

# COVID-19 PANDEMIC

## RAEB'S Evidence Update

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

October 18, 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.

### Effectiveness of Masking Policies for Containing the Spread of COVID-19

Information regarding the effectiveness of masking policies in containing the spread of COVID-19 was solely identified in the research literature. While masking policies were identified in Australia, Canada (British Columbia, Ontario), Europe (Denmark, Finland, France, Germany, Greece, Italy, United Kingdom), New Zealand, and the United States (US), jurisdictions did not report information on the effectiveness of their masking policies. Research literature reported outcomes associated with masking policies in Australia, Germany, 37 member states of the Organisation for Economic Co-operation and Development (OECD), and the US. Overall, the studies found that masking policies are an effective policy measure for reducing the spread of COVID-19. Findings include:

- **Canada:** The Government of Canada suggests that well-constructed, well-fitting, and properly worn non-medical masks can help prevent the spread of COVID-19.
- **Australia:** Australia's mandatory masking policy was associated with a significant decline in new COVID-19 cases.
- **Germany:** A study from December 2020 found that mandatory masking reduced the number of newly registered COVID infections between 15% and 75% over a period of 20 days, and that face masks reduce the daily growth rate of reported infections by 47%.
- **US:** Five studies noted that masking policies are associated with a decline in COVID-19 cases. For example:

- A study (June 2021) found that up to 40 days after introducing a mask mandate, there was a statistically significant decrease in new cases (-3.55 per 100,000), deaths (-0.13 per 100,000), and the proportion of hospital admissions (-2.38%), corresponding to 14% of the highest recorded number of cases, 13% of deaths, and 7% of admissions.
- According to a study (June 2020), mandatory masking in public is associated with a decline in the daily COVID-19 growth rate by: 0.9 percentage points in one to five days after mandate introduction; 1.1 in six to 10 days; 1.4 in 11-15 days; 1.7 in 16-20 days; and 2.0 in 21+ days. The mandates resulted in an estimated 200,000 COVID-19 cases being averted by May 22, 2020.

## 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

#### ***Nature: SARS-CoV-2 immunity and functional recovery of COVID-19 patients one-year after infection***

**Oct 13, 2021.** This study analyzed 121 recovered COVID-19 patients from China at one-year after diagnosis, finding long-lasting immune protection after SARS-CoV-2 infection, while also highlighting the risk of immune evasive variants (Alpha and Beta) and long-term consequences for COVID-19 survivors. [Article](#).

#### ***medRxiv: Efficacy and safety of NVX-CoV2373 (Novavax) in adults in the US and Mexico***

**Oct 10, 2021.** This preprint study of a phase three trial evaluated the efficacy and safety of Novavax in 29,949 adults ≥18 years of age randomized in a 2:1 ratio to receive two doses of NVX-CoV2373 or placebo during the first quarter of 2021. The vaccine was well-tolerated and demonstrated a high overall vaccine efficacy (>90%) for prevention of COVID-19, with most cases due to variant strains. [Article](#).

#### ***Journal of the American Medical Association (JAMA): Association of receipt of the Ad26.COV2.S (Janssen/Johnson & Johnson) COVID-19 vaccine with presumptive Guillain-Barré Syndrome (GBS)***

**Oct 7, 2021.** This study determined that there is a potential small, but statistically significant, safety concern for Guillain-Barré syndrome following receipt of the Johnson & Johnson vaccine.

Among the 13,209,858 doses administered to US adults between February to July 2021, 130 cases of presumptive GBS were reported. These findings are considered preliminary, pending analysis of medical records to establish a definitive diagnosis. [Article](#).

***The New England Journal of Medicine (NEJM): Waning immune humoral response to Pfizer vaccine over six months in Israel***

**Oct 6, 2021.** This study, involving nearly 4,000 health care workers who had received two doses of the Pfizer vaccine, found levels of spike-binding immunoglobulin G (IgG) and neutralizing antibody decreased and did so to a greater extent in men, persons 65 years of age or older, and persons with immunosuppression. Obese persons had higher levels of neutralizing antibody than non-obese persons. [Article](#).

***NEJM: Waning of Pfizer vaccine protection against SARS-CoV-2 infection in Qatar***

**Oct 6, 2021.** This study, involving more than 900,000 participants, the Pfizer vaccine effectiveness peaked at 77.5% in the first month after the second dose. The effectiveness fell thereafter to as low as 20% in months five through seven after vaccination, but protection against serious COVID-19 outcomes remained greater than 90% for at least six months. [Article](#).

***NEJM: Myocarditis after COVID-19 vaccination in a large health care organization in Israel***

**Oct 6, 2021.** This study found that among over 2.5 million patients who received the Pfizer vaccine in a large health care system, the incidence of myocarditis at 42 days was 2.13 cases per 100,000 persons, with the highest incidence (10.69 per 100,000 persons) among male patients between the ages of 16 and 29 years. Most cases of myocarditis were mild or moderate. [Article](#).

## Understanding the Disease

***JAMA: Short-term and long-term rates of post-acute sequelae (PASC) of SARS-CoV-2 infection***

**Oct 13, 2021.** In this systematic review of 57 studies comprising more than 250,000 survivors of COVID-19, most sequelae included mental health, pulmonary, and neurologic disorders, which were prevalent longer than six months after SARS-CoV-2 exposure. These findings suggest that long-term PASC must be factored into existing health care systems, especially in low- and middle-income countries. [Article](#).

## Transmission

### ***JAMA: Transmission of SARS-CoV-2 after COVID-19 screening and mitigation measures for primary school children attending school in Liège, Belgium***

**Oct 12, 2021.** This study including 63 children and 118 adults found no significant difference between the number of children and the number of adults testing positive for SARS-CoV-2 infection during the study period; children were asymptomatic significantly more often compared with adults (46% vs. 13%). A reconstruction of the outbreak showed that most transmission events originated from within the school. These results suggest that children may play a larger role in the transmission of SARS-CoV-2 than previously assumed. [Article](#).

### ***medRxiv: Impact of heating, ventilation, and air conditioning (HVAC) design features on the transmission of coronaviruses***

**Oct 11, 2021.** This preprint systematic review of 32 studies found that: increased ventilation rate was associated with decreased transmission, transmission probability/risk, infection probability/risk, droplet persistence, virus concentration, and increased virus removal and virus particle removal efficiency; increased ventilation rate decreased risk at longer exposure times; some ventilation was better than no ventilation; airflow patterns affected transmission; and ventilation feature (e.g., supply/exhaust, fans) placement influenced particle distribution. Adapting HVAC ventilation systems to mitigate virus transmission is not a one-solution-fits-all approach but instead requires consideration of factors such as ventilation rate, airflow patterns, air balancing, occupancy, and feature placement. [Article](#).

## Health Equity and Vulnerable Populations

### ***JAMA: COVID-19 Vaccine acceptance and access among Black and Latinx communities***

**Oct 13, 2021.** This study of 72 participants who identified as Black and/or Latinx identified three themes to understanding factors associated with facilitating or obstructing COVID-19 vaccination: pervasive mistreatment of Black and Latinx communities and associated distrust; informing trust via trusted messengers and messages, choice, social support, and diversity; and addressing structural barriers to vaccination access. These findings suggest that community-informed insights may inform health care strategies to maximize vaccine acceptance and access in communities hardest hit by the COVID-19 pandemic. [Article](#).

**Nature: Nature inequity and higher COVID-19 case rates in less-green neighbourhoods in the US**

**Oct 11, 2021.** This study found that areas with majority persons of colour had both higher case rates and less greenness (i.e., vegetation, including trees and grass). These results suggest that the communities most impacted by COVID-19 have the least nature nearby to alleviate distress and provide space for safe recreation. Given that urban nature is associated with both human health and biodiversity, these results have far-reaching implications both during and beyond the pandemic. [Article](#).

**Centres for Disease Control and Prevention (CDC): US National/state trends in anxiety and depression severity scores among adults during the pandemic**

**Oct 8, 2021.** This report found that average nationwide anxiety severity scores increased 13% from August to December 2020 and then decreased 26.8% from December 2020 to June 2021. Similar increases and decreases occurred in depression severity scores. These findings indicate that mental health services and resources, including telehealth behavioural services, are critical during the COVID-19 pandemic, particularly among populations disproportionately affected by COVID-19. [Article](#).

**JAMA: Evaluation of racial, ethnic, and socioeconomic disparities in initiation of kidney failure treatment during the first four months of the COVID-19 pandemic**

**Oct 7, 2021.** In this study of 127,149 US adults with incident kidney failure during the first four months of the pandemic (March 1 through June 30, 2020), the number of patients initiating treatment for incident kidney failure declined by 30%, with Black patients and patients living in counties with high COVID-19 mortality initiating treatment with significantly worse levels of kidney function when compared with prior years. These results suggest that declines in the number of patients with incident kidney failure may indicate delayed treatment initiation or changes in care delivery during the pandemic. [Article](#).

**The Public Library of Science One (PLOS One): Severe COVID-19 in inflammatory bowel disease (IBD) patients in a population-based setting**

**Oct 5, 2021.** This study found a higher rate of hospitalization in IBD patients with COVID-19 in a heavily impacted Dutch region, reflecting previous research that showed IBD patients who use systemic medication were at an increased risk of serious infection. However, even at an increased risk of hospitalization, the clinical course of severe COVID-19 was comparable to hospitalized patients without IBD. [Article](#).

## Infection, Prevention and Control in Specific Settings

### ***JAMA: COVID-19 incidence and mortality in federal and state prisons compared with the US population***

**Oct 6, 2021.** This study found that COVID-19 incidence and standardized mortality rates remained consistently higher among the US prison population (3.3 and 2.5 times higher, respectively) than the overall US population in the first year of the pandemic. While incidence and mortality rates have since declined, the cumulative toll of COVID-19 has been several times greater among the prison population than the overall population. This study underscores the importance of initiatives such as vaccination, ‘decarceration’, and continued disease surveillance in prison settings. [Article](#).

## Public Health Measures

### ***medRxiv: Impact of mandatory COVID-19 certificates on vaccine uptake in six countries***

**Oct 11, 2021.** This preprint study compared six countries (Denmark, Israel, Italy, France, Germany, and Switzerland) that introduced COVID-19 certification (May-August 2021), with 20 control countries. Certification led to increased vaccinations 20 days prior to implementation, with a lasting effect up to 40 days after. Countries with lower than average pre-intervention uptake had a more pronounced increase. There was no effect in countries with higher uptake (Germany), or when introduced during limited supply (Denmark). There was higher uptake for those aged <20 years and 20-29 years. Access restrictions linked to certain settings (e.g., nightclubs, events with >1,000 people) were associated with higher uptake in those <20 years. When extended to broader settings, uptake remained high in the youngest group, but was also observed in older age groups. [Article](#).

### ***Nature: Nationwide rollout reveals efficacy of epidemic control through digital contact tracing in Norway***

**Oct 11, 2021.** This study used a real-world contact dataset, involving millions of contacts between 12.5% of the adult population, collected during the rollout of the first Norwegian contact tracing app in the Spring of 2020. The technological tracing efficacy was 80.0%, and at least 11.0% of the discovered close contacts could not have been identified by manual contact tracing. Digital contact tracing also has the potential to flag individuals with excessive contacts, which can help contain superspreading related outbreaks. The overall effectiveness of digital tracing depends strongly on app uptake, but significant impact can be achieved for moderate uptake numbers. [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 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) global spotlights; and 3) horizon scans. To receive an email containing hyperlinks to these products twice a month, [subscribe here](#).
    - In the first half of October, there were nine newly added evidence syntheses. The syntheses focus on public health measures (n=6), clinical management (n=2), and health system arrangements (n=1). Please visit [Canadian Spotlight 10.1](#) to view the evidence, or browse past [Canadian evidence spotlights](#). A complete list of the products is available [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 scan
- Economic analysis
- Evaluation planning
- Research fund management
- Knowledge translation services

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