

# COVID-19 PANDEMIC

## RAEB'S Evidence Update

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

August 24, 2020

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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.

### Provider-Led Virtual Care in Ambulatory Care

Virtual care technology in hospitals can help minimize in-person visits and contact among physicians and patients, thus reducing the transmission of COVID-19.

Type of virtual care technologies: There are synchronous (i.e., real-time, such as videoconferencing) and asynchronous (i.e., store-and-forward, such as photos) technologies. Evidence sources suggest there is an increased use of synchronous virtual care technologies compared to asynchronous ones.

Type of patients consulted: Most virtual care technologies are offered to patients seeking care for: endocrinology (e.g., diabetes), mental health and addictions, outpatient, obstetrics and gynaecology, remote and rural locations, teledermatology, telehomecare, pulmonary, teleophthalmology, surgical transitions, cancer, aging and geriatrics, cardiology, and inpatient care.

Type of services offered: There are different services offered within synchronous and asynchronous virtual care technologies. Videoconferencing was identified as the most commonly used, followed by telephone calls, telemonitoring, teleconsultation, and store-and-forward.

Reported outcomes: Virtual care technologies are effective in improving patient and provider experiences and are also cost-effective. In particular:

- *Patient experience and equity*: Patient experiences with virtual care technology are overall positive compared to in-person care. Common themes of patient satisfaction include: increased equity, increased quality of care, increased access to timely supports and care, and reduced travel time.
- *Provider experience*: Provider experiences with virtual care technology are overall positive compared to in-person care. Common themes pertaining to provider satisfaction include: reduced travel time, increased patient consultations, increased geographic coverage, reduced burden on health care system, increased quality of care, and increased time of service.
- *Cost-effectiveness*: Virtual care technologies have been shown to be cost-effective in comparison to in-person care.

## Models of Infection Prevention and Control (IPAC) Networks that Support Long-Term Care (LTC) Facilities

‘Hub and spoke’ models arrange service delivery assets into a network consisting of: 1) an anchor establishment (hub) that offers an array of complex medical services and services that support care delivery (e.g., human resource management, marketing); and 2) secondary establishments (spokes) that offer limited, but locally-delivered basic health services. When complexities emerge and care falling outside the scope of services provided at secondary facilities is required, patients are routed to the hub for treatment. Hub and spoke models for IPAC in LTC facilities to respond to COVID-19 were identified in the United States (US) (i.e., Virginia, Washington, and Colorado) and France.

Structure: Two models consist of an academic hospital (‘hub’) and regional LTC facilities (‘spokes’) in eight LTC homes in Virginia and 115 nursing homes in France. In Washington, the model consists of a central university and 16 regional skilled nursing facilities, and two regional acute care hospitals and 43 long-term care facilities function in a model in Colorado.

Two networks are organized in a phased approach. For example, in Virginia this consists of: 1) a prevention arm that includes an interprofessional academic clinical team, local government agencies including a health department and emergency management, and local organizations related to prevention and treatment of COVID-19 in patients in post-acute/LTC facilities; and 2) a response arm that includes all components of prevention, as well as a targeted rapid response (e.g., expansion of nursing liaisons, rapid implementation of telemedicine consult service with daily clinical rounds and team huddles).

Hub roles and responsibilities: These include daily community collaborative rounds, nursing liaisons, infection advisory consultations, telemedicine consultations, social

support of individual LTC residents via phone calls, weekly web conferences, a regional information platform, a telephone hotline, and monthly meetings between hub staff, key LTC staff, and on-site clinicians.

Lessons learned: In relation to responding to an outbreak, these included: 1) telemedicine consultation services increased direct subspecialty care; 2) daily huddles with all stakeholders in outbreak facilities streamlined communication for clinical and facility-based needs to activate response; 3) interprofessional teams enabled a more fulsome assessment to meet real-time facility needs; 4) early intervention for facility outbreaks was vital, and broad and ongoing outreach to facilities to expand impact and sustain facility involvement is recommended; 5) centralized monitoring bodies can aid distressed facilities in the deployment of information and resources; and 6) telemedicine readiness surveys can be used to better understand existing technological and staffing capabilities in the LTC environment to prevent implementation delays.

## 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.

### Understanding the Disease

#### ***medRxiv: First evidence that antibodies protect humans against COVID-19 re-infection***

**August 14, 2020.** This US-based preprint study describes a SARS-CoV-2 outbreak that was associated with a high attack rate among crewmembers on a fishing vessel (i.e., 104 of 122 individuals, 85.2%). Prior to the boat's departure, three crewmembers had tested seropositive in initial screening and had neutralizing and spike-reactive antibodies in follow-up assays. None of these crewmembers showed evidence of bona fide viral infection or experienced any symptoms during the viral outbreak. Results suggest the presence of neutralizing antibodies from prior infection was significantly associated with protection against re-infection. [Article.](#)

#### ***Science of The Total Environment: Effects of temperature and humidity on new cases and deaths of COVID-19 in 166 countries***

**August 10, 2020.** This study collected worldwide data (not including China) as of March 27, 2020 and suggested that temperature and relative humidity were both negatively related to the daily new cases and daily new deaths of COVID-19. A 1°C increase in temperature was associated with a 3.08% reduction in daily new cases and a 1.19% reduction in daily new

deaths, whereas a 1% increase in relative humidity was associated with a 0.85% reduction in daily new cases and a 0.51% reduction in daily new deaths. [Article](#).

## Case Testing and Screening

### ***medRxiv*: Simple and sensitive saliva-based diagnostic test for SARS-CoV-2 surveillance**

**August 4, 2020.** In this US-based preprint article, the authors describe their approach to developing a new diagnostic test using saliva instead of respiratory swabs, which enables non-invasive frequent sampling and reduces the need for trained health care professionals during testing. The new test, SalivaDirect, was issued an Emergency Use Authorization from the US Food and Drug Administration. Information about how to obtain the protocol for free (a kit is not yet available to purchase) can be found [here](#). [Article](#).

### ***The Lancet*: SeroTracker: A Global SARS-CoV-2 seroprevalence dashboard**

**August 4, 2020.** This article describes a custom-built dashboard that integrates evidence from published articles, preprints, government reports, and news articles and allows for visualization of seroprevalence estimates on a world map and comparisons of estimates between regions, population groups, and testing modalities. [Article](#).

## Transmission

### ***Canadian Medical Association Journal (CMAJ)*: Projected effects of nonpharmaceutical public health interventions to prevent resurgence of SARS-CoV-2 transmission to Canada**

**August 19, 2020.** A modelling study explored the impact of nonpharmaceutical interventions (i.e., case detection and isolation, contact tracing and quarantine, physical distancing and community closures), alone and in combination, on SARS-CoV-2 transmission in Canada. Results suggest that without any interventions, 64.6% of Canadians will be infected with SARS-CoV-2 (total attack rate) and 3.6% of those infected and symptomatic will die. A combination of enhanced case detection, contact tracing, and physical distancing was the only scenario that significantly reduced the attack rate, which would keep hospital and intensive care unit bed use under capacity, prevent nearly all deaths, and eliminate the epidemic. Extending school closures had a minimal effect but did reduce transmission in schools; however, extending closures of workplaces and mixed-age venues markedly reduced attack rates and usually or always eliminated the epidemic under any scenario. [Article](#).

**medRxiv: Projections for COVID-19 outbreak size and student-days lost to closure in Ontario childcare centres and primary schools**

**August 16, 2020.** A preprint of a modeling study suggested that in both childcare and primary school settings, each doubling of class size from eight to 15 to 30 more than doubled the outbreak size and student-days lost. [Article.](#)

**Centers for Disease Control and Prevention (CDC): New guidance states COVID-19 rates in children 'steadily increasing'**

**August 14, 2020.** The US CDC posted its updated guidance for pediatricians and indicated that children likely have the same or higher viral loads in their nasopharynx compared with adults and that children can spread the virus effectively in households and camp settings. The CDC noted that the number and rate of child cases have been "steadily increasing" and that the rate of hospitalizations among children is low but increasing. [Article.](#)

**Nature: Face mask use in the general population and optimal resource allocation during COVID-19**

**August 13, 2020.** This study used mathematical modeling to examine the epidemiological impact of face masks, considering resource limitations and a range of supply and demand dynamics. The authors reported that total deaths and infections reduced with increased mask effectiveness and availability. While providing masks to the healthy population immediately would yield maximal impact, delayed implementation of a general mask-wearing policy could still provide reductions in total infections. However, the epidemic peak could be increasingly delayed with earlier adoption of mask use. [Article.](#)

## Public Health Measures

**Journal of the American Medical Association (JAMA): US parents' plans regarding school attendance for their children in the Fall of 2020**

**August 14, 2020.** A survey reported that many parents plan to keep their children at home if schools open for in-person instruction. Factors associated with keeping children home were lower household income, not being employed, whether those employed had a flexible and controllable work schedule, fear of COVID-19, fear of multisystem inflammatory syndrome, confidence in schools, and challenges of homeschooling. Race and ethnicity were not significantly associated with plans to keep children home. [Article.](#)

## Health Equity and Vulnerable Populations

### **JAMA: Assessment of COVID-19 hospitalizations by race/ethnicity in 12 US states**

**August 17, 2020.** In 10 states, the percentage of hospitalizations for Hispanic individuals was higher than their representative proportion of the state population. This pattern was largely reversed for the Asian population: in six of 10 states that reported data for this subgroup, the proportion of hospitalizations was lower compared with their population representation. Hospitalization data for American Indian and Alaskan Native populations were only reported by eight states; however, the disparity was substantial in select states. Moreover, only 12 of 50 US states consistently reported hospitalizations by race/ethnicity during the study period, highlighting the need for increased data reporting and consistency within and across all US states. [Article](#).

## Frontline Workers

### **JAMA: COVID-19 outcomes in French nursing homes that implemented staff confinement with residents**

**August 13, 2020.** COVID-19-related mortality rates were lower among nursing homes that implemented staff confinement with residents compared with those in a national survey. These findings suggest that self-confinement of staff members with residents may help protect nursing home residents from mortality related to COVID-19 and residents and staff from COVID-19 infection. [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.

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](#).

## 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  
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Research fund management  
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