

COVID-19 PANDEMIC

RAEB'S Evidence Update

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

March 22, 2021

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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.

Rapid COVID-19 Testing Deployment and Non-Essential Business Sectors

Between January and March 2021, rapid COVID-19 testing programs have been piloted across jurisdictions to support the re-opening of non-essential business: travel (Toronto, ON), construction industries (ON), food production (Scotland), and the trucking industry (Singapore). Outcomes have yet to be reported. Mass COVID-19 testing is currently being carried out in the City of Liverpool (UK), Germany, Iceland, Slovakia, and China. No identified studies have evaluated the effectiveness of the identified mass testing strategies, how they compare to each other, or the feasibility or cost-effectiveness of adopting them in Ontario. The US Centers for Disease Control and Prevention guidance on businesses and employers responding to COVID-19 suggests that repeated testing over time, also referred to as 'serial' testing, may be more likely to detect infection among workers with exposures than testing done at a single point in time.

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.

Disease Management

Journal of the American Medical Association (JAMA): Outcomes and risk factors associated with SARS-CoV-2 infection in a North American registry of patients with multiple sclerosis

March 19, 2021. In this study of 1,626 North American patients with multiple sclerosis (MS) and COVID-19 infection, ambulatory disability (i.e., both patients who are non-ambulatory and those requiring assistance to walk) was independently associated with increased odds of poor clinical severity levels after adjusting for other risk factors. Other factors including older age, male sex, Black race, cardiovascular comorbidities, and corticosteroid use in the past two months were associated with increased odds of increasing clinical severity compared with those not requiring hospitalization or worse. These findings suggest that the identification of risk factors can improve the treatment of patients with MS and COVID-19 by alerting clinicians of patients requiring more intense treatment or monitoring. [Article](#).

JAMA: Four-month clinical status of a cohort of patients after hospitalization for COVID-19

March 17, 2021. In this study of 478 survivors of COVID-19, at least one new-onset symptom was reported by telephone interview by 244 patients (51%), including fatigue in 134 of 431 (31%), cognitive symptoms in 86 of 416 (21%), and dyspnea in 78 of 478 (16%). Computed tomographic lung scan abnormalities were reported in 63% of 171 patients assessed at an ambulatory visit. Fibrotic lesions were observed in 19% of these 171 patients. This study provides clinical status of a cohort of patients four months after hospitalization for COVID-19, but further research is needed to understand longer-term outcomes. [Article](#).

JAMA: Efficacy of the ChAdOx1 nCoV-19 COVID-19 vaccine against the B.1.351 variant

March 16, 2021. This randomized controlled trial found that a two-dose regimen of the ChAdOx1 nCoV-19 vaccine (i.e., the vaccine produced by AstraZeneca) did not show protection against mild-to-moderate COVID-19 due to the B.1.351 variant in people not infected with HIV in South Africa, where that variant was first identified. [Article](#).

New England Journal of Medicine (NEJM): COVID-19 vaccine testing and administration guidance for allergists/immunologists

March 15, 2021. This review from the Canadian Society of Allergy and Clinical Immunology (CSACI) provides the first Canadian guidance regarding assessment of an adolescent and adult with a suspected allergy to one of the COVID-19 vaccines currently available, or any of their known allergenic components, and for patients who are immunocompromised who require vaccination for COVID-19. Assessment by an allergist is warranted in any individual with a suspected allergy to a COVID-19 vaccine or any of its components; assessment is not required

for individuals with a history of unrelated allergies, including to allergies to foods, drugs, insect venom, or environmental allergens. COVID-19 vaccines should be offered to immunocompromised patients if the benefit is deemed to outweigh any potential risks of vaccination. [Article](#).

Case Testing and Screening

Nature: Increased mortality in community-tested cases of SARS-CoV-2 lineage B.1.1.7

March 15, 2021. To identify whether the SARS-CoV-2 variant, B.1.1.7 (i.e., the variant first identified in the UK) leads to any change in disease severity, this study analyzed a dataset linking positive SARS-CoV-2 community tests (n=2,245,263) and COVID-19 deaths (n=17,452) in England from September 1, 2020 to February 14, 2021. A total of 4,945 deaths were identified, indicating a hazard of death that was 55% higher after adjustment for demographic factors. Overall, the study estimated a 61% (42-82%) higher hazard of death associated with B.1.1.7. These findings suggest that B.1.1.7 is not only more transmissible than pre-existing SARS-CoV-2 variants but may also cause more severe illness. [Article](#).

Understanding the Disease

Cochrane: COVID-19 and its cardiovascular effects

March 11, 2021. This systematic review assessed the prevalence of pre-existing cardiovascular comorbidities associated with suspected or confirmed cases of COVID-19 in a variety of settings, including the community, care homes, and hospitals. The findings indicate that cardiometabolic comorbidities are common in people who are hospitalized with a severe COVID-19 infection. The most frequent cardiovascular complications are cardiac arrhythmias, heart failure, and arterial and venous occlusive events. Laboratory biomarkers may help identify those at greater risk of developing cardiovascular complications and of death. [Article](#).

Health Equity and Vulnerable Populations

JAMA: Association of Vitamin D levels, race/ethnicity, and clinical characteristics with COVID-19 test results

March 19, 2021. In this cohort study of 4,638 individuals with a measured vitamin D level in the year before undergoing COVID-19 testing, the risk of having positive results in Black individuals was 2.64-fold greater with a vitamin D level of 30 to 39.9 ng/mL than a level of 40 ng/mL or greater and decreased by five percent per one ng/mL increase in level among individuals with a level of 30 ng/mL or greater. There were no statistically significant associations of vitamin D levels with COVID-19 positivity rates in White individuals. These findings suggest that

randomized clinical trials to determine whether increasing vitamin D levels to greater than 30 to 40 ng/mL affect COVID-19 risk are warranted, especially in Black individuals. [Article](#).

Pediatric Blood & Cancer: Clinical presentations and outcomes of children with cancer and COVID-19

March 15, 2021. This systematic review analyzed 33 published studies regarding the clinical manifestations and outcomes of 226 pediatric cancer patients affected by COVID-19. The findings suggest that males and children on intensive treatment were more frequently affected by COVID-19 and fever was the most common symptom. About 10% of children required intensive care, 32% had oxygen requirements, and 4.9% of children died due to COVID-19. Overall, the severity, morbidity, and mortality of COVID-19 in pediatric oncology were higher compared to the general pediatric population. [Article](#).

medRxiv: Vaccine effectiveness in long-term care facility residents and health care workers

March 9, 2021. A population-based study (preprint) assessed the effectiveness of the Pfizer/BioNTech vaccine for COVID-19 after the first and second doses in all long-term care facility (LTCF) residents (n=39,040) and health care workers (HCWs; n=331,039) in Denmark. During the study period, there had been increased focus on testing in LTCFs and a national testing strategy, where HCWs were offered weekly PCR-testing. After the second dose, the authors estimated a vaccine effectiveness of 52% and 46% in LTCF residents and HCWs within seven days, which increased to 64% and 90% in the two groups respectively beyond seven days of immunization. These findings support maintaining a two-dose schedule of the Pfizer COVID-19 vaccine. [Article](#).

Frontline Workers

Journal of Perinatology: Maternal and neonatal health care worker well-being and patient safety during the COVID-19 pandemic

March 16, 2021. A survey was conducted on well-being, burnout, and patient safety of obstetric and neonatal health care workers (HCWs; n=288) in California in June 2020. Reported results suggest that HCWs who were “burned out” (66%) reported significantly worse well-being and patient safety attributes. Compared to physicians, nurses reported higher rates of unprofessional behaviour (37% vs. 14%) and difficulty focusing on work (59% vs. 36%). The authors concluded that three months into the COVID-19 pandemic, HCW well-being was substantially compromised, raising concerns for patient safety. [Article](#).

Public Health Measures

British Journal of Cancer: Effects of cancer screening restart strategies after COVID-19 disruption

March 15, 2021. This study aimed to estimate the effects of five restart strategies after COVID-19 disruptions on screening capacity and cancer burden among the Dutch population. The disruption in screening programs without catch-up of missed screens led to an increase of 2.0, 0.3, and 2.5 cancer deaths per 100,000 individuals in 10 years in breast, cervical, and colorectal cancer, respectively. Immediately catching-up on missed screens minimized the impact of the disruption but required a surge in screening capacity, whereas delaying screening but still offering all screening rounds gave the best balance between required capacity, incidence, and mortality. [Article](#).

Infection, Prevention, and Control in Specific Settings

The Lancet: SARS-CoV-2 infection and transmission in primary schools in England between June - December 2020

March 16, 2021. After the first national lockdown, Public Health England initiated a study, COVID-19 Surveillance in School KIDs (sKIDs), to estimate the incidence of symptomatic and asymptomatic SARS-CoV-2 infection, seroprevalence, and seroconversion among primary school staff and students. Weekly SARS-CoV-2 infection rates were 4.1 per 100,000 students and 12.5 per 100,000 staff. SARS-CoV-2 infection rates were low in primary schools following their partial and full reopening in June and September 2020. [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 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](#).
- 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 first half of March, contributing evidence-synthesis teams in [Canada](#) shared 18 completed evidence syntheses and four questions that they have newly taken on, 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](#).

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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