

COVID-19 PANDEMIC – RAEB'S EVIDENCE UPDATE

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

• July 6, 2020 •

FEATURED

- Evidence products produced with our partners
- Research evidence
- 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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EVIDENCE PRODUCTS PRODUCED IN COLLABORATION 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.

- **COVID-19 Testing Update – Evidence and Best Practices**

(Produced in collaboration with McMaster Health Forum and [Cochrane Library](#)).

According to a Cochrane review on antibody tests for identification of current and past infection with SARS-CoV-2, antibody tests conducted one week after initial symptoms has been reported to detect 30% of people who had COVID-19. The accuracy of these tests increased in week two after the onset of symptoms, with 70% COVID-19 cases detected, and was highest in week three with more than 90% cases detected. Little evidence was available after week three. Tests gave false positive results in 2% of cases without COVID-19. International testing capacities are described below:

- **Current Viral Testing Capacity:** China (3,000,000 per day); France (700,000 per week); Germany (157,150 per day); Italy (662 swabs per 1,000 population); New Zealand (12,500 per day); United Kingdom (UK) (target of 100,000 per day but have not reached capacity); and the United States (US) (varies by state).
- **Current Antibody Testing Capacity:** Germany (short-term capacity target over the summer is 15,000 people every two weeks in 150 regions, and a set of 2,000 samples from four hot-spot areas); Italy (several regions have implemented routine testing, but no targets identified); and UK (plans to implement point-of-care antibody testing, but experiencing challenges with test validity).

EVIDENCE PRODUCTS PRODUCED IN COLLABORATION WITH OUR PARTNERS cont'd

- **Quick Response (QR) Codes as an Approach to Contact Tracing for COVID-19**

(Produced in collaboration with [North American Observatory](#) and [McMaster Health Forum](#)).

QR codes, barcodes that can be scanned by smartphones, are a type of location-based digital contract tracing approach. Some research findings suggest that QR codes may be effective with sufficient population uptake and usage and/or when they are used in combination with other strategies. They are easy to deploy and have high locational accuracy. They may be most effective when they are required to be used by all patrons of a specific location or service and tied to a specific exchange (e.g., ticket to enter a venue, fare for public transport). Potential limitations primarily relate to user adoption, for example: users may not be comfortable with an application that tracks their real-time location; users may become fatigued over time from having to scan multiple entry/exit points and choose to discontinue or be dissuaded from participating at the onset; and failures to regularly scan and log codes can lead to false negatives. Five identified jurisdictions use QR codes as part of their case management and contact tracing strategies:



Example of a QR Code

- **Method:** In China, New Zealand, and Singapore, users scan QR codes with their smartphones at entry/exit checkpoints to keep track of places visited and/or to verify permission to enter public venues based on their low- or high-risk COVID-19 profile. In Israel, four stationary testing centres in major metropolitan areas and eight drive-in testing centres use QR codes to identify patients. In Taiwan, travelers flying to Taiwan have to complete a COVID-19 health declaration form when arriving at airports by scanning a QR code.
- **Mandatory/Voluntary Use:** Mandatory in China, Singapore, and Taiwan, and voluntary in New Zealand.
- **Locations Used:** Ranges from: office buildings, shopping centres, transportation systems (e.g., taxis, buses, trains, airports), schools/universities, parks, hotels, hospitals, and testing centres.
- **Information Collected:** Ranges from: name, phone number, home address, self-reported health status, travel history, relationship to confirmed or suspected cases, and date of visit to public venue.
- **Governance:** Governments authorize and oversee the contract tracing approach, often in partnership with technology companies who developed the QR code applications.
- **Privacy:** Singapore abides by their personal data protection act, and New Zealand's system was developed in consultation with the privacy commissioner, has password authentication protocols, enables automatic deletion of information, and requires users' permission to share information with the government.

RESEARCH EVIDENCE

The research evidence profiled below was selected from highly esteemed academic journals, based on date of publication and potential applicability or interest to the Ontario health sector.

- **Altered sense of smell or taste in patients with mildly symptomatic COVID-19 in Italy**
[July 2, 2020](#). A cross-sectional survey-based study of SARS-CoV-2 positive mildly symptomatic patients (i.e., 202 patients) in Italy noted that 89% of the patients who had a sudden onset of altered sense of smell or taste experienced a complete resolution or improvement of these symptoms and suggested that persistent loss of smell or taste was not associated with persistent SARS-CoV-2 infection. [Read](#).
- **Mental health symptoms in China during the COVID-19 pandemic**
[July 1, 2020](#). A cross-sectional online survey study among the general population in China indicated that mental health symptoms were particularly common among infected individuals, people with suspected infection, and people who might have contact with patients with COVID-19. Measures, such as quarantine and delays in returning to work, were also associated with affected mental health among the public. [Read](#).
- **Estimation of excess deaths associated with the COVID-19 pandemic in the US**
[July 1, 2020](#). An observational study comparing US historical rates of death with this year's rate of death, found that 78% of the excess deaths were attributed to COVID-19. The difference between the reported and true number of deaths due to COVID-19 may be attributed to unavailability of diagnostic tests, guidelines on how suspected COVID-19 cases should be recorded, location of deaths, reporting delays, and indirect effects of COVID-19 on mortality. [Read](#).
- **Factors associated with worsening stress in Canadians during the COVID-19 pandemic**
[June 30, 2020](#). An online survey of Canadians during the acute phase of the COVID-19 pandemic (April 3 to May 15, 2020) identified that psychological stress during the pandemic was associated with having: a mental disorder, underage children, heavier alcohol consumption, shorter sleep duration, lower coping skills, obsessive-compulsive symptoms related to germs and contamination, personalities of extraversion, conscientiousness and neuroticism, spending less time exercising, and being of the female sex. [Read](#).
- **Symptomatic children may transmit COVID-19 similarly to adults**
[June 30, 2020](#). An analysis of 23 symptomatic children with laboratory-confirmed COVID-19 in Geneva, Switzerland showed that the viral loads and shedding patterns of symptomatic children are comparable to adults. [Read](#).
- **Attitudes and psychological factors among adolescents in the US during the COVID-19 pandemic**
[June 29, 2020](#). A self-reported survey study in the US suggested that emphasizing the severity of COVID-19 and the social implications of pandemic-related behaviours may be important among adolescents (i.e., 13-18 years), particularly for those who are not following preventive health behaviours or who are engaging in hoarding (i.e., supplies from grocery or department stores). [Read](#).

RESEARCH EVIDENCE cont'd

- **Body mass index and obesity linked to poor outcomes in COVID-19 patients**

[June 29, 2020](#). A systematic review of nine studies in the US, France, Germany, and China identified obesity as a risk factor of composite poor outcome in adult patients with COVID-19, which was measured by mortality, morbidity, admission to intensive care unit, mechanical ventilation, and having acute respiratory distress syndrome, and severe COVID-19. [Read](#).

- **Eurasian avian-like H1N1 swine influenza virus with 2009 pandemic viral genes facilitating human infection**

[June 29, 2020](#). A surveillance study carried out between 2011-18 identified that 10.4% (35/338) of swine workers in China tested positive for G4, a virus that is described as having “all the essential hallmarks” of infecting humans and causing the next pandemic. This study highlighted the role of surveillance of livestock workers in preventing pandemics. [Read](#).

- **Test frequency is more important than test sensitivity**

[June 27, 2020](#). A US-based modelling study (preprint) demonstrated that an effective surveillance strategy that includes time to first detection, outbreak control, and measured by R_0 (reproduction number), depends on frequency of testing, speed of reporting, and is only marginally improved by high test sensitivity. [Read](#).

- **Determinants of COVID-19 severity in patients with cancer**

[June 24, 2020](#). A cohort study of adult and pediatric cases of symptomatic, laboratory-confirmed COVID-19 cases in New York state found that being older than 65 years of age and receiving treatment with immunotherapy drugs (i.e., immune checkpoint inhibitors) were predictors for hospitalization and severe disease, whereas metastatic disease, receipt of chemotherapy, and major surgery were not. [Read](#).

JURISDICTIONAL EXPERIENCE

- **Global scientific community unites to track progress on COVID-19 R&D and identify new research priorities and critical gaps**

[July 2, 2020](#). The World Health Organization held a two half-day virtual summit on July 1 and 2, to take stock of the evolving science on COVID-19 and examine progress made so far in developing effective health tools to improve the global response to the pandemic. The event brought together researchers, developers, and funders from all over the world, all of whom shared approaches and raw data freely. For example, the meeting analyzed 15 vaccine trial designs from different developers, and criteria for conducting robust trials to assess safety and efficacy of vaccine candidates. [Read](#).



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TRUSTED RESOURCES

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](#).

* 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*