

COVID-19 PANDEMIC – RAEB'S EVIDENCE UPDATE

Highlights of health research evidence synthesized by the
Research, Analysis and Evaluation Branch (RAEB)

• July 5, 2021 •

FEATURED

- RAEB'S Rapid Responses for Ontario's health sector
- Evidence Products Produced with Our Partners
- 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.

Increasing Full-Time Positions in Long-Term Care (LTC) Settings

- The impact that COVID-19 had in LTC settings has put a spotlight on LTC staffing, and ways that it might meaningfully be changed to prevent future pandemics.
- Strategies to increase full-time positions and employee retention in LTC were only identified for Ontario, where such strategies were in place before the COVID-19 pandemic.
 - The primary strategy is the Nursing Graduate Guarantee policy, which aims to stimulate full-time employment for graduate nurses by offering a financial incentive for employers to hire and mentor new graduate nurses for a period of 20 weeks. A 2011 study found that this policy resulted in increased full-time employment of new graduate nurses and that mentorship facilitated workforce integration of new graduate nurses.
 - Another strategy is to offer 12-hour shifts; however, the workload during this shift length may be too physically intensive for PSWs as increased injury rates and absenteeism have been observed in some LTC homes where the strategy has been implemented.
- Three research studies from Canada and the United States (US), which assessed factors associated with full-time employment in nursing, suggested that family-friendly strategies (e.g., access to reliable and inexpensive childcare) may be beneficial in increasing retention of full-time nurses.
- The COVID-19 pandemic has resulted in additional LTC worker shortages; however, limited information was identified regarding the impacts of the pandemic specifically on full-time employment in LTC. For example, in Ontario, there have been staffing shortages of RNs, PSWs, and licensed practical nurses during the pandemic for many reasons (e.g., fear and anxiety of contracting COVID-19 in LTC settings, limited access to childcare supports).
 - New policies and strategies have been implemented in Ontario, British Columbia, the US, and Australia to retain LTC workers and mitigate infection spread in LTC settings, including: switching part-time staff to full-time status, implementing single-site LTC work policies, increasing wages, and/or providing childcare, housing, and transportation for employees.

* 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. 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*

EVIDENCE PRODUCTS PRODUCED WITH OUR PARTNERS

The COVID-19 Evidence Synthesis Network is comprised of groups specializing in evidence synthesis and knowledge translation. The group has committed to provide their expertise to provide high-quality, relevant, and timely synthesized research evidence about COVID-19 to inform decision makers as the pandemic continues. Please contact [Evidence Synthesis Unit](#) for the full read of these evidence products.

Pre-Operative COVID-19 Testing and Vaccination Policies

(Produced in collaboration with Ontario Health (Cancer Care Ontario))

- Pre-Operative COVID-19 Testing: Pre-operative and surgical COVID-19 testing strategies are in place in multiple jurisdictions (British Columbia [BC], Saskatchewan, United States, United Kingdom, Italy, Germany, Israel, South Korea, and India).
 - Testing Methods: The most commonly used and evaluated testing method is the nasopharyngeal swab for reverse transcriptase-polymerase chain reaction (RT-PCR) testing, while others also include antibody screening and point-of-care PCR testing. Timing of pre-operative screenings varies from 12 hours to five days prior to surgery.
 - Health Outcomes: A 2021 study reported that swab testing was beneficial before major pulmonary surgery, as well as in areas with a high 14-day SARS-CoV-2 case notification rate, but not beneficial in low-risk areas.
 - Costs: A 2021 study on pre-operative screening strategies in a South Korean hospital reported that a total of 10,645 pre-operative RT-PCR tests were performed during the study period, costing the hospital approximately CAD \$900,000. This was compared to the expected loss of CAD \$15,000,000 that would have occurred had the operating rooms been closed for two weeks due to the nosocomial spread of COVID-19.
- COVID-19 Vaccination and Elective Surgery: A review (May 2021) on COVID-19 vaccination and elective surgery reported that expert consensus from international professional societies generally recommend vaccinating patients against SARS-CoV-2 before elective surgery, as this may reduce the risk of COVID-19 complications and transmission of the virus during procedures. Most guidance documents on COVID-19 vaccination from Australia and England recommend pre-operative vaccination, though differ about suggested timings.
 - Timing for Pre-Operative Vaccination: Recommended timings for pre-operative COVID-19 vaccination are variable, ranging from a few days to weeks. Recommendations on time of vaccination before surgery by specialty groups varied as follows:
 - General Surgery: A few days to one week; one week; and several weeks.
 - Kidney Transplant: Three to four weeks.
 - Plastic or Cosmetic Surgery: At least one week.
 - Immunology: One week.
- Analysis for Ontario: An Ontario Health guidance document (June 8, 2020) recommends that pre-surgical (non-emergent) and pre-procedural COVID-19 testing should be conducted as close as possible to the date of the surgery or procedure, given local testing capacity.

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

- **Nature: Analysis of sex-specific risk factors and clinical outcomes in COVID-19 in New York City**
[Jun 30, 2021](#). This study followed 4,930 patients hospitalized with COVID-19 in a single health care system in New York City from the start of the pandemic until August 5, 2020, to determine clinical factors that may contribute to sex differences in the outcome of COVID-19. The study found that men hospitalized with COVID-19 had a higher risk of death than women when other factors were taken into account. Some conditions, like low oxygen levels and obesity, appeared to be associated with worse outcomes in women compared to men early in the pandemic but further studies will be necessary for confirmation. [Read](#).
- **Nature: Long COVID-19 in a prospective cohort of home-isolated patients in Bergen, Norway**
[Jun 23, 2021](#). This study followed 312 patients (247 home-isolated and 65 hospitalized) comprising 82% of total cases in Bergen during the first pandemic wave. The study found that among the home-isolated patients, 55% experienced persistent symptoms at six months. The study also found that 52% of home-isolated young adults (aged 16-30 years) had symptoms at six months, including loss of taste and/or smell (28%), fatigue (21%), dyspnea (13%), impaired concentration (13%), and memory problems (11%). [Read](#).
- **PLOS One: Global seroprevalence of SARS-CoV-2 antibodies**
[Jun 23, 2021](#). This systematic review of 968 studies from January 1, 2020 to December 31, 2020, including 9.3 million participants, found that the global seroprevalence of SARS-CoV-2 antibodies remains low in the general population, indicating the importance of remaining vigilant until vaccine-derived herd immunity is achieved. Geographic and population differences in SARS-CoV-2 infection prevalence were observed, with certain groups, including racial and ethnic minorities, being disproportionately affected. The review suggests that policy and decision makers need to better protect these groups to reduce inequity in the impact of COVID-19. [Read](#).
- **PLOS One: Body mass index (BMI) and severity/fatality from COVID-19 in South Korea**
[Jun 22, 2021](#). This study investigated the relationship between BMI and COVID-19 severity and fatality among 4,141 COVID-19 patients. The study demonstrated a non-linear (U-shaped) relationship between BMI and fatal illness. Subjects with a BMI of <18.5 kg/m² and those with a BMI ≥ 25 kg/m² had a high risk of fatal illness. These results suggest that maintaining a healthy weight is important not only to prevent chronic cardiometabolic diseases, but also to improve the outcome of COVID-19. [Read](#).

RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE cont'd

TRANSMISSION

- **NEJM: Effect of vaccination on household transmission of SARS-CoV-2 in England**
[Jun 23, 2021](#). This study used data from the Household Transmission Evaluation Dataset (HOSTED) to examine COVID-19 transmission among unvaccinated household contacts of infected persons who had received at least one dose of the ChAdOx1 nCoV-19 or BNT162b2 (i.e., AstraZeneca or Pfizer-BioNTech) vaccine 21 days or more before testing positive. Household transmission was approximately 40-50% lower in households of index patients who had been vaccinated 21 days or more before testing positive than in households of unvaccinated index patients. Findings were similar for the two vaccines. [Read](#).

DISEASE MANAGEMENT

- **Nature: Follow-up of COVID-19 recovered patients with mild disease**
[Jun 28, 2021](#). This study investigated the presence or absence of 11 post-viral symptoms in patients (N=242) who had recovered from mild COVID-19 disease. Female patients were more likely to experience eight of the 11 symptoms. Patients with co-morbidities were significantly more likely to experience decreased appetite and sleep disturbances. The study notes that identifying post-COVID-recovery symptoms will assist clinicians to proactively arrange appropriate follow-up visits and rehabilitation, if needed. [Read](#).
- **American Journal of Kidney Diseases: Humoral and cellular responses to mRNA SARS-CoV-2 vaccines administered to hemodialysis patients in Barcelona, Spain**
[Jun 24, 2021](#). This study evaluated humoral and cellular responses to mRNA SARS-CoV-2 vaccines (mRNA-1273 and BNT162b2; i.e., Moderna and Pfizer-BioNTech) in patients with kidney failure requiring maintenance dialysis. The study found that 97.7% of vaccinated patients (N=175) who were seronegative at baseline developed a response (humoral, cellular, or both) and identified that greater age and immunosuppressive treatment were associated with lower antibody levels. Due to the high risk of infection and poor clinical outcomes among these patients, the study concluded that it is necessary to make vaccination a health priority within this population. [Read](#).
- **Journal of Ethnopharmacology: Efficacy and safety of ReDuNing (RDN) injection as a treatment for COVID-19 and its inhibitory effect against SARS-CoV-2**
[Jun 24, 2021](#). This study examined the clinical efficacy of RDN injection, a traditional Chinese medicine, in patients with COVID-19 and sought to characterize its antiviral activity against SARS-CoV-2 in vitro. Findings indicated that RDN relieves clinical symptoms in patients with COVID-19 and reduces SARS-CoV-2 infection by regulating inflammatory cytokine-related disorders. These findings suggest that RDN might be a safe and effective treatment for COVID-19. [Read](#).

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HEALTH EQUITY AND VULNERABLE POPULATIONS

- **Nature: Risk factors for mortality among nursing homes exposed to COVID-19 in Catalonia, Spain**
[Jun 28, 2021](#). This study of 167 nursing homes providing long-term care to 8,716 residents during the COVID-19 outbreak found that COVID-19-related and overall mortality at the facility level was significantly associated with a higher percentage of patients with complex diseases, lower scores on pandemic preparedness measures, and higher population incidence of COVID-19 in the surrounding population. [Read](#).
- **JAMA: Association of the COVID-19 pandemic with estimated life expectancy by race/ethnicity in the US 2020**
[Jun 24, 2021](#). This study aimed to update life expectancy estimates in the US using observed COVID-19 deaths for all of 2020 and more recent pre-pandemic mortality conditions. Updated estimates indicate that COVID-19 reduced overall life expectancy by 1.31 years for the general population. The reductions are 3.2 times as large for the Latino population (3.03 years) and twice as large for the Black population (1.90 years) compared with the White population (0.94 years). Various social and economic inequities are attributed to these disparities. The study notes that the Black population's life expectancy decline has likely been underestimated, due to the exclusion of deaths that have indirectly resulted from COVID-19. [Read](#).
- **NJEM: Three doses of an mRNA COVID-19 vaccine in solid-organ transplant recipients in France**
[Jun 23, 2021](#). This study examined the impact of a third dose of the BNT162b2 (i.e., Pfizer-BioNTech) vaccine among solid-organ transplant patients (e.g., kidney-, liver-, lung-, heart-, and pancreas-transplant recipients). The prevalence of anti-SARS-CoV-2 antibodies was 0% (zero of 101 patients) before the first dose, 4% (four of 101 patients) before the second dose, 40% (40 of 99 patients) before the third dose, and 68% (67 of 99 patients) four weeks after the third dose. Patients who did not have an antibody response were older, had a higher degree of immunosuppression, and had a lower estimated glomerular filtration rate than patients who had an antibody response. [Read](#).
- **Journal of Affective Disorders: Prevalence of mental health problems among children and adolescents during the COVID-19 pandemic**
[Jun 18, 2021](#). This systematic review of 23 studies from China and Turkey including more than 50,000 children and adolescents reported the pooled prevalence for depression (29%), anxiety (26%), sleep disorders (44%) and post-traumatic stress symptoms (48%) during the global COVID-19 pandemic. Adolescents and females exhibited higher prevalence of depression and anxiety compared to children and males. Further research investigating the mental health of children and adolescents is needed from other countries. [Read](#).

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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](#).
 - During the second half of June, Canadian evidence synthesis teams completed 18 new evidence syntheses. Please visit [Canadian Spotlight 6.2](#) to view the evidence, or browse [past Canadian evidence spotlights](#).