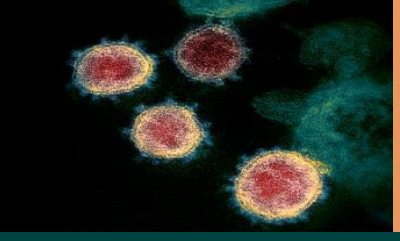
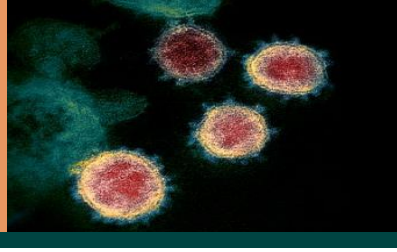


COVID-19 PANDEMIC – RAEB'S EVIDENCE UPDATE

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

• December 14, 2020 •



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

CONTACT RAEB

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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.

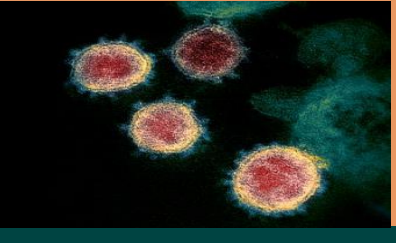
- Best Practices for Caring for Persons Under Investigation (PUIs) for COVID-19 in Hospital Settings

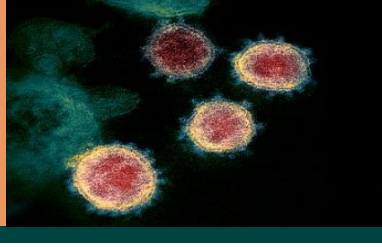
Limited information was identified on this topic. Most of this literature discussed caring and housing PUIs in terms of a combination of the following strategies:

- Testing: Although resource-intensive, two studies from the United Kingdom (UK) and United States (US) found point-of-care testing led to a reduction in the time to availability of results, improvement in infection prevention and control (IPC) measures, and reduction in bed moves and time spent in assessment areas.
- Triaging: Studies and/or guidance from Manitoba, Canada, UK, US, and South Korea suggest reorganizing hospitals into several zones to segregate PUIs from other patients. These zones may be defined by the likelihood of COVID-19 and risk of outcomes (e.g., low/high likelihood and low/high-risk), which can determine the order of priority for isolation in single-occupancy rooms, cohorting, or segregation in waiting rooms/areas that allows for physical distancing.
- Isolation: Studies and/or guidance from Canada, UK, US, South Korea, South Africa, and Australia support the immediate isolation of PUIs, either in single-occupancy rooms or waiting rooms/areas that allow for social distancing or cohorting. Physical barriers (e.g., curtains, partitions, doors) can be constructed to create isolated areas.
- Cohorting: Studies and/or guidance from Alberta, UK, and Singapore suggest cohorting PUIs in areas segregated from the rest of the hospital when isolation capacity is limited. A staged approach to cohorting may be based on minimizing risk to the most patients, expert consultation, vaccination status, underlying patient conditions, and whether a caregiver is required for patient support. Guidance from Canada, Manitoba, Alberta, US, and Australian states does not recommend cohorting PUIs if it can be avoided; cohorting should ideally be only for patients confirmed to have COVID-19. PUIs and confirmed COVID-19-positive patients should not be cohorted together.
- IPC Measures: All testing, triaging, isolation, and cohorting best practices should be implemented with appropriate IPC measures, for example: screening, personal protective equipment for health care workers, mask wearing by PUIs, clear signage for designated areas, physical barriers, bed spacing by at least 1.5-2 metres, dedicated toilets and sinks, proper ventilation, enhanced cleaning, and contact tracing. Staff cohorting can minimize the risk of transmission; if staffing levels cannot support this, then care should be done in a sequential fashion (care for PUIs first, then COVID-19-positive patients).

RAEB'S RAPID RESPONSES FOR ONTARIO'S HEALTH SECTOR cont'd

- Youth Compliance with COVID-19 Public Health Measures
  - Compliance and Non-Compliance with Public Health Measures: Mixed findings on youth and young adult compliance/non-compliance were identified regarding physical distancing, mask wearing, and other public health measures (i.e., washing hands, sleeve sneeze, cough into elbow).
    - Non-Compliance: The male gender, young age, being single, employed, and decreased income are largely associated with non-compliance. With regard to the following measures, youth and young adults:
      - *Physical Distancing*: Are report being non-compliant with physical distancing in unavoidable (e.g., an elevator; public washrooms; a small grocery store aisle; public transit), and avoidable situations (e.g., engaging in social activities to manage unease from "cabin fever")
      - *Mask Wearing*: Report not wearing a mask when socializing with friends due to those interactions eliciting a sense of security and acceptance, and the assumption that they will be unaffected if they contract COVID-19.
  - Strategies or Best Practices for Increasing Compliance to COVID-19 Public Health Measures: Most strategies aim at increasing physical distancing compliance.
    - Communications and Messaging: Initiatives can increase compliance through considering the use of different key messages, tone, and delivery directed to particular cohorts of youth and young adults. Communication should be clear, accessible, motivational, positive, and outline the consequences of not complying to public health measures.
    - Behavioural Changes and Skill Development: Empowering youth and young adults to physically distance requires developing a range skills and capabilities such as: patience, discipline, and self-awareness; empathy, compassion, and sense of community; becoming more informed; spatial awareness; and relaxation and positive mental health.
    - Social Influences: When it comes to physical distancing, family and friends are most influential, especially among younger cohorts, along with various spokespeople such as politicians, experts in the field, entertainers/celebrities, and social media influencers.
  - Analysis of Ontario: Consultation with youth and young adults in Ontario generally suggest they are non-compliant with physical distancing in unavoidable (e.g., an elevator; public washrooms; a small grocery store aisle; public transit) and avoidable (e.g., couples in separate households not physically distancing) situations. Strategies for increasing compliance include focusing on communication and messaging (i.e., using key messages, tone, and delivery of information that is clear and positive directed to particular cohorts of youth) and behavioural changes and skills development (e.g., patience, discipline, self-awareness, empathy, compassion, sense of community).





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.

- Association between COVID-19 and Vitamin D Levels
  (Produced in collaboration with McMaster Health Forum).

  - Twenty-two systematic reviews, reviews, or studies were identified that suggested that Vitamin D supplementation may help boost the immune system and reduce COVID-19 incidence, symptoms, and/or severity, particularly among vulnerable populations (e.g., older adults, obese individuals, individuals living at high latitudes and experiencing lower daily light exposure during the dark months of the year, individuals with dark skin tones or with greater levels of skin pigmentation), although definitive randomized controlled trials are needed. Since Vitamin D has multiple cellular and intracellular targets, it is recommended to be administered with caution and monitoring to avoid stimulating or inhibiting some cellular functions that could induce infectious tolerance.
  - Ten systematic reviews, reviews, or studies were identified that suggested there is not enough evidence regarding the association between Vitamin D levels and COVID-19 severity and mortality.

* 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*

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.

TRANSMISSION

- *Lancet*: COVID-19 infection and transmission in educational settings
  Dec 8, 2020. This study analyzed a variety of educational settings ranging from early years settings (< five years) to secondary schools (11-18 years) in England that reopened after the first national lockdown (June 1 to July 17, 2020). One hundred and thirteen single cases of SARS-CoV-2 infection, nine co-primary cases (at least two confirmed cases within 48 hours, typically within the same household), and 55 outbreaks were found with a higher incidence among staff than students. The probable direction of transmission was staff-to-staff in 26 outbreaks, indicating that interventions should focus on reducing transmission in and among staff. *Read*.

CASE TESTING AND SCREENING

- *Lancet*: Real-life validation of the Panbio™ COVID-19 antigen rapid test (Abbott) in community-dwelling subjects with symptoms of potential SARS-CoV-2 infection in the Netherlands
  Dec 5, 2020. This study found that the rapid antigen test had 100% specificity and a sensitivity above 95% for nasopharyngeal samples when using Ct-values <32 cycles as cut-off for RT-qPCR test positivity. Considering short turnaround times, user friendliness, low costs, and opportunities for decentralized testing, this test may improve efforts to control transmission of SARS-CoV-2. *Read*.

DATA ANALYTICS, MODELLING AND MEASUREMENT

- *Nature*: Strategic spatiotemporal vaccine distribution may increase the survival rate in COVID-19
  Dec 9, 2020. This modelling study proposed a strategy for the distribution of vaccines in time and space, which sequentially prioritizes regions with the most new cases of infection during a certain time frame, and compared it with the standard practice of distributing vaccines demographically. For a locally well-mixed population, the proposed strategy strongly reduced the number of deaths (by about a factor of two for basic reproduction numbers of $R_0 \sim 1.5\text{-}4$ and by about 35% for $R_0 \sim 1$). The proposed vaccine distribution strategy suggests that prioritizing individuals not only regarding individual factors (e.g., risk of spreading the disease), but also according to the region in which they live, can help save lives. *Read*.

RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE

DISEASE MANAGEMENT

- *Nature*: Identifying side effects of commonly used drugs in the treatment of COVID-19
  Dec 9, 2020. This study examined the interactions and potential side effects of eight drugs (i.e., chloroquine, hydroxychloroquine, azithromycin, ritonavir, ribavirin, atazanavir, heparin, and clozapine) used for COVID-19 treatment with 645 different drugs. The hematopoietic system and the cardiovascular system were exposed to more side effects than other organs. Heparin and Atazanavir appeared to cause more adverse reactions than other drugs; Ritonavir had negative interactions with the fewest drugs. Dizziness, headache, and thrombocytopenia were the most common side effects due to multiple use of drugs. These experimental results may facilitate drug selection and increase the success of COVID-19 treatment according to the targeted patient. *Read*.
- *Nature*: Male sex identified by global COVID-19 meta-analysis as a risk factor for death and intensive treatment unit (ITU) admission
  Dec 9, 2020. This meta-analysis of 3,111,714 reported global cases found that while there is no difference in the proportion of males and females with confirmed COVID-19, male patients have almost three times the odds of requiring ITU admission and higher odds of death compared to females. *Read*.
- *Lancet*: Safety and efficacy of the ChAdOx1 nCoV-19 vaccine (AZD1222)
  Dec 8, 2020. Based on preliminary data from four ongoing randomized controlled trials in Brazil, South Africa, and the UK, this interim analysis found the ChAdOx1 nCoV-19 vaccine has an acceptable safety profile and is efficacious against symptomatic COVID-19. Between April 23 and Nov 4, 2020, 23,848 participants were enrolled and 11,636 participants were included in the interim primary efficacy analysis. *Read*.
- *NEJM*: Repurposed antiviral drugs for COVID-19 – Interim World Health Organization (WHO) Solidarity trial results
  Dec 2, 2020. This study carried out mortality trials of four repurposed antiviral drugs (i.e., remdesivir, hydroxychloroquine, lopinavir, and interferon beta-1a) in patients hospitalized with COVID-19. At 405 hospitals in 30 countries, 11,330 adult inpatients with COVID-19 were assigned to a trial drug regimen (2,750 remdesivir; 954 hydroxychloroquine; 1,411 to lopinavir; 2,063 to interferon, including 651 to interferon plus lopinavir; and 4,088 to no trial drug). In total, 1,253 deaths were reported. Results suggest that no drug definitely reduced mortality or reduced initiation of ventilation or hospitalization duration. *Read*.
- *Nature*: Clinical characteristics and predictors of mortality associated with COVID-19 in elderly patients from a long-term care facility (LTCF)
  Nov 30, 2020. This retrospective study assessed clinical characteristics and baseline predictors of mortality among 50 COVID-19 patients (mean age of 80 years) hospitalized after an outbreak of COVID-19 in a LTCF. The overall in-hospital mortality rate was 32%, and significant predictors of mortality were hypernatremia, lymphopenia, cardiovascular disease other than hypertension, and higher IL-6 serum levels. *Read*.

RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE cont'd

HEALTH EQUITY AND VULNERABLE POPULATIONS

- *JAMA*: Race/ethnicity among children with COVID-19 associated Multisystem Inflammatory Syndrome (MIS-C) Nov 30, 2020. Using demographic and clinical data of patients under 20 years of age who were hospitalized with MIS-C between March 1 and June 30, 2020 (n=223), this study found a disproportionate burden of MIS-C among Black and Hispanic children in New York City (NYC). Black children constitute 22.2% of the NYC population and 19.9% of COVID-19 hospitalizations, yet 34.4% of patients with MIS-C (n=75) were Black. The proportion of patients with MIS-C who were Hispanic (29.8%) was similar to the NYC population, but lower than that for COVID-19 hospitalizations (40.0%). *Read*.
- *JAMA*: Unemployment insurance, health-related social needs, health care access, and mental health Nov 30, 2020. A US-based study used Household Pulse Survey data collected between June 11 and July 21, 2020 to determine how receiving unemployment insurance benefits impacted working-age adults with household income disruption from pandemic-related job loss (n=68,911). Results suggest that being in a household that received benefits was associated with fewer health-related social needs, less health care delay, and better mental health. *Read*.
- *Journal of the American Medical Directors Association*: Social connection in long-term care (LTC) homes Nov 26, 2020. This review identified 61 studies that demonstrated an association between social connection (i.e., social support, social engagement, loneliness, and social networks) and mental health outcomes (e.g., depression, mood, anxiety, medication use, boredom) among LTC residents. While more research is needed in this area, some studies provide evidence on approaches to address social connection with LTC residents including: 1) pain management; 2) addressing vision and hearing loss; and 3) sleep at night, and not during the day. *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.
- An up-to-date and comprehensive list of sources, organized by type of research evidence, is available on McMaster Health Forum's COVID-19 Evidence Network to support Decision-making (COVID-END) website.
- 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.