

COVID-19 PANDEMIC – RAEB'S EVIDENCE UPDATE

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

• January 11, 2021 •

FEATURED

- RAEB'S Rapid Responses for Ontario's health sector
- 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 these rapid responses.

• Triage Protocols for Hospitals During COVID-19

Hospital triage guidance in the context of health resource limitations during the COVID-19 pandemic was identified from 26 countries and organizations:

- **Purpose:** In anticipation of hospital demand escalation, guidance was developed to facilitate the decision-making process in triage situations, and enhance transparency and objectivity.
- **Areas of Consensus:** Most of the identified guidance aims to achieve maximum benefit for as many as possible and to save the maximum number of lives with the resources available at the time of the decision. There is typically a gradation in the prioritization of decisions depending on the extent of scarcity of resources, and various scores are recommended to assess mortality risk and to estimate the probability of survival of the acute event (e.g., sequential organ failure assessment score, clinical frailty scale). According to the literature, triage decisions should generally apply to all patients with the same prognosis, with or without COVID-19, and there should be no discrimination based on characteristics such as age, race, disability, or socio-economic status. Other important factors discussed in guidance include ethical principles (e.g., fair decision-making, patient will), and burden of triage and staff support.
- **Areas of Disagreement:** The identified guidance varies in terms of the type of measures used to evaluate maximizing benefit (e.g., lives saved versus life years saved), and prioritization criteria for patients with the same prognosis and tiebreakers used (e.g., lottery for random allocation versus 'first come, first served' waiting lists).

RAEB'S RAPID RESPONSES FOR ONTARIO'S HEALTH SECTOR cont'd

- **COVID-19 Vaccine Deployment Models and Volumes (as of December 31, 2020)**

Information on the volume and/or deployment methods for COVID-19 vaccines was identified from the United Kingdom (UK), United States (US), Israel, Germany, Italy, Portugal, Australia, Singapore, China, and Japan.

- **Vaccine Type and Volume:** The vaccine developed by Pfizer/BioNTech/Fosun Pharma has been purchased by the UK, US, Israel, Italy, Germany, Portugal, Australia, Singapore, China, and Japan. The vaccine developed by Moderna has been purchased by the UK, US, Italy, Singapore, and Japan. The vaccine developed by AstraZeneca has been purchased by the UK and Italy. Three other vaccines are being developed in China.
 - The volume of vaccines available or purchased from manufacturers ranges from 10-300 million doses.
 - The number of single vaccine doses administered per 100 people in the total population is 9.18 in Israel, 1.18 in the UK, 0.64 in the US, 0.16 in Germany and Portugal, and 0.02 in Italy. In China, up to one million people are reported to have been vaccinated.
- **Distribution, Storage, and Transportation:** Centralized distribution approaches are used in the US, UK, and Australia, and decentralized approaches are used in Israel, Germany, and China. Delivery service agents, supply chain, and logistic companies have been contracted to help distribute vaccines to cold chain facilities or administration sites. For example, vaccine manufacturers in the US transport the vaccines to UPS and FedEx facilities, and then planes and trucks are used to transport the vaccine to administration sites. In Singapore, the national airline carrier will transport vaccines from production facilities, and most vaccines developed by China will be stored in climate-controlled warehouses at airports and then flown to countries around the world via temperature-controlled cargo jets.
- **Administration Sites:** Vaccines are primarily administered to people in a wide range of health care facilities, including hospitals, primary care clinics, pharmacies, long-term care homes, and mobile units.
- **Vaccination Appointments:** In Israel, there is no need for a referral from a doctor, and individuals can schedule an appointment for the vaccine directly with their primary care provider. In Germany, a standardized module for telephone and digital arrangement of appointments is available.
- **Staffing:** Vaccination services are being provided by family physicians, nurses, paramedics, pharmacists, and/or administrative staff.

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

- **WHO: Interim recommendations for use of BNT162b2 vaccine (Pfizer/BioNTech) under Emergency Use Listing** [Jan 8, 2021](#). On December 31, 2020, WHO listed the BNT162b2 vaccine for emergency use, making it the first to receive emergency validation from WHO since the COVID-19 outbreak began. The WHO Emergency Use Listing Procedure is a risk-based procedure for assessing and listing unlicensed vaccines with the aim of expediting the availability of these products to people affected by a public health emergency. BNT162b2 has been shown to have an efficacy of approximately 95%, based on a median follow-up of two months. The data reviewed by WHO at this time support the conclusion that the known and potential benefits of BNT162b2 outweigh the known and potential risks. [Read](#).
- **NEJM: Safety and efficacy of the BNT162b2 mRNA COVID-19 vaccine (Pfizer/BioNTech)** [Dec 31, 2020](#). This study that tested the safety and efficacy of BNT162b2 with 43,548 participants reported that a two-dose regimen of the vaccine conferred 95% protection against COVID-19 in persons 16 years of age and older. Similar vaccine efficacy (generally 90 to 100%) was observed across subgroups defined by age, sex, race, ethnicity, baseline body mass index, and the presence of coexisting conditions. The safety profile of BNT162b2 was characterized by short-term, mild-to-moderate pain at the injection site, fatigue, and headache. Safety over a median of two months was similar to that of other viral vaccines. [Read](#).
- **NEJM: Efficacy and safety of the mRNA-1273 SARS-CoV-2 vaccine (Moderna)** [Dec 30, 2020](#). This US-based study of 30,400 participants evaluated the efficacy and safety of mRNA-1273 and reported the vaccine showed 94.1% efficacy at preventing COVID-19 illness among persons at high risk for SARS-CoV-2 infection, including severe disease. Symptomatic COVID-19 illness was confirmed in 185 participants in the placebo group and in 11 participants in the mRNA-1273 group. Severe COVID-19 occurred in 30 participants, with one fatality; all 30 were in the placebo group. Serious adverse events were rare, and the incidence was similar in the two groups. [Read](#).
- **JAMA: National trends in the US public's likelihood of getting a COVID-19 vaccine (April 1 to December 8, 2020)** [Dec 29, 2020](#). This study suggests that the self-reported likelihood of getting a COVID-19 vaccine declined from 74% in early April to 56% in early December 2020, despite the early November press releases of high vaccine efficacy for two vaccines in phase three trials. Low likelihood of getting a COVID-19 vaccine was identified among Black individuals and those with lower educational backgrounds, which is reported to be especially concerning due to their disproportionately higher burden from COVID-19 disease. [Read](#).

RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE cont'd

UNDERSTANDING THE DISEASE

- **WHO: Genomic sequencing of SARS-CoV-2: A guide to implementation for maximum impact on public health**
[Jan 5, 2021](#). This document provides guidance for laboratories on maximizing the impact of SARS-CoV-2 sequencing now and other emerging pathogens in the future. Sequencing enabled the world to rapidly identify SARS-CoV-2 and develop diagnostic tests and other tools for outbreak management. Continued genome sequencing supports the monitoring of the disease's spread and evolution of the virus. [Read](#).

TRANSMISSION

- **JAMA: Assessment of air contamination by SARS-CoV-2 in hospital settings**
[Dec 23, 2020](#). This systematic review identified that the air close to and distant from patients with COVID-19 was frequently contaminated with SARS-CoV-2 RNA; however, few of these samples contained viable viruses. High viral loads found in toilets and bathrooms, staff areas, and public hallways should be carefully considered. [Read](#).

CASE TESTING AND SCREENING

- **JAMA: Estimation of SARS-CoV-2 infections, symptomatic infections, hospitalizations, and deaths in the US using seroprevalence surveys**
[Jan 5, 2021](#). Based on seroprevalence surveys, this study suggests that the SARS-CoV-2 disease burden may be much larger than reported COVID-19 cases owing to underreporting. Even after adjusting for underreporting, a substantial gap remains between the estimated proportion of the population infected and the proportion infected required to reach herd immunity. Additional seroprevalence surveys are needed to monitor the pandemic, including after the introduction of safe and efficacious vaccines. [Read](#).

PUBLIC HEALTH MEASURES

- **Nature: Psychological characteristics associated with COVID-19 vaccine hesitancy and resistance in Ireland and the United Kingdom (UK)**
[Jan 4, 2021](#). Using nationally representative data from the general adult populations of Ireland (N=1,041) and the UK (N=2,025), this study found that vaccine hesitancy/resistance was evident for 35% and 31% of these populations respectively. In both populations, those resistant to a COVID-19 vaccine were less likely to obtain information about the pandemic from traditional and authoritative sources and had similar levels of mistrust in these sources compared to vaccine accepting respondents. [Read](#).

RESEARCH EVIDENCE/JURISDICTIONAL EXPERIENCE cont'd

HEALTH EQUITY AND VULNERABLE POPULATIONS

- ***Canadian Journal of Public Health: COVID-19 and older adults living in social housing in Canada***
[Jan 4, 2021](#). This article reports that older adults in social housing have high rates of chronic diseases and live in clustered housing (e.g., apartment buildings with shared facilities including elevators and laundry rooms) and should be recognized as a vulnerable population in the public health discourse. Their social isolation, low mobility, low health literacy, and limited internet access are barriers to accessing basic needs, health information, and health care in a Canadian context where many services have moved to virtual platforms. There is substantial movement in and out of social housing buildings as residents are required to go out to meet their basic needs and individuals providing support enter the buildings without screening (e.g., personal support workers, volunteers delivering groceries). [Read](#).
- ***Surgical Practice: Pediatric domestic accidents during COVID-19 pandemic***
[Dec 30, 2020](#). This study, conducted in Hong Kong during the COVID-19 social isolation period (January to May 2020), reviewed all patients under 18 years of age admitted to a tertiary pediatric surgical unit with domestic accidents (i.e., foreign body ingestion [FBI], scald injury, animal bite, and fall). The proportion of domestic accidents in 2020 increased compared with the same period in 2018 and 2019 with a noticeable increase in non-food FBIs and surgical interventions. Governments and health care authorities should proactively implement appropriate intervention programs to prevent domestic accidents during lockdown. [Read](#).
- ***Penn Medicine Center for Evidence-based Practice: Vaccination for women who are pregnant or lactating***
[Dec 24, 2020](#). Guidelines note the lack of clinical evidence on the safety or effectiveness of COVID-19 vaccines in women who are pregnant, breastfeeding, or attempting to conceive. Two major US specialty societies recommend shared decision-making to best balance the risks of vaccination with the risks of remaining unvaccinated; they do not consider pregnancy or breastfeeding to be an absolute contraindication to COVID-19 vaccination. Most US medical centres that have taken a position on COVID-19 vaccination endorse the US societies' recommendations and will offer vaccination to women who are pregnant or breastfeeding. UK organizations consider pregnancy and breastfeeding to be contraindications to COVID-19 vaccination. [Read](#).

FRONTLINE WORKERS

- ***International Journal of Nursing Studies: Practical nursing recommendations for palliative care for people with dementia in long-term care (LTC) facilities during the COVID-19 pandemic***
[Jan 2021](#). This review concludes there is a need to formulate practical recommendations for nursing staff working in LTC facilities on how to provide palliative care for people with dementia in times of COVID-19, especially concerning grief and bereavement support, and an acknowledgment of the grief and moral distress experienced by nursing staff. Nursing leadership is needed to safeguard the quality of palliative care, interprofessional collaboration, and peer support among nursing staff. [Read](#).

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FRONTLINE WORKERS

- *Lancet*: Risk assessment and seroprevalence of SARS-CoV-2 infection in health care workers (HCWs) of COVID-19 and non-COVID-19 hospitals.
[Dec 31, 2020](#). This study evaluated the SARS-CoV-2 seroprevalence among 4,726 HCWs in Southern Switzerland between April 16-30, 2020. Seropositivity was higher among HCWs working on COVID-19 wards (14.1%) compared to other hospital areas at medium (10.7%) or low-risk exposure (7.3%) as well as HCWs who had household exposure to COVID-19 cases (18.7%) compared to those without (7.7%). HCWs with exposure to COVID-19 patients have only a slightly higher risk of seropositivity compared to those without, suggesting that the use of personal protective equipment and other measures aiming at reducing hospital transmission are effective while household contact with known COVID-19 cases represents the highest risk of seropositivity for HCWs. [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.

* 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*