COVID-19 PANDEMIC – RAEB'S EVIDENCE UPDATE
Highlights of health research evidence synthesized by the Research, Analysis and Evaluation Branch (RAEB)
• July 19, 2021 •

FEATURED

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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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.

Effectiveness of Rehabilitation Interventions for People with 'Long COVID'

(Produced in collaboration with Ontario Health(Q))

- Prevalence of Long COVID: A World Health Organization (WHO) policy brief (February 2021) reported that approximately 25% of COVID-19-positive patients still experience symptoms beyond the acute phase of the disease (four to five weeks after a positive test), and approximately 10% experience debilitating symptoms 12 weeks after having COVID-19, which may last for several more months.
- Rehabilitation Care Models: Twelve identified care models have been developed and implemented for COVID patients discharged following a hospitalization and patients who had lived with the infection in the community.
  - *Model Components*: The five most commonly identified model components were: 1) standardized symptom assessment; 2) referral system; 3) follow-up system; 4) telehealth/virtual care; and, 5) home-based care.
  - *Staffing*: Thirty health care professions and medical specialties were proposed for staffing Long COVID services. The following five were most commonly named: 1) pulmonary/respiratory; 2) cardiovascular; 3) psychiatry/psychology; 4) physiotherapy; and, 5) occupational therapy.
- Effectiveness of Rehabilitation of Long COVID: Overall, studies reported that patients with Long COVID who received rehabilitation services improved on exercise tests, quality of life, and function (i.e., less fatigue and lower perceived limitations to daily activities due to COVID-19) from baseline to follow-up or compared with a control group.
- Implications for Ontario: Based on identified research, it is possible to design a rehabilitation care model for the Long COVID population that is integrated in the current health care system, has a sustainable and equitable care pathway, and integrates primary care, rehabilitation services, and specialty care for medical assessment.

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:* Clinical characterization and prediction of clinical severity of SARS-CoV-2 infection among US adults
  Jul 13, 2021. Drawing on data from the National COVID Cohort Collaborative (the largest, most representative COVID-19 cohort to date), this study of 174,568 adults with SARS-CoV-2 evaluated COVID-19 severity and risk factors over time and assessed the use of machine learning to predict clinical severity. Patient demographic characteristics (e.g., age, male sex, African American race, obesity) and comorbidities were associated with higher clinical severity. The machine learning models accurately predicted ultimate clinical severity using commonly collected clinical data from the first 24 hours of a hospital admission. *Read*.
- *Lancet:* Difference in mortality among individuals admitted to hospital with COVID-19 during the first and second waves in South Africa
  Jul 9, 2021. This study found that peak rates of COVID-19 cases, hospital admissions, and deaths in the second wave exceeded rates in the first wave (31% increased risk of in-hospital mortality in the second wave). Compared with the first wave, individuals admitted to a hospital in the second wave were more likely to: be over the age of 40 years; be of mixed race, compared with White race; be admitted in the public sector; and have a comorbid condition. Although some of the increased mortality in the second wave can be explained by a higher proportion of admissions being older individuals in the public sector, the residual mortality increase could be related to the new SARS-CoV-2 501Y.V2 (Beta) lineage, which contains several mutations that were not identified in SARS-CoV-2 viruses from South Africa before September 2020. *Read*.
- *JAMA:* Assessment of prolonged physiological and behavioural changes associated with COVID-19 symptoms in the US
  Jul 7, 2021. This study examined the duration and variation of recovery among individuals who reported symptoms of an acute respiratory illness and were found to be either COVID-19 positive (n=234) or negative (n=641). The study found that individuals with COVID-19 took longer to return to their resting heart rate, sleep, and activity baselines compared with symptomatic individuals who were COVID-19-negative. Overall, findings suggest a prolonged physiological impact of COVID-19 infection, lasting approximately two to three months, but with substantial intraindividual variability, which may reflect various levels of autonomic nervous system dysfunction or potentially ongoing inflammation. *Read*.

RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE cont'd

TRANSMISSION

- *Lancet:* Decreased infectivity following Pfizer vaccination in Israel
  Jul 7, 2021. This study found that the BNT162b2 mRNA vaccine (Pfizer) was moderately to highly effective in reducing infectivity, via preventing infection and through reducing viral shedding, among 9,650 health care workers at a large tertiary medical centre in Israel. *Read*.

DISEASE MANAGEMENT

- *NEJM:* Bamlanivimab plus Etesevimab in mild or moderate COVID-19 patients
  Jul 14, 2021. In this phase three trial involving 1,035 outpatients with mild or moderate COVID-19 who were at increased risk for progression to severe disease, those who received a single intravenous infusion of a combination of two monoclonal antibodies (Bamlanivimab plus Etesevimab) within three days of lab diagnosis had a significant reduction in SARS-CoV-2 viral load and a lower incidence of COVID-19-related hospitalization and death than those who received placebo. *Read*.
- *Nature:* Effect of prone position on COVID-19 patients
  Jul 13, 2021. This systematic review and meta-analysis of 28 studies found that prone positioning has no significant effect on the respiratory rate or other respiratory parameters. However, prone positioning was associated with improved oxygenation parameters and reduced mortality and intubation rate in COVID-19 related respiratory failure. *Read*.
- *Nature:* Moderna COVID-19 vaccine effectiveness against variants of concern in Qatar
  Jul 9, 2021. This study assessed the real-world effectiveness of the mRNA-1273 (Moderna) vaccine against SARS-CoV-2 variants of concern, specifically B.1.1.7 (Alpha) and B.1.351 (Beta), in Qatar, a population that comprises mainly working-age adults. Findings indicate that Moderna is highly effective against B.1.1.7 and B.1.351 infections, whether symptomatic or asymptomatic, and against any COVID-19 hospitalization and death, even after a single dose. *Read*.
- *JAMA:* Association between administration of IL-6 antagonists and mortality among patients hospitalized for COVID-19
  Jul 6, 2021. This meta-analysis of 27 randomized trials (n=10, 930 hospitalized COVID-19 patients) found that administration of IL-6 antagonists, compared with usual care or placebo, was associated with lower 28-day all-cause mortality, as well as lower progression to invasive mechanical ventilation or death, cardiovascular support or death, and kidney replacement therapy or death in patients not receiving support for the corresponding organ at randomization. Administration of IL-6 antagonists was not associated with an increased risk of 28-day infection compared with usual care or placebo. *Read*.

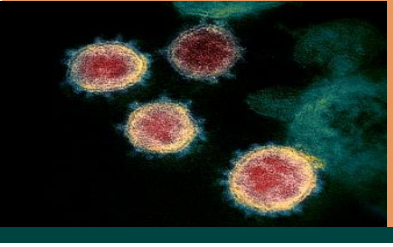
RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE cont'd

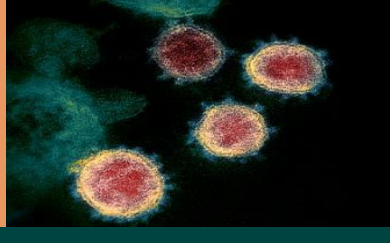
PUBLIC HEALTH MEASURES

- *Journal of the American Geriatrics Society:* Telehealth was beneficial during COVID-19 for older Americans
  Jul 10, 2021. This study assessed physician experiences with using telemedicine for older patients (n=48; geriatrician, n=18, primary care, n=15, emergency, n=15) and reported five key emerging themes: 1) telehealth uptake was rapid and iterative; 2) telehealth improved the safety of medical care; 3) use cases were specialty-specific (e.g., substituting for in-person visits with geriatricians, supplementing visits with emergency physicians); 4) physicians altered clinical care to overcome older patient barriers to telehealth use; and 5) telehealth use among physicians declined in mid-April 2020, due primarily to patient needs and administrator preferences, not physician factors. The study concluded that physician experiences during the pandemic can inform interventions and policies to help maintain telehealth for ongoing health care delivery and ensure its accessibility for older Americans. *Read*.

HEALTH EQUITY AND VULNERABLE POPULATIONS

- *Disaster Med Public Health Prep:* Variations in presentation and management of COVID-19 in patients by race and ethnicity in a large Texas metroplex hospital
  Jul 12, 2021. This study found that race/ethnicity was not a significant predictor of ICU admission or case fatality. However, patients reporting Spanish as their primary language were significantly more likely to be admitted to the ICU. These findings suggest that state-wide disparities in mortality rate may be attributed more to unequal infection risk than to hospital course and demonstrates the need to pursue tailored interventions on both a community and structural level to mitigate further health disparities. *Read*.
- *Nature:* Public mental health problems during the COVID-19 pandemic
  Jul 9, 2021. This meta-analysis on the prevalence of mental health problems during the COVID-19 pandemic included data from the US, China, Japan, India, Italy, Spain, Greece, Singapore, and Turkey. The results demonstrated a total prevalence of anxiety symptoms (32.60%), depression (27.60%), insomnia (30.30%), and post-traumatic stress disorder symptoms (16.70%). However, subgroup analyses revealed the highest prevalence of anxiety (63.90%) and depression (55.40%) in confirmed and suspected patients compared with other cohorts, as well as insomnia and post-traumatic stress disorder in medical staff. The heterogeneous results observed were noted to potentially be due to the non-standardized use of psychometric tools. *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:
  - 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) lobal 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. A complete list of the products is available here.

* 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*