FEATURED

- RAEB'S Rapid Responses for Ontario's health sector
- Research evidence and jurisdictional experience
- Trusted resources

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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RAEB'S RAPID RESPONSES FOR ONTARIO'S HEALTH SECTOR

Please contact Evidence Synthesis Unit for the full read of these rapid responses.

- Incidence, Severity, and Management of Acutely Ill COVID-19 Obstetrical Patients

  o **Incidence**: The prevalence of COVID-19 among pregnant women is difficult to estimate given geographic and temporal variability in the prevalence of COVID-19 and differing thresholds for testing pregnant women. There seems to be a higher risk of COVID-19 in the third trimester in pregnant women compared to the first and second trimesters. The symptomatic infection in pregnant women generally seems to be of lower incidence compared to the general population, and there are high rates of asymptomatic infection in pregnant women.

  o **Severity**: There is mixed evidence on the severity of COVID-19 in pregnant women: some studies report that pregnant status raises the morbidity of COVID-19 (e.g., ICU admission, mechanical ventilation), while others indicate that the clinical presentation of COVID-19 in pregnant women resembles that of non-pregnant women. Jurisdictional guidance/reports note that there is an increased risk of ICU admission and mechanical ventilation in pregnant women with COVID-19 compared to symptomatic non-pregnant women. Some studies and jurisdictional reports suggest that certain factors (e.g., increased age, obesity, pre-existing comorbidities, pre-eclampsia) are associated with severe COVID-19 in pregnancy.

  o **Outcomes**: Pregnant women with COVID-19 may be at a higher risk of maternal mortality and maternal/neonatal morbidities than non-infected women, including preeclampsia, preterm birth, prelabour rupture of membranes, caesarean delivery, low birth weight infants, or neonatal intensive care admission. However, it is unclear if these outcomes are directly due to SARS-CoV-2 infection or an indirect effect that results from severe maternal illness or iatrogenic intervention.

  o **Management**: Research evidence and guidance from Canada, US, UK, Italy, Australia, and the World Health Organization suggest one or more of the following recommendations for managing pregnant patients with suspected/confirmed COVID-19: appropriate screening, triaging, and isolation; individualized delivery planning dependent on the patient's clinical status, gestational age, fetal condition, and shared decision-making; designated multispecialty care teams; and appropriate infection prevention and control measures.

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Evidence to Action

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COVID-19 PANDEMIC – RAEB'S EVIDENCE UPDATE
Highlights of health research evidence synthesized by the
Research, Analysis and Evaluation Branch (RAEB)

• May 25, 2021 •

RESEARCH EVIDENCE/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

- *JAMA:* Association of vitamin D level with SARS-CoV-2 seropositivity among working-age adults
  May 19, 2021. This study analyzed whether low levels of vitamin D are associated with SARS-CoV-2 seropositivity using data from a cohort of 18,148 individuals whose vitamin D levels were measured before the pandemic. It was found that low levels of vitamin D were not associated with SARS-CoV-2 seropositivity when analysis adjusted for potentially confounding factors such as age, sex, race/ethnicity, education, body mass index, blood pressure, smoking status, and geographical location. Although SARS-CoV-2-seropositive individuals did have lower vitamin D levels than seronegative individuals, low vitamin D levels were not independently associated with the risk of seropositivity. *Read.*

- *JAMA:* Immunogenicity of COVID-19 mRNA vaccines in pregnant and lactating women
  May 13, 2021. In this study of 103 women who received a COVID-19 mRNA vaccine, 30 of whom were pregnant and 16 of whom were lactating, immunogenicity was demonstrated in all, and vaccine-elicited antibodies were found in infant cord blood and breast milk. Pregnant and nonpregnant vaccinated women developed cross-reactive immune responses against SARS-CoV-2 variants of concern. These findings suggest that the COVID-19 mRNA vaccines were immunogenic in pregnant and lactating women and induced immune responses against SARS-CoV-2 variants. *Read.*

TRANSMISSION

- *Lancet:* Seroprevalence of anti-SARS-CoV-2 antibodies in Iquitos, Peru
  May 19, 2021. This study assessed the seroprevalence of COVID-19 in the city of Iquitos between July 13-18, 2020, and August 13-18, 2020 and found a seroprevalence of 70% at baseline and 66% at one month of follow-up. After the first epidemic peak (May 2020), Iquitos had one of the highest rates of seroprevalence of anti-SARS-CoV-2 antibodies worldwide, yet still experienced a second wave starting in January 2021. This was probably due to the emergence of the SARS-CoV-2 P1 variant, which has shown higher transmissibility and reinfection rates. *Read.*

* Figures in the header: Transmission electron microscope image shows SARS-CoV-2, the virus that causes COVID-19, isolated from a patient in the United States. Virus particles are emerging from the surface of cells cultured in the lab. The spikes on the outer edge of the virus particles give coronaviruses their name, crown-like. *National Institutes of Health's National Institute of Allergy and Infectious Diseases – Rocky Mountain Laboratories*

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DATA ANALYTICS, MODELLING AND MEASUREMENT

- *JAMA:* Estimation of transmission of COVID-19 in simulated nursing homes with frequent testing and immunity-based staffing
  May 14, 2021. In this modeling study of a simulated nursing home with 100 residents and 100 staff, routine screening testing and strategies that prioritized pairing recovered staff and recovered residents with susceptible residents were associated with a reduction in transmission of COVID-19 in nursing homes. These findings suggest that frequent testing and immunity-based staffing interventions may reduce transmission of SARS-CoV-2 in nursing homes and protect this vulnerable population. *Read*.

- *BMJ:* Public health impact of delaying second dose of BNT162b2 or mRNA-1273 COVID-19 vaccine
  May 12, 2021. This modeling study, examining the Pfizer and Moderna vaccines, simulated standard COVID-19 vaccination versus delayed second dose vaccination prioritizing the first dose based on real world US county data. The delayed second dose strategy was optimal for vaccine efficacies at or above 80% and vaccination rates at or below 0.3% of the population per day, under both sterilizing (i.e., both symptoms of infection and transmission of virus are prevented) and non-sterilizing (i.e., only symptoms are prevented) vaccine assumptions, resulting in absolute cumulative mortality reductions between 26 and 47 per 100000. The delayed second dose strategy for people under 65 years performed consistently well under all vaccination rates tested. *Read*.

PUBLIC HEALTH MEASURES

- *Lancet:* Prevalence and changes in food-related hardships by socioeconomic and demographic groups during the COVID-19 pandemic
  May 17, 2021. This study found that food-related hardships increased substantially in the UK, largely driven by reports of an inability to eat nutritious food. Data on food-related hardships from 11,104 respondents demonstrated that the prevalence of reporting an inability to eat healthy or nutritious food rose from 3.2% in April to 16.3% in July 2020. The largest increases in being unable to eat nutritious food were among Asian respondents, self-employed, and 33-44-year olds. The prevalence of being hungry but not eating rose from 3.3% in April to 5.1% in July, with the largest increases observed among unemployed individuals below the age of 65 years. *Read*.

- *JAMA:* Assessment of a crowdsourcing open call for approaches to university community engagement and strategic planning during COVID-19
  May 14, 2021. This study suggests that open calls are a feasible strategy for university community engagement on COVID-19, providing a stakeholder-driven approach to identifying promising ideas for enhancing safety and well-being. Open calls could be formally incorporated into university planning processes to develop COVID-19 safety strategies that are responsive to diverse community members' concerns. *Read*.

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HEALTH EQUITY AND VULNERABLE POPULATIONS

- *Lancet:* Need for and use of contraception by women before and during COVID-19
  June 2021. This preprint study discussed a national and regional survey on the need for and use of contraception by women during the COVID-19 pandemic in sub-Saharan Africa conducted from November 2019 to February 2020 and May 28 to July 20, 2020. The study found an increase in the need for and use of contraception among women without children. Findings do not support the anticipated harmful effect of COVID-19 on accessing contraceptive services by women in the earliest stages of the pandemic. *Read*.

- *Nature:* Equitable allocation of COVID-19 vaccines in the US
  May 18, 2021. This study analyzed vaccine allocation plans published on Nov 8, 2020, which tracked updates up to Mar 30, 2021. Findings demonstrated that by Mar 30, 2021, 14 jurisdictions had prioritized specific zip codes in combination with metrics such as COVID-19 incidence, and 37 jurisdictions (34 states) had adopted disadvantage indices, compared to 19 jurisdictions in Nov 2020. Five applications were distinguished: 1) prioritizing disadvantaged groups through increased shares of vaccines or vaccine appointments; 2) defining priority groups; 3) tailoring outreach and communication; 4) planning the location of dispensing sites; and 5) monitoring receipt. To ensure that equity is the central element in allocation plans, policymakers should universalize the uptake of disadvantage indices and related place-based measures. *Read*.

- *CMAJ:* Individual and social determinants of SARS-CoV-2 testing and positivity in Ontario
  May 17, 2021. This study examined the individual, environmental, and social determinants of being tested and diagnosed positive for SARS-CoV-2 infection among Ontario residents between March 1 and June 20, 2020. Of 14,695,579 people, 758,691 were tested for SARS-CoV-2, of whom 25,030 (3.3%) had a positive test result. Residing in areas with the highest household density, highest proportion of essential workers, lowest educational attainment, and highest proportion of recent immigrants were consistently related to increased odds of SARS-CoV-2 diagnosis. Optimizing COVID-19 responses necessitates creating interventions that are tailored to heterogeneity in social determinants of risk, including household crowding, occupation, and structural racism. *Read*.

- *Nature:* Global prevalence of mental health issues among the general population during COVID-19
  May 13, 2021. This systematic review and meta-analysis examined data from 32 different countries and 398,771 participants. The global prevalence estimate was 28.0% for depression; 26.9% for anxiety; 24.1% for post-traumatic stress symptoms; 36.5% for stress; 50.0% for psychological distress; and 27.6% for sleep problems. Data are limited for other aspects of mental health issues. The review also highlights the disparities between countries in terms of the poverty impacts of COVID-19, preparedness of countries to respond, and economic vulnerabilities that impact the prevalence of mental health problems. *Read*.

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FRONTLINE WORKERS

- *General Hospital Psychiatry:* Psychological impact of the COVID-19 pandemic on Ontario hospital workers May 5, 2021. This survey of diverse hospital staff in Ontario measured the individual characteristics associated with emotional exhaustion and psychological distress in Fall 2020 and Winter 2021. Results suggest that emotional exhaustion differed by occupational role (greatest in nurses), with increases over time in workers caring for children or elders. Severe emotional exhaustion increased over time, rising from 41.1% of participants in Fall 2020 to 49.8% in Winter 2021. Psychological distress also increased, rising from 9.7% in Fall 2020 to 11.6% in Winter 2021. Health care workers' psychological burden is high and rising as the pandemic persists. *Read*.

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:
  o 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 produces Canadian and global spotlights and horizon scans on emerging issues, as well as hosting 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.
  o 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. COVID-19 responses can include the full spectrum of public health measures, clinical management, health system arrangements, and economic and social responses. During the second half of April, contributing evidence-synthesis teams in Canada shared 12 completed evidence syntheses, and globally, there are a number of emergent issues related to COVID-19 for which evidence syntheses are or will be needed (see here). To receive an email containing hyperlinks to these products twice a month, subscribe here.