon release after two doses of Pfizer vaccine or a combination of AstraZeneca and Pfizer vaccines for up to 230

days after the first dose to determine immunity over time. It was estimated that IgG levels will drop at different rates depending on prior infection, age, sex, T-cell response, and the interval between vaccine injections. Only natural infection mounted a significant and lasting IgA response. [Article](#).

JAMA: Estimated COVID-19 cases and hospitalizations averted by case investigation and contact tracing (CICT) in the US

March 25, 2022. This study used CICT program data from 23 jurisdictions and estimated that CICT programs averted 1.11 to 1.36 million cases and 27,231 to 33,527 hospitalizations over 60 days during the 2020 to 2021 winter peak of the pandemic. The upper estimate assumes that all interviewed cases and monitored contacts complied with isolation and quarantine guidelines, whereas the lower estimate assumes that fractions of interviewed cases and monitored or notified contacts did so. These findings suggest that CICT programs likely played a critical role in curtailing the pandemic. [Article](#).

Canadian Medical Association Journal (CMAJ): Impact of cancer surgery slowdowns on patient survival during the COVID-19 pandemic in Ontario

March 21, 2022. This study projected pandemic-related slowdowns of cancer surgeries may result in decreased long-term survival for many patients with cancer. Mean wait time to surgery pre-pandemic was 25 days and during the pandemic was 32 days. Excess wait time led to 0.01–0.07 life-years lost per patient across cancer sites, translating to 843 (95% credible interval 646–950) life-years lost among patients with cancer in Ontario. [Article](#).

Health System Impacts

Nature: Global ecological analysis of COVID-19 mortality and comparison between “the East” and “the West”

March 28, 2022. This study found Western countries reported a median mortality 114 times that of the East (684 vs. 6.0 per million). Significant correlates of mortality in countries with at least one million population were median age, obesity prevalence, and democracy index; political stability and experience of SARS in 2002-03 were protective; and health system variables and income inequality were not associated. Despite structural advantages in the West, delays in national responses early on resulted in a loss of control over the spread of SARS-CoV-2. Although the early success of the East was sustained in the second half of 2020, the region remains extremely vulnerable to COVID-19 until enough people are immunized. [Article](#).

Nature: Global landscape of SARS-CoV-2 genomic surveillance and data sharing

March 28, 2022. This study found SARS-CoV-2 genomic surveillance and sequencing availability varied markedly across countries, with 45 countries performing a high level of routine genomic surveillance and 96 countries with a high availability of SARS-CoV-2 sequencing. There was a marked heterogeneity of sequencing percentage, sequencing technologies, turnaround time, and completeness of released metadata across regions and income groups. A total of 37% of countries with explicit reporting on variants shared less than half of their sequences of variants of concern in public repositories. [Article](#).

CMAJ: Changes in ischemic stroke presentations, management, and outcomes during the first year of the COVID-19 pandemic in Alberta

March 28, 2022. This study reported that the first year of the COVID-19 pandemic saw persistently reduced rates of patients presenting with ischemic stroke, recurrent treatment delays, and higher risk of in-hospital death in later waves. These findings support public health messaging that encourages care-seeking for medical emergencies during pandemic periods, and stroke systems should re-evaluate protocols to mitigate inefficiencies. [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 second half of March 2022, contributing Canadian evidence-synthesis teams shared seven newly completed evidence syntheses, focusing on public health measures (n=5) and clinical management (n=2). Please visit [Canadian Spotlight 15.2](#) 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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