

COVID-19 PANDEMIC

RAEB'S Evidence Update

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

February 28, 2022

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RAEB's Rapid Responses for Ontario's Health Sector

Please contact [Evidence Synthesis Unit](#) for the full read of these rapid responses.

Testing Strategies Post-Omicron Wave of the COVID-19 Pandemic

- **PCR Testing:** Testing strategies were identified from the United Kingdom, Iceland, New Zealand, and Australia (South Australia, Victoria, Tasmania, New South Wales, and Queensland).
 - Most jurisdictions permit PCR testing of symptomatic individuals, symptomatic or asymptomatic individuals of close contacts, and those who cannot access rapid antigen tests. Some jurisdictions require PCR testing for individuals undergoing a hospital procedure or entering a health care setting (e.g., hospital, long-term care home).
 - Some jurisdictions have reduced PCR testing capacity by no longer requiring individuals who have tested positive in a rapid antigen test to follow up with a confirmatory PCR test.
- **Rapid Antigen Testing:** Testing strategies were identified from the United States (US), England, Scotland, Iceland, New Zealand, and Australia (South Australia, Victoria, Tasmania, New South Wales, and Queensland).
 - Most jurisdictions provide government-funded rapid antigen tests to the general public through testing centres, online ordering, pharmacy, and/or health plans,

- either with no eligibility criteria requirements or for those who are symptomatic or close contacts.
- In terms of rapid antigen testing for vulnerable populations: the US and New Zealand provide tests to organizations that support priority populations who are at high risk of the effects of COVID-19 (e.g., Indigenous communities, people in lower socioeconomic groups, seniors, correctional facilities); Victoria recommends testing for students and staff at schools; and Queensland prioritizes testing of symptomatic children.
 - In terms of rapid antigen testing for critical workplaces: New Zealand provides free tests for critical service workers who are close contacts, as well as to the health care/emergency workforce; and England provides tests for care home staff.

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.

Disease Management

The Lancet: Duration of effectiveness of vaccines against SARS-CoV-2 infection and COVID-19 disease

February 21, 2022. This systematic review and meta-analysis found that COVID-19 vaccine efficacy or effectiveness against severe disease remained high, although it did decrease somewhat by six months after full vaccination. By contrast, vaccine efficacy or effectiveness against infection and symptomatic disease decreased approximately 20-30 percentage points by six months. The decrease in vaccine efficacy or effectiveness is likely caused by, at least in part, waning immunity, although an effect of bias cannot be ruled out. Evaluating vaccine efficacy or effectiveness beyond six months is crucial for updating COVID-19 vaccine policy.

[Article.](#)

Journal of the American Medical Association: Risk of second allergic reaction to SARS-CoV-2 vaccines

February 21, 2022. In this systematic review and meta-analysis of 22 studies, including 1,366 patients re-vaccinated under the supervision of an allergist, there was a low incidence (0.16%) of immediate severe allergic reactions associated with receiving a second dose of SARS-CoV-2 mRNA vaccine among individuals who had an immediate allergic reaction to their first dose. There were no deaths. [Article.](#)

Nature: Effectiveness of Moderna vaccine against SARS-CoV-2 Omicron and Delta variants

February 21, 2022. This study of a large, diverse population (n=26,683) of SARS-CoV-2 test-positive cases (16% Delta, 84% Omicron) demonstrated high, durable three-dose vaccine effectiveness (VE) against Delta infection (71.6%) but lower effectiveness against Omicron infection (47.4%), particularly among immunocompromised people (29.4%). However, three-dose VE of the Moderna vaccine was high against hospitalization with Delta and Omicron variants (>99%). [Article](#).

New England Journal of Medicine (NEJM): Protection against SARS-CoV-2 after COVID-19 vaccination and previous infection

February 16, 2022. This study found that among more than 35,000 health care workers, those who received two doses of Pfizer vaccine had a high level of protection against serious COVID-19, regardless of the between-dose interval, but effectiveness began to wane after six months. Immunity in vaccinated, previously infected persons was more effective and durable than that in vaccinated persons who had not been infected. [Article](#).

NEJM: Effectiveness of the Pfizer vaccine after recovery from COVID-19

February 16, 2022. This Israeli study followed 149,032 patients who had recovered from SARS-CoV-2 infection over a 270-day period to assess the rate of reinfection according to whether they had subsequently received a COVID-19 vaccine or had remained unvaccinated. The reinfection rate was 10.21 cases per 100,000 persons per day among unvaccinated patients and 2.46 cases among vaccinated patients. [Article](#).

Health Equity and Vulnerable Populations

Nature: Investigating the association between severity of COVID-19 infection during pregnancy and neonatal outcomes

February 22, 2022. This study examined the relationship between maternal COVID-19 and adverse neonatal outcomes. Pregnant women with moderate to severe COVID-19 were found to be at much higher risk of preterm delivery, lower birth weight, neonatal infection, as well as neonatal ICU admission. Appropriate protective measures and early detection of suspected COVID-19 should be addressed for more favourable obstetric outcomes. [Article](#).

Annals of Internal Medicine: Contribution of individual- and neighborhood-level social, demographic, and health factors to COVID-19 hospitalization outcomes in Michigan

February 22, 2022. This study of 38 hospitals found that hospitalized patients with COVID-19 from socially vulnerable neighborhoods presented with greater illness severity and required

more intensive treatment. However, once hospitalized they did not experience differences in hospital mortality or discharge disposition. [Article](#).

International Long-Term Care Policy Network: International data on deaths attributed to COVID-19 among people living in care homes

February 22, 2022. Data from 21 countries show that the COVID-19-related deaths among care home residents has decreased in most countries since the middle of 2021, reflecting that in many countries people living in care homes were given priority for COVID-19 vaccination, booster doses, and efforts were made to improve infection prevention and control in care homes. In addition, the number of COVID-19 deaths among people living in the community and among care home residents are positively correlated, highlighting the importance of community transmission despite measures to protect care homes. [Article](#).

The Lancet: Real-world serological responses to extended-interval and heterologous COVID-19 mRNA vaccination in frail, older people (UNCOVER) in Montreal

February 21, 2022. Interim results from this ongoing study, conducted across 12 long-term care facilities, show that among frail, older people, previous SARS-CoV-2 infection, and the type of mRNA vaccine influenced antibody responses when used with a 16-week interval between doses. In these cohorts of frail, older individuals with a similar age and comorbidity distribution, serological responses were similar and clinically equivalent between the discovery and confirmatory cohorts. Homologous and heterologous use of mRNA vaccines was not associated with significant differences in antibody responses four weeks following the second dose, supporting their interchangeability. [Article](#).

Annals of Intensive Care: Relationship between frailty and mortality, ICU admission, and length of hospital stay in COVID-19 patients

February 20, 2022. This systematic review and meta-analysis examined the evidence on the efficacy of frailty tools in risk assessment in COVID-19 patients. The Clinical Frailty Scale (CFS) is the most commonly used tool, and it indicated that frailty is strongly associated with increased in-hospital and 30-day mortality in COVID-19 patients. Frail patients were also less likely to be admitted to the ICU. Frailty assessment-based decision-making has not been implemented worldwide: for example, several countries (UK, the Netherlands, Belgium, and France) advised the use of CFS in decision-making in their COVID-19 guidelines, in contrast to Central and Eastern Europe. [Article](#).

British Medical Journal: Risks of mental health outcomes in people with COVID-19

February 16, 2022. Using a large national cohort of people with COVID-19 and contemporary and historical controls, this study found that the risks of incident mental health disorders are substantial in people with COVID-19 and span several disorder categories, including anxiety, depression, stress and adjustment disorders, opioid and other substance use disorders, cognitive decline, and sleep disorders. The risks were evident even among those with COVID-19 who did not require hospital admission. [Article](#).

Transmission

NEJM: Population immunity and COVID-19 severity with the Omicron variant in Gauteng, South Africa

February 23, 2022. This study conducted in Gauteng, where the Omicron variant was first identified, found that two-thirds of unvaccinated residents were seropositive for SARS-CoV-2, which indicates past infection. Omicron peaked just one month after being detected; hospitalizations and deaths did not increase in proportion to cases. Whether this change is related to widespread pre-existing immunity or feature of the virus is unclear. [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 February 2022, contributing Canadian evidence-synthesis teams produced nine newly completed evidence syntheses. From the COVID-END taxonomy, these syntheses focus on public health measures (n=6) and clinical management (n=3). Please visit [Canadian Spotlight 14.1](#) 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 scan
- Economic analysis
- Evaluation planning
- Research fund management
- Knowledge translation services

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