COVID-19 PANDEMIC – RAEB'S EVIDENCE UPDATE
Highlights of health research evidence synthesized by the Research, Analysis and Evaluation Branch (RAEB)
• June 21, 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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RAEB'S RAPID RESPONSES FOR ONTARIO'S HEALTH SECTOR

Please contact Evidence Synthesis Unit for the full read of these rapid responses.

Guidance and Jurisdictional Evidence Regarding the Use of Vaccine Passports

- Use Cases: Vaccine passports are used to facilitate and regulate international travel, for the domestic purpose of regulating access to certain public spaces or services, or allowing participation in large events. In general, the uses specified depend on whether the certificate/passport is intended to certify that an individual is vaccinated or to indicate that they are unlikely to contract or transmit the virus.
- Eligibility and Validity: Adults become eligible for vaccination or immunity passports if: 1) they have been fully vaccinated; 2) they have recovered from a previous SARS-CoV-2 infection; or 3) they have recently received negative SARS-CoV-2 test results. Children are typically either included in their parents' passports or are issued passports separately that are managed by their parents.
- Design/Development: Key design principles identified include: ensuring interoperability between jurisdictions; providing both digital and paper versions of the passport; and protecting users' personal data. In most existing vaccine passport programs, QR codes are used to verify authenticity.
- Impact: There is no direct evidence of the impact of vaccine passports on either vaccine coverage or virus spread. In addition, limited data regarding the degree and duration of protection from vaccination against the virus, including emerging variants of concern, constrains what can be known about the impact of these programs.
- Ethical/Equity Risks: Most expert and jurisdictional guidance noted that without mitigation efforts, vaccine passports risk exacerbating existing racial or socioeconomic inequalities. Depending on the use cases, vaccine passports also risk unintentionally coercing people into getting vaccinated. Many experts also noted, however, that there are ethical risks associated with maintaining restrictions on mobility that are not necessary for limiting the spread of the SARS-CoV-2 virus.
- Ontario Analysis: Vaccination records are part of a health record and issued within provincial and territorial health care jurisdictions, yet a Canadian certificate is expected to be required for international travel. A vaccination passport developed in Ontario would likely need to be interoperable with those of other Canadian jurisdictions.

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.

Health Care Worker (HCW) Burnout

(Produced in collaboration with Ontario Hospital Association)

- This briefing note summarizes the best practices for mitigating health care worker (HCW) burnout, fatigue, and moral injury following an intense professional commitment, such as the COVID-19 pandemic. The research most commonly proposes individual interventions for supporting HCWs, such as health promotion strategies and relaxation and mindfulness-based activities (e.g., yoga, focused attention). Recent research suggests that organization-directed interventions (i.e., rescheduling hourly shifts, reducing workload, structural changes) are associated with higher treatment effects compared with physician-directed interventions (e.g., mindfulness-based stress reduction techniques, educational interventions, exercise, or a combination of these features). Programs that champion individual interventions are unlikely to be successful, unless accompanied by organizational and structural interventions. In addition, health managers' and policymakers' awareness of burnout in HCWs is important in stimulating and implementing preventive interventions.

* 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.

UNDERSTANDING THE DISEASE

- *Critical Care:* Comparison of renal histopathology and gene expression profiles between severe COVID-19 and bacterial sepsis in critically ill patients
  Jun 10, 2021. This study examined the mechanisms driving acute kidney injury by conducting histopathology and mRNA analyses of post-mortem kidney biopsies collected from critically ill patients with COVID-19 (n=6) and bacterial sepsis (n=27). Findings indicate that COVID-19 was associated with more severe acute tubular necrosis and microvascular thrombosis coupled with decreased microvascular flow, yet minimal inflammation. *Read*.
- *JAMA:* Incidence of multisystem inflammatory syndrome in children (MIS-C) infected with SARS-CoV-2 in the US
  Jun 10, 2021. This study investigated the population-based incidence of MIS-C among persons with SARS-CoV-2 infection in the US between April and June 2020. Findings suggest that MIS-C is a rare complication associated with SARS-CoV-2 infection. Estimates for population-based incidence and incidence among persons with infection were higher among Black, Hispanic or Latino, and Asian or Pacific Islander persons. Further study is needed to understand variability by race/ethnicity and age group. *Read*.

CASE TESTING AND SCREENING

- *PLoS One:* Screening for SARS-CoV-2 by RT-PCR: Saliva or nasopharyngeal swab?
  Jun 15, 2021. This rapid review and meta-analysis included 50 studies that compared saliva and nasopharyngeal/oropharyngeal samples for the detection of SARS-CoV-2. Findings demonstrate that saliva is as valid as nasopharyngeal sampling for the detection of SARS-CoV-2 infections in symptomatic as well as asymptomatic carriers. In contrast to nasopharyngeal swabs, saliva sampling is simple, fast, non-invasive, inexpensive, and painless, and is thus uniquely applicable for surveillance, screening, and diagnosis. *Read*.

TRANSMISSION

- *Nature:* Insights into household transmission of SARS-CoV-2 from a population-based serological survey
  Jun 15, 2021. This study aimed to determine the risk of infection from household transmission by applying household transmission models to data from a cross-sectional, household-based population serosurvey of 4,534 people ≥ five years of age from 2,267 households enrolled April to June 2020 in Geneva, Switzerland. The study found that the risk of infection from exposure to a single infected household member aged ≥ five years was more than three times that of extra household exposures over the first pandemic wave. The study also found that infected, asymptomatic household members had 69.4% lower odds of infecting another household member compared to those reporting symptoms. *Read*.

RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE cont'd

DISEASE MANAGEMENT

- *NEJM:* Tofacitinib in patients hospitalized with COVID-19 pneumonia in Brazil
  Jun 16, 2021. This randomized controlled trial assigned hospitalized adults with COVID-19 pneumonia (n=289) to receive either tofacitinib at a dose of 10mg or placebo twice daily for up to 14 days or until hospital discharge. Tofacitinib led to a lower risk of death or respiratory failure through day 28 than placebo. *Read*.
- *Nature:* Mechanisms of action of Ivermectin against SARS-CoV-2
  Jun 15, 2021. This review suggests repurposing of approved drugs such as Ivermectin could be worthy of attention, considering the urgency of the ongoing COVID-19 pandemic, simultaneous detection of various new mutant strains, and future potential re-emergence of novel coronaviruses. The review discusses the mechanism of action of ivermectin against SARS-CoV-2 and summarizes the available literature over the years. A schematic of the key cellular and biomolecular interactions between Ivermectin, host cell, and SARS-CoV-2 in COVID-19 pathogenesis and prevention of complications are proposed. *Read*.
- *NEJM:* Treatment of multisystem inflammatory syndrome associated with COVID-19 in children
  Jun 15, 2021. This modelling study compared three treatments for multisystem inflammatory syndrome (MIS-C) in children: intravenous immune globulin (IVIG), IVIG plus glucocorticoids, and glucocorticoids alone. Drawing on data associated with 614 children from 32 countries from June 2020 through February 2021, the results suggest that children's recovery from MIS-C does not differ after primary treatment with IVIG alone, IVIG plus glucocorticoids, or glucocorticoids alone, although significant differences may emerge as more data accrue. *Read*.
- *American Journal of Otolaryngology:* Early vs. late tracheostomy in ventilated COVID-19 patients
  Jun 7, 2021. This study assessed the effect of early tracheostomy on mortality and decannulation (removal of the tracheotomy tube) on patients admitted to a COVID-19 intensive care unit between March 2020 and January 2021 who underwent elective open tracheostomy. Findings from the study suggest that early tracheostomy might offer improved outcomes with significantly higher decannulation rates. Further validation from larger scale studies is required. *Read*.

PUBLIC HEALTH MEASURES

- *WHO:* Considerations for implementing public health and social measures (PHSMs) in the context of COVID-19
  Jun 14, 2021. This interim WHO guidance provides updates to the assessment framework that drives decision-making for PHSMs. For example, in settings where robust PHSMs are otherwise in place to control the spread of SARS-CoV-2, allowing the relaxation of some measures for individuals with natural or vaccine-induced immunity may contribute to limiting the economic and social hardship of control measures. Applying such individualized public health measures, however, must take into account a number of ethical and public health considerations (e.g., the level of transmission of SARS-CoV-2; the evidence around the impact of various COVID-19 vaccines in preventing transmission; and existing inequities in vaccine availability within jurisdictions). *Read*.

RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE cont'd

FRONTLINE WORKERS

- *JAMA:* Academic medicine faculty perceptions of work-life balance before and since the COVID-19 pandemic
  Jun 15, 2021. This study aimed to determine how the COVID-19 pandemic is associated with academic medicine faculty perceptions of work-life integration through a survey of 1,186 medical, graduate, and health professional school faculty. The study found that more faculty considered leaving since the COVID-19 pandemic than before. Faculty with children, particularly female faculty with children, were more likely to consider leaving since the pandemic. The study suggested that that the stressors of integrating work and life are higher in female faculty than male faculty, highest in women with children, and may have been heightened by the COVID-19 pandemic. *Read*.

HEALTH EQUITY AND VULNERABLE POPULATIONS

- *Nature:* Impact of COVID-19 on older adults and the role of long-term care facilities (LTCFs) during early stages of the epidemic in Italy
  Jun 15, 2021. This study found that the greater the number of elderly people living in LTCFs, the greater the increase of both general and COVID-19 related mortality in Italy. It was also observed that the handling of the crises due to unpreparedness in LTCFs hampered an efficient tracing of COVID-19 spread and promoted the increase of deaths not directly attributed to SARS-CoV-2. *Read*.
- *NEJM:* Delayed large local reactions to mRNA COVID-19 vaccines in Blacks, Indigenous Persons, and People of Color (BIPOC) in Boston
  Jun 9, 2021. Researchers affiliated with Massachusetts General Hospital reported delayed large local reactions to mRNA vaccines against SARS-CoV-2 in recipients who are Black, Indigenous, or People of Color (BIPOC). Between February 10 and April 23, 2021, 1,422 reports of post-vaccination reactions were submitted to a COVID-19 vaccine allergy case registry and of these reactions, 510 were delayed large local reactions, 55 (11%) of which were in BIPOC patients. The reactions were reported in patients who were Asian (27 [5%]); of mixed race, which included American Indian-Alaska Native and Native Hawaiian-Pacific Islander (22 [4%]); and Black (6 [1%]). Six of these patients (11%) were Hispanic. Such reactions may result in vaccine hesitancy or incomplete vaccination; as such, proactive outreach is needed to increase education regarding these reactions across diverse communities. *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 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. In the first half of June, contributing Canadian evidence synthesis teams shared nine newly completed evidence syntheses and seven questions that they have newly taken on (see here). Three of these syntheses provides insight across all four domains of the COVID-END taxonomy (public health measures, clinical management, health system arrangements, and economic and social response) and one synthesis provides insight across two domains (public health measures and health system arrangements). The remaining focus on public health measures (n=4) and clinical management (n=1). The questions taken on focus on public health measures (n=6) and clinical management (n=1). To receive an email containing hyperlinks to these products twice a month, subscribe here.