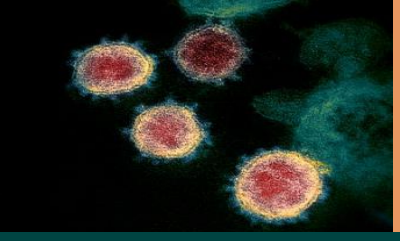
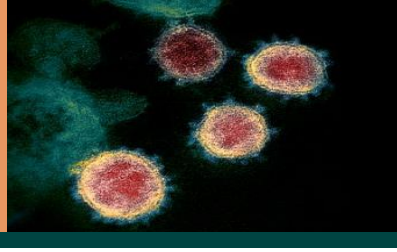


COVID-19 PANDEMIC – RAEB'S EVIDENCE UPDATE

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

• March 29, 2021 •



FEATURED

- 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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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.

DISEASE MANAGEMENT

- *JAMA:* Comparison of time to clinical improvement with versus without remdesivir treatment in hospitalized patients with COVID-19 in Baltimore, Maryland, and Washington, DC
  Mar 24, 2021. In this study, that included 2,483 consecutive admissions with a high proportion of non-White individuals, treatment with remdesivir was associated with more rapid clinical improvement than no remdesivir receipt in propensity score-matched controls. The addition of corticosteroids to remdesivir was not associated with improved time to death. *Read*.
- *WHO:* Evaluation of COVID-19 vaccine effectiveness (VE)
  Mar 17, 2021. This interim guidance provides best practices on how to assess COVID-19 VE using observational study designs. It discusses critical considerations in the design, analysis, and interpretation of COVID-19 VE evaluations, as biased results may be produced even in settings where data completeness and quality are high. The most feasible outcomes to evaluate in most settings are symptomatic disease and severe disease. The primary analysis should compare persons receiving the recommended number of doses of the same vaccine with unvaccinated individuals, and secondary analyses should include partially vaccinated persons, persons receiving doses of two different vaccines, targeted subgroups, viral variants, and history of prior SARS-CoV-2 infection or disease if available. *Read*.

TRANSMISSION

- *British Dental Journal:* Dental periodontal procedures in relation to COVID-19
  Mar 24, 2021. This systematic review of 50 studies found that ultrasonic scaling, air polishing, and prophylaxis procedures produce contamination (splatter, droplets, and aerosol) in the presence of suction, with a small amount of evidence showing droplets taking between 30 minutes and 1 hour to settle. Consideration should be given to infection control, areas of cleaning particularly around the patient and appropriate personal protective equipment, with particular attention to respiratory, facial, and body protection for these procedures. Lower power settings should be considered to reduce the amount and spread of contamination. *Read*.

RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE cont'd

UNDERSTANDING THE DISEASE

- *JAMA:* Association of age with SARS-CoV-2 antibody response in a New York City hospital
  Mar 23, 2021. In this study evaluating 31,426 SARS-CoV-2 antibody tests performed between April 9 and August 31, 2020, immunoglobin G levels were found to vary in different age groups, despite similar seroprevalence in the pediatric and adult patient populations. SARS-CoV-2 immunoglobin G and total antibody levels, neutralizing activity, and avidity exhibited negative correlations with age in patients aged one to 24 years. This analysis revealed distinct antibody responses in different age groups, suggesting that age-targeted strategies for disease screening and management as well as vaccine development may be warranted. *Read*.
- *Nature:* Post-acute COVID-19 syndrome
  Mar 22, 2021. This review characterized the epidemiology and the organ-specific (e.g., cardiovascular, gastrointestinal) effects of post-acute COVID-19 syndrome, which is defined as: 1) sub-acute or ongoing symptoms four-12 weeks beyond acute COVID-19; and 2) chronic or post-COVID-19 syndrome, which includes symptoms and abnormalities persisting or present beyond 12 weeks of the onset of acute COVID-19 and not attributable to alternative diagnoses. The review advises that care for patients with COVID-19 does not conclude at the time of hospital discharge, and interdisciplinary cooperation is needed for comprehensive care in outpatient settings. *Read*.
- *CMAJ:* Characteristics and outcomes of hospital admissions for COVID-19 and influenza in Ontario
  Mar 22, 2021. This study described the characteristics, clinical care, resource use, and outcomes for patients admitted to hospitals with COVID-19 in Ontario between Nov 1, 2019 and June 30, 2020, using influenza as a comparator. Hospital admissions data was collected from seven hospitals in Toronto and Mississauga, (n=1,027 COVID-19; n=783 influenza). Patients younger than 50 years accounted for 21.2% of COVID-19 admissions and 24% of ICU admissions. Compared with influenza, patients with COVID-19 had significantly greater in-hospital mortality (19.9% vs. 6.1%), ICU use (26.4% vs. 18%), and hospital length of stay (8.7 days vs. 4.8 days). *Read*.
- *CMAJ:* Impact of COVID-19 on pregnancy outcomes
  Mar 19, 2021. This systematic review and meta-analysis evaluated the association between SARS-CoV-2 infection during pregnancy and adverse pregnancy outcomes. Overall, 42 studies (n=438,548) found that COVID-19 was associated with preeclampsia, preterm birth, and stillbirth when compared with no SARS-CoV-2 infection. Compared with mild COVID-19, severe COVID-19 was strongly associated with preeclampsia, preterm birth, gestational diabetes, and low birth weight. Future studies are needed to understand the pathophysiologic pathways that explain these associations and identify effective strategies to prevent adverse outcomes in pregnant people with COVID-19. *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*

RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE cont'd

UNDERSTANDING THE DISEASE

- *BMC Geriatrics:* Frailty as a predictor of mortality among patients with COVID-19
  Mar 17, 2021. This systematic review and meta-analysis indicates that frailty is an independent predictor of mortality among patients with COVID-19. Frailty could be a prognostic factor for clinicians to stratify high-risk groups and remind doctors and nurses to perform early screening and corresponding interventions urgently needed to reduce mortality rates in patients infected by SARS-CoV-2. *Read*.
- *Lancet:* Assessment of protection against reinfection with SARS-CoV-2 in Denmark
  Mar 17, 2021. Using national PCR-test data from 2020, this study estimated protection towards repeat infection with SARS-CoV-2. Among eligible PCR-positive individuals (n=11,727) from the first surge of the epidemic, 72 (0.65%) tested positive again during the second surge. Estimated protection against repeat infection was 80.5%. Among those aged 65 years and older, observed protection against repeat infection was 47.1%. These findings could inform decisions on which groups should be vaccinated and advocate for vaccination of previously infected individuals, especially among older people. *Read*.

HEALTH EQUITY AND VULNERABLE POPULATIONS

- *Nature:* Characteristics and clinical outcomes of prisoners versus non-prisoner populations hospitalized with COVID-19
  Mar 22, 2021. This study of all patients hospitalized with COVID-19 between March 10 and May 10, 2020 at two hospitals in Michigan compared clinical outcomes amongst hospitalized prisoners (n=108) and non-prisoners (n=598). Of the 706 hospitalized COVID-19 patients (mean age of 66 years, 57% males, and 44% black), it was found that prisoner status was associated with more severe clinical presentation, higher rates of ICU admissions, vasopressors requirement, intubation, in-hospital mortality, and 30-day mortality. *Read*.
- *MedRxiv:* Safety and immune-efficacy of one versus two doses of COVID-19 vaccine BNT162b2 for cancer patients
  Mar 17, 2021. This study (preprint) presents data on the safety and efficacy of the BNT162b2 (Pfizer-BioNTech) vaccine in 54 healthy patients and 151 mostly elderly patients with solid cancers (i.e., lung, breast, prostate, colon and rectum, bladder) and haematological malignancies (cancers that affect the blood, bone marrow, and lymph nodes). The vaccine was largely well tolerated, however, in contrast to its very high performance in healthy patients, immune efficacy of a single dose in solid cancer patients was below 40% and below 15% in haematological cancer patients. Efficacy in solid cancer patients was greatly increased by boosting at 21-days. Delayed boosting potentially leaves most cancer patients wholly or partially unprotected, with implications for their health; environment and the evolution of variant strains. *Read*.

RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE cont'd

PUBLIC HEALTH MEASURES

- *JAMA:* In-person and telehealth ambulatory contacts and costs in a US insured cohort before and during the COVID-19 pandemic
  Mar 23, 2021. In this study of 36,568,010 US individuals, ambulatory contacts decreased by 18% between the March to June 2019-20 periods, and telehealth use increased from 0.3% of contacts in 2019 to 23.6% of all contacts in 2020. Increased disease burden, COVID-19 prevalence, and greater social resources were associated with higher telehealth use. These findings suggest that the dramatic shift in the adoption of virtual care has many implications for health services provision both during and after the pandemic. *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
- McMaster Health Forum's COVID-19 Evidence Network:
  - 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-19 Evidence Network to support Decision-making (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.