

COVID-19 PANDEMIC – RAEB'S EVIDENCE UPDATE

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

• October 13, 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

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RAEB'S RAPID RESPONSES FOR ONTARIO'S HEALTH SECTOR

Please contact [Evidence Synthesis Unit](#) for the full read of this rapid response.

- **Rapid Point-of-Care Tests for COVID-19**
 - Regulators in the United States (US) and across the European Union have approved rapid point-of-care diagnostic tests for active COVID-19. The US Food and Drug Administration reports that 211 antigen and four molecular tests are currently authorized under emergency use authorizations, and the European Commission's [COVID-19 In Vitro Diagnostic Devices and Test Methods Database](#) approved 15 rapid in vitro COVID-19 tests.

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.

- **Leading Practices for Training Health Care Facility Staff in Infection Prevention and Control Strategies** (*Produced in collaboration with McMaster Health Forum*)
 - Using a combination of interventions recommended by the World Health Organization (WHO) guidelines (e.g., alcohol-based hand rub, education, reminders, performance feedback, managerial support) may slightly improve hand hygiene compliance, reduce colonization rates, and improve infection rates regardless of the health care setting. There is insufficient evidence to identify which strategy or combination of strategies is most effective, however using multimodal interventions recommended by WHO can be applicable to all settings, if they are adapted to meet local needs and if the appropriate resources are available. Different strategies or multimodal interventions may be more effective for some groups or health care settings than others.

* 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*

EVIDENCE PRODUCTS PRODUCED WITH OUR PARTNERS cont'd

- **Effectiveness and Use of Non-medical Masks in Community Settings**

(Produced in collaboration with McMaster Health Forum, SPOR Evidence Alliance, and Ontario Health)

- There is a small protective effect of wearing medical and cloth facemasks in community settings for COVID-19. Medical masks are identified to be more effective in filtering out smaller particles compared to cloth facemasks, but when applied to community settings with other public-health measures in place, the difference between the two types of facemasks is not significant.
 - Mask Effectiveness: Masks are more effective when used with other public health measures including physical distancing and hand washing.
 - Potential Harms of Mask Wearing: Harms related to mask wearing include headaches and feelings of a false sense of security when wearing a mask, which could lead to a reduction in adherence to other public health measures. The available evidence does not support concerns that wearing face coverings will adversely affect hand hygiene.
 - Mask Wearing Adherence: There is significant variation with adherence to mask wearing. One systematic review indicated that adherence was significantly higher when required of people rather than suggested as optional.

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

- ***The Lancet*: Prevalence, management, and outcomes of SARS-CoV-2 infections in older people and those with dementia**

[Oct 5, 2020](#). This study reports that patients admitted to psychiatric inpatient settings in the United Kingdom (UK) without known SARS-CoV-2 infection had a high risk of SARS-CoV-2 compared with those in the community, and also had a higher proportion of deaths from COVID-19 than in the community. The study suggests that planning for future COVID-19 waves in psychiatric hospitals is urgent. [Read](#).

RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE cont'd

TRANSMISSION

- ***Nature Medicine: Crowding and the shape of COVID-19 epidemics in Wuhan, China***
[Oct 5, 2020](#). This study shows that the degree to which cases of COVID-19 are compressed into a short period of time (i.e., peakedness of the epidemic) is strongly shaped by population aggregation and heterogeneity, such that epidemics in crowded cities are more spread over time, and crowded cities have larger total attack rates than less populated cities. [Read](#).
- ***medRxiv: SARS-CoV-2 viral load peaks prior to symptom onset***
[Sept 30, 2020](#). This systematic review (preprint) found that SARS-CoV-2 viral load peaks prior to symptom onset and remains elevated for up to three weeks, while MERS-CoV and SARS-CoV viral loads peak after symptom onset. SARS-CoV-2, MERS-CoV, and SARS-CoV have median viral shedding durations of 4.8, 4.2, and 1.2 days, respectively, after symptom onset. Disease severity, age, and specimen type were all shown to have an effect on viral load, but an individual's sex was not found to be a significant factor. [Read](#).
- ***Journal of American Medical Association: Susceptibility to SARS-CoV-2 infection among children and adolescents compared with adults***
[Sept 25, 2020](#). This systematic review and meta-analysis reports that children and adolescents younger than 20 years had 44% lower odds of secondary infection with SARS-CoV-2 compared with adults 20 years and older. This finding is marked in those younger than 10-14 years. Data were insufficient to conclude whether the transmission rate of SARS-CoV-2 by children is lower than by adults. [Read](#).

CASE TESTING AND SCREENING

- ***British Medical Journal: Effectiveness of COVID-19 diagnostic tests***
[Oct 1, 2020](#). This systematic review examined studies on diagnostic test accuracy of virus and antibody testing. The review estimated a sensitivity of 87.8% for an initial reverse-transcriptase PCR test for SARS-CoV-2 virus testing. For SARS-CoV-2 antibody testing, the sensitivity ranged from 18.4% to 96.1%, and specificity ranged from 88.9% to 100%. Uncertainties about test effectiveness and most appropriate application remain (e.g., more evidence is needed about the effectiveness of testing outside of hospital settings and in mild or asymptomatic cases). [Read](#).
- ***Cochrane Systematic Review: Thoracic imaging tests for the diagnosis of COVID-19***
[Sept 30, 2020](#). This systematic review suggests that chest computed tomography (CT) and chest X-ray may be effective for confirming COVID-19 diagnosis in people who have been diagnosed with COVID-19 infection using another test. However, CT scans may be less accurate in confirming or ruling out infection in people with only suspected COVID-19. [Read](#).

RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE cont'd

PUBLIC HEALTH MEASURES

- ***Global Health Action: Reconciling model predictions with low reported cases of COVID-19 in Sub-Saharan Africa***
[Oct 5, 2020](#). This study shows that the low incidence of COVID-19 cases in Sub-Saharan Africa, as of July 2020, can be explained by any combination of the late introduction of first imported cases, early implementation of non-pharmaceutical interventions, and low case detection rates. The study suggests that Madagascar, along with other countries in Sub-Saharan Africa, remains at risk of a growing health crisis. [Read](#).
- ***New England Journal of Medicine: Delaying pregnancy during a public health crisis - Examining public health recommendations for COVID-19 and beyond***
[Sept 30, 2020](#). This commentary suggests that before public health agencies make a recommendation to avoid pregnancy during a public health emergency like the COVID-19 pandemic, several criteria should be met: 1) pregnancy-related risks associated with the pandemic should be well understood; 2) pregnancy-related risk should be high and well above the risk associated with other conditions or exposures common among pregnant women (e.g., pregestational diabetes); 3) pregnancy-related risks cannot be reasonably minimized or mitigated; 4) effective contraception should be readily available; and, 5) educational programming that lays out the risks and benefits associated with becoming pregnant during the pandemic as compared with waiting until it ends to conceive should be widely available. [Read](#).
- ***International Journal of Infectious Diseases: Facemask use in community settings***
[Sept 26, 2020](#). This review and meta-analysis recommends medical facemask use by healthy and sick individuals for preventing respiratory infection transmission (i.e., influenza, influenza-like illness, SARS-CoV, and SARS-CoV-2 transmission) in community settings. Medical facemask effectiveness is dependent on compliance and use in combination with preventive measures, such as intensive hand hygiene. The study found no direct evidence supporting the recommendation of cloth facemask use to prevent respiratory infection transmission. [Read](#).

DATA ANALYTICS, MODELLING AND MEASUREMENT

- ***medRxiv: Virus evolution affected early COVID-19 spread***
[Sept 30, 2020](#). This study (preprint) modelled early global infection dynamics of COVID-19 based on its genetic mutations (i.e., clade assignment), along with other demographic and meteorological factors and found that higher proportions of clade 19A and 19B were negatively correlated with COVID-19 growth rate, whereas higher proportions of 20A and 20C were positively correlated with growth rate, especially when coupled with low humidity. This study suggests that COVID-19 has the potential to grow more quickly in regions dominated by the 20A and 20C clades, including most of South and North America. [Read](#).

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VULNERABLE POPULATIONS

- *American Journal of Emergency Medicine: Racial/ethnic disparities in COVID-19 disease burden and mortality among emergency department (ED) patients*
[Sept 23, 2020](#). This study reports a significant disparity in COVID-19 adjusted test positivity rate and crude mortality rate among Latino and Black ED patients in California, respectively. Results from ED testing can identify racial and ethnic disparities in COVID-19 testing, test positivity rates, and mortality associated with COVID-19 infection and can be used by health departments to inform policy. [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.