

# COVID-19 PANDEMIC

## RAEB'S Evidence Update

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

May 2, 2022

### Featured

[Research Evidence and Jurisdictional Experience  
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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.

#### Transmission

***Journal of Exposure Science & Environmental Epidemiology: Monitoring SARS-CoV-2 in air and on surfaces and estimating infection risk in buildings and buses on a university campus***

**April 27, 2022.** In this study, detection of viral RNA in multiple air and surface samples on a university campus in Michigan (Aug 2020 to April 2021) showed low overall positivity rates, indicating that the risk of exposure to SARS-CoV-2 at monitored locations was low. Inhalation is the predominant route of exposure compared to surface contact, which emphasizes the importance of protecting individuals from airborne transmission of SARS-CoV-2 and potentially other respiratory infectious diseases. [Article](#).

***Centre for Disease Control and Prevention: Seroprevalence of infection-induced SARS-CoV-2 antibodies in the US***

**April 26, 2022.** As of February 2022, approximately 75% of children and adolescents in a sample from across the US had serologic evidence of previous infection with SARS-CoV-2, with approximately one-third becoming newly seropositive since December 2021 when the Omicron variant was predominant. The greatest increases in seroprevalence during September 2021–

February 2022 occurred in the age groups with the lowest vaccination coverage (5-11 years, 28%; 12-17 years, 59%; 18-49 years, 69%; 50-64 years, 80%; and ≥65 years, 90%). [Article](#).

## Disease Management

### ***Nature: Distinct clinical symptom patterns in patients hospitalized with COVID-19 in England, Scotland, and Wales***

**April 27, 2022.** This study analyzed clinical data on 59,011 patients in the UK to identify a core set of symptoms (fever, cough, and dyspnoea), that co-occurred with additional symptoms in three patterns: fatigue and confusion, diarrhea and vomiting, or productive cough. Other findings suggest that patients presenting with gastrointestinal symptoms were commonly female, had a longer duration of symptoms before presentation, and had lower 30-day mortality. Patients presenting with confusion, with or without core symptoms, were older and had a higher unadjusted mortality. [Article](#).

### ***Nature: Effectiveness of a second Pfizer booster vaccine against hospitalization and death from COVID-19 in adults aged over 60 years in Israel***

**April 25, 2022.** Israeli authorities approved a fourth COVID-19 vaccine dose (second-booster) for individuals aged 60 years and over who received a first booster dose four or more months earlier. Hospitalizations and mortality due to COVID-19 among participants who received the second-booster were compared with participants who received one booster dose. This study found a substantial reduction in hospitalizations and deaths due to COVID-19 conferred by a second-booster in adults aged 60 years and over. [Article](#).

### ***Vaccines: Influences on attitudes regarding COVID-19 vaccination in Germany***

**April 22, 2022.** This study suggests that a history of influenza vaccination and level of satisfaction with democratic institutions were highly predictive for COVID-19 vaccine acceptance among citizens (n=1,092). Additionally, social determinants of health, such as gender, age, number of children in the family, and the degree of satisfaction with life were also predictors for COVID-19 vaccine acceptance. To maximize vaccine uptake, governments should strive for trust and transparency, and involve measures to communicate trust in democratic and scientific institutions. [Article](#).

### ***Nature: Comparing COVID-19-related hospitalization rates among individuals with infection-induced and vaccine-induced immunity in Israel***

**April 22, 2022.** This study compared COVID-19-related hospitalization incidence rates in 2,412,755 individuals across four exposure levels: non-recent vaccine immunity (two Pfizer

vaccine doses five or more months prior), boosted vaccine immunity (three Pfizer doses), infection-induced immunity (previous COVID-19 without a subsequent Pfizer dose), and enhanced infection-induced immunity (previous COVID-19 with a subsequent Pfizer dose). Compared with non-recent vaccine immunity, COVID-19-related hospitalization incidence rates were reduced by 89% (87-91%) for boosted vaccine immunity, 66% (50-77%) for infection-induced immunity, and 75% (61-83%) for enhanced infection-induced immunity. Infection-induced immunity (enhanced or not) provided more protection against COVID-19-related hospitalization than non-recent vaccine immunity, but less protection than booster vaccination. Additionally, vaccinating individuals with infection-induced immunity further enhanced their protection. [Article](#).

### ***New England Journal of Medicine: Intramuscular AZD7442 (Tixagevimab-Cilgavimab) for prevention of COVID-19***

**April 20, 2022.** This randomized controlled trial evaluated AZD7442 (a combination of tixagevimab and cilgavimab, monoclonal antibodies targeting the SARS-CoV-2 spike protein) for the prevention of COVID-19 in adults at high risk for SARS-CoV-2 infection (n=5,197). AZD7442 had approximately 77% efficacy in preventing symptomatic infection. Symptomatic COVID-19 occurred in eight of 3,441 participants (0.2%) in the AZD7442 group and in 17 of 1,731 participants (1.0%) in the placebo group (relative risk reduction, 76.7%). Extended follow-up at a median of six months showed a relative risk reduction of 82.8%. Five cases of severe or critical COVID-19 and two COVID-19-related deaths occurred in the placebo group. [Article](#).

## Health Equity and Vulnerable Populations

### ***Journal of Epidemiology & Community Health: Monitoring sociodemographic inequality in COVID-19 vaccination uptake in England (Dec 2020 - Aug 2021)***

**April 25, 2022.** This national study of 35,223,466 adults found inequalities in COVID-19 vaccination uptake rates. A lower percentage of males than females were vaccinated in the young and middle age groups (18-59 years), but not in the older age groups. Vaccination rates were highest among individuals of White British and Indian ethnic backgrounds and lowest among Black Africans (aged ≥80 years) and Black Caribbeans (18-79 years). Differences by ethnic group emerged as soon as vaccination roll-out commenced and widened over time. Vaccination rates were also lower among individuals who identified as Muslim, lived in more deprived areas, reported having a disability, did not speak English as their main language, lived in rented housing, belonged to a lower socioeconomic group, and had fewer qualifications. [Article](#).

***American Journal of Obstetrics Gynecology: Effects of prenatal exposure to maternal COVID-19 and perinatal care on neonatal outcome***

**April 19, 2022.** In this study from March 2020 to March 2021, COVID-19 in pregnancy was associated with increased maternal and neonatal complications. Caesarean section was significantly associated with newborn COVID-19 diagnosis. Vaginal delivery should be considered the safest mode of delivery if obstetrical and health conditions allow it. Mother to child skin-to-skin contact, rooming-in, and direct breastfeeding did not represent risk factors for newborn COVID-19 diagnosis, thus these well-established best practices can be continued among women with COVID-19 diagnosis. [Article](#).

***Journal of Personalized Medicine: Gender differences in the impact of COVID-19 pandemic on mental health of Italian academic workers***

**April 11, 2022.** This study examined gender differences in mental health status after wave one of the COVID-19 pandemic (May 11 - June 10, 2022) and in teleworking. Results showed gender differences in awareness and concerns about the COVID-19 pandemic that differently influenced mood, as females were more frightened and worried than males. Compared to males, female participants reported feeling significantly more sad, lonelier, fearful, and insecure. Female participants also experienced more sleep disorders, and were more likely to sanitize surfaces. [Article](#).

## Public Health Measures

***British Medical Journal: Digital health innovations (DHI) for non-communicable disease (NCD) management during the COVID-19 pandemic***

**April 26, 2022.** This review found that while DHIs supported NCD management during the pandemic, their implementation has not been equitable across geographies or NCDs. Most DHIs targeted mental health conditions. A majority of the interventions were delivered remotely and via telephones. Zoom (26.5%), email (17%), and WhatsApp (7.5%) were the top three platforms for care delivery. Telemedicine, targeted client interventions, personal health tracking, and on-demand information services for clients were the most frequently implemented interventions. Details regarding associated costs, sustainability, scalability, and data governance of the DHI implementations were not described in the majority of the studies. [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 April 2022, contributing Canadian evidence-synthesis teams shared seven newly completed evidence syntheses, all focusing on public health measures. Please visit [Canadian Spotlight 16.1](#) 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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