

The Newfoundland & Labrador Centre for Applied Health Research (NLCAHR) sends this COVID-19 e-bulletin to our health system stakeholders on a bi-weekly basis. This e-bulletin includes results from recent searches of health evidence and grey literature on the pandemic under specific subject headings, highlighting those findings considered to be of particular relevance to you.

We welcome your [feedback and suggestions](#).

To subscribe to this e-bulletin, please email: Rochelle.Baker@med.mun.ca

You can find all NLCAHR e-bulletins and COVID-19 *Quick Response Reports* [online here](#).

Articles about **COVID-19 VARIANTS** are **highlighted in RED** below.

CLINICAL PRESENTATION & BIOLOGY

Nature: [COVID super-immunity: one of the pandemic's great puzzles](#) (October 14, 2021)

“Those who had recovered from COVID-19 months before receiving their jabs harboured antibodies capable of defanging the mutant spike, which displays much more resistance to immune attack than any known naturally occurring variant. These peoples’ antibodies even blocked other types of coronaviruses.” [LINK](#)

Cellular and Molecular Immunology: [Significantly reduced abilities to cross-neutralize SARS-CoV-2 variants by sera from convalescent COVID-19 patients infected by Delta or early strains](#). (October 11, 2021)

“A new variant of interest, the Lambda strain (C.37), is currently spreading in South American countries... Our results have shown that the Lambda strain possesses mutations that confer immune evasion from Delta strain-specific convalescent sera, with a 13.03-fold reduction in [natural anti-body (nAb)] titers. As different BCR germlines could be used during the infection of SARS-CoV-2 variants, a COVID-19 vaccine specifically designed for Delta and Lambda strains is highly warranted, as the current vaccines are all designed based on the S protein of the early dominant strains.” [LINK](#)

Nature: [Results of an early second PCR test performed on SARS-CoV-2 positive patients may support risk assessment for severe COVID-19](#) (October 14, 2021)

“Identifying patients at increased risk for severe COVID-19 is of high priority during the pandemic as it could affect clinical management and shape public health guidelines [...] Analysis of a nationwide electronic health records data of 1683 SARS-CoV-2 positive individuals indicated that a second negative PCR test result was associated with lower risk for severe illness compared to a positive result. This association was seen across different age groups and clinical settings. More importantly, it was not limited to recovering patients but also observed in patients who still had evidence of COVID-19 as determined by a subsequent positive PCR test. Our study suggests that an early

second PCR test may be used as a supportive risk-assessment tool to improve disease management and patient care.” [LINK](#)

The Royal Society Publishing: [The three Ts of virulence evolution during zoonotic emergence](#) (July 16, 2021)

“... we discuss the selection acting on zoonotic pathogens' transmission rates and virulence at spillover and during emergence. We explain how the direction and strength of selection during epidemics of emerging zoonotic disease can be understood by a three Ts framework: trade-offs, transmission, and time scales.” [LINK](#)

Nature Reviews Immunology: [The immunology of asymptomatic SARS-CoV-2 infection: what are the key questions?](#) (October 19, 2021)

“It is clear that adaptive immunity is strongly activated during asymptomatic infection, but some features of the T cell and antibody response may differ from those in symptomatic disease. Areas that need greater clarity include the extent to which asymptomatic disease leads to persistent symptoms (long COVID), and the quality, quantity and durability of immune priming required to confer subsequent protection” [LINK](#)

British Medical Journal Open Respiratory Research: [COVID-19 is associated with distinct myopathic features in the diaphragm of critically ill patients](#) (September 20, 2021)

“Diaphragm of critically ill patients with COVID-19 has distinct myopathic features compared with critically ill patients without COVID-19, which may contribute to the ongoing dyspnoea and fatigue in the patients surviving COVID-19 infection” [LINK](#)

Journal of the American Medical Association: [Short-term and Long-term Rates of Post-acute Sequelae of SARS-CoV-2 Infection](#) (October 13, 2021)

“Our results indicate that clinical management of post-acute sequelae of COVID will require a whole-patient perspective, including management tools like virtual rehabilitation platforms and chronic care for post-acute COVID-19 symptoms in conjunction with the management of preexisting or new comorbidities. One-stop multidisciplinary clinics are therefore recommended to avoid multiple referrals to different specialists and encourage comprehensive care.” [LINK](#)

European Respiratory Journal: [Putative contributions of circadian clock and sleep in the context of SARS-CoV-2 infection](#) (October 1, 2021)

“The unique potential links between SARS-Cov-2 and circadian rhythms and sleep have been reviewed and suggest the possibility that both of these homeostatic processes may significantly modify the susceptibility to infection as well as the overall clinical manifestation of the disease. Therefore, implementation of healthy sleep measures as a protective strategy against infection, and early detection of patients at risk for more severe disease (e.g., night-shift workers or patients with OSA) may enable improved implementation of supportive measures and lead to better outcomes.” [LINK](#)

- **See also:** Frontiers in Neuroscience: [COVID-19: Sleep, Circadian Rhythms and Immunity – Repurposing Drugs and Chronotherapeutics for SARS-CoV-2](#) (October 1, 2021)
- **See also:** The Lancet Respiratory Medicine: [Could a good night's sleep improve COVID-19 vaccine efficacy?](#) March 12, 2021
- **See also:** The Royal Society Publishing: [COVID-19, circadian rhythms and sleep: from virology to chronobiology](#). October 12, 2021

HEALTH EQUITY AND ETHICS

Journal of the American Medical Association Network Open: [Changes in Adverse Pregnancy Outcomes Associated with the COVID-19 Pandemic in the United States](#) (October 15, 2021)

“The authors finding that the pandemic period was not associated with a changing risk of stillbirth and provided only modest evidence of a lower risk of preterm birth is broadly consistent with the existing literature. The study provides novel evidence of the association of the pandemic with the risk of complications that have rarely been documented, including gestational hypertension, poor fetal growth, and preeclampsia”. [LINK](#)

Irish Journal of Medical Science: [COVID-19 vaccine — can it affect fertility?](#) (October 15, 2021)

“Here we summarise international consensus from multiple organisations advising on fertility and the COVID-19 vaccine. Preliminary studies all suggest that there is neither link, nor indeed any theoretical reason why any of the COVID-19 vaccines might affect fertility. Dissemination of misinformation regarding the impact of the vaccine on future fertility needs to be controlled in order to avoid any hesitancy amongst young women attending for vaccination. It is also vital that the medical profession counteract this information, and, in order to do that, healthcare providers must be well informed on the latest recommendations and research” [LINK](#)

MedRxiv: [Characterizing menstrual bleeding changes occurring after SARS-CoV-2 vaccination](#) (October 12, 2021)

“Many people began sharing that they experienced unexpected menstrual bleeding after SARS-CoV-2 inoculation. The authors found increased/breakthrough bleeding was significantly associated with age, other vaccine side effects (fever, fatigue), history of pregnancy or birth, and ethnicity. Changes to menstrual bleeding are not uncommon nor dangerous, yet attention to these experiences is necessary to build trust in medicine” [LINK](#)

Current Pediatrics Reports: [True Resilience: A Look inside COVID’s Effect on Children with Medical Complexity and Their Families](#) (October 9, 2021)

“Vulnerable children with medical complexity are silent victims of the COVID-19 pandemic, impacted by lack of resources and sick caregivers. In this article, we examine ways in which the pandemic has increased the significant difficulties already experienced by these patients and their families. Increased awareness will lead to improvement in the disparities experienced by this population and improve the ability of healthcare providers to care for them.” [LINK](#)

The Atlantic: [Masks Are Changing How Kids Interact](#) (October 11, 2021)

“Some psychologists and educators worry that such impairment in facial processing can lead to a spate of challenges with socialization and communication. Kids may find reading people’s emotions through masks [particularly](#) difficult. And for children who are meeting new classmates for the first time while masked, recognition difficulties can slow down the getting-to-know-you process and, in the long run, hinder the development of trust.” [LINK](#)

Journal of the American Medical Association: [Transmission of SARS-CoV-2 after COVID-19 Screening and Mitigation Measures for Primary School Children Attending School in Liège, Belgium](#) (October 12, 2021)

“This cohort 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%). In addition, 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.” [LINK](#)

- **See also:** Detroit Free Press: [K-12 schools without mask mandates in Michigan saw 62% more coronavirus spread](#). (October 15, 2021)

BioMed Central Health Services Research: [Estimated impact of COVID-19 on preventive care service delivery: an observational cohort study](#) (October 16, 2021)

“This study utilized primary care EMR data to quantify the impact of COVID-19 on the delivery of preventive care services, namely cervical cancer, CRC, and type 2 diabetes mellitus (T2DM) screening. It is expected that the number of patients screened has decreased since COVID-19 restrictions began. COVID-19 decreased the delivery of preventive care services, which may cause delayed diagnoses, increased mortality, and increased health care costs. Virtual care and reopening measures have not restored the provision of preventive care services. Electronic medical record data could be leveraged to improve screening via panel management. Additional, system-wide primary care and laboratory capacity will be needed to restore pre-COVID-19 screening rates.” [LINK](#)

British Medical Journal Public Health: [A rapid systematic review of measures to protect older people in long-term care facilities from COVID-19](#) (October 18, 2021)

“The global COVID-19 pandemic produced large-scale health and economic complications. Older people and those with comorbidities are particularly vulnerable to this virus, with nursing homes and long term care facilities (LTCF) experiencing significant morbidity and mortality associated with COVID-19 outbreaks. The aim of this rapid systematic review was to investigate measures implemented in LTCF to reduce transmission of COVID-19 and their effect on morbidity and mortality of residents, staff and visitors” [LINK](#)

The Royal Society Publishing: [Miasmas, mental models and preventive public health: some philosophical reflections on science in the COVID-19 pandemic](#) (October 12, 2021)

“When the history of the COVID-19 pandemic is written, it is likely to show that the mental models held by scientists sometimes facilitated their thinking, thereby leading to lives saved, and at other times constrained their thinking, thereby leading to lives lost. This paper explores some competing mental models of how infectious diseases spread and shows how these models influenced the scientific process and the kinds of facts that were generated, legitimized and used to support policy.” [LINK](#)

HEALTH SYSTEM ADMINISTRATION

Centres for Disease Control: [COVID-19 Science Update released: October 22, 2021 Edition 109](#) (October 15, 2021)

“The *COVID-19 Science Update* summarizes new and emerging scientific data for public health professionals to meet the challenges of this fast-moving pandemic.” See [here](#) to sign up for the CDC COVID-19 Science Update. [LINK](#)

Nature: [COVID lesson: trust the public with hard truths](#) (October 12, 2021)

“The idea that the public is incapable of dealing effectively with the unpleasant truth stymies pandemic management. It leads authorities to communicate in self-defeating ways. My group’s research shows that messages should communicate self-efficacy: people who feel that they know what to do, and how, are likely to comply. Governments that underestimate their people focus on what the public cannot do. Authorities that distrust the population also downplay negative or complicated facts. Rather than explaining emerging evidence of, say, waning immunity or new variants, paternalistic authorities resort to vague reassurances. Our research shows that vagueness inhibits vaccine acceptance and decreases trust in authorities.” [LINK](#)

Canadian Medical Association Journal (CMAJ): [The consequences of neglecting to collect multisectoral data to monitor the COVID-19 pandemic](#) (October 18, 2021)

“Neglecting the use of a wide range of data hinders policy-making. Unpopular restrictions on economic and social activity require strong justification, and multisectoral evidence may very well reinforce their benefits. Conversely, if governments opt to allow greater economic and social activity, then such decisions require close monitoring and, sometimes, rapid reversal. Polarization and politicization of debates regarding COVID-19 policies is a problem that the transparent sharing of multisectoral data could counter. Without broader data reporting, governments also miss important opportunities to celebrate successes, such as maintaining low crime rates or keeping schools open. Maintaining public morale is, after all, an essential part of a whole-of-society response.” [LINK](#)

- **See also:** Journal of Medical Ethics: [Public justification and expert disagreement over non-pharmaceutical interventions for the COVID-19 pandemic](#) (October 12, 2021)

Canadian Medical Association: [Pandemic Wellness Toolkit](#) (2021)

“The pandemic has taken a toll on the emotional and physical well-being of physicians, medical learners and health care workers across Canada. Many have had to cope with an increase or exacerbation of anxiety, burnout or other health challenges related to increasingly difficult workplace conditions. This toolkit includes proven wellness services and resources to support you at this stage of the pandemic.” [LINK](#)

Supportive Care in Cancer: [COVID-19 recovery: implications for cancer care clinicians](#) (October 9, 2021)

“Using the three Cancer Australia questions, we draw from clinicians’ insights collected through the Victorian COVID-19 Cancer Network (VCCN) and from the wider health professional literature. We summarise key features of the COVID-19 experience for cancer care clinicians, highlighting moral distress, fatigue and disrupted practice. We then discuss how pandemic-related ethical values might guide health leaders and administrators to balance support for clinician wellbeing with ongoing delivery of cancer care for patients.” [LINK](#)

Nature: [SARS-CoV-2 vaccine breakthrough infections with the alpha variant are asymptomatic or mildly symptomatic among health care workers](#) (October 15, 2021)

“Results of this study suggest the protective effects of the BNT162b2 vaccine in the prevention of SARS-CoV-2 infection in healthcare workers. By comparing the incidence of vaccine breakthrough infections with the incidence of SARS-CoV-2 infection in healthcare workers that did not receive the vaccination during the study period, an 83% protection from infection was calculated. All vaccine breakthrough infections were asymptomatic or symptomatic mainly with few and mild symptoms as rhinitis. The frequency of symptomatic infections was lower in vaccinated than non-vaccinated subjects (48% vs 85%). Live infectious virus was detected only in half of the cases of breakthrough infections and virus transmission to other individuals was documented in 6.1% of the cases. Finally, breakthrough infections were not associated with failure in developing antibody or T-cell response after vaccination.” [LINK](#)

World Health Organization: [Building health systems resilience for universal health coverage and health security during the COVID-19 pandemic and beyond: WHO position paper](#) (October 15, 2021)

“The world has not learned from previous epidemics, and overreliance on reacting to events as they occur, rather than on prevention and preparedness, has meant that countries were caught unprepared for a pandemic of this speed and scale [...] This paper provides leaders and policymakers at national and local levels with the following recommendations for the medium and long term, positioning health within the wider discussions on socioeconomic recovery and transformation.” [LINK](#)

INFECTION PREVENTION AND CONTROL

Nature: [Don't get it or don't spread it: comparing self-interested versus prosocial motivations for COVID-19 prevention behaviors](#) (October 12, 2021)

"Coronavirus prevention efforts can reasonably be conceptualized as either self-interested or prosocial. We have investigated which framing is more effective—and motivation is stronger—for fostering intentions to engage in prevention behaviors [...] Thus, across all of our experiments, we never found self-interested framing to be significantly more effective than prosocial framing. These findings are striking, considering the substantial risks of hospitalization and death posed by COVID-19 to individuals. And they suggest that people are receptive to the suggestion that prevention behaviors can, in addition to conferring personal benefits, also serve to benefit others. In this way, our results imply that prosocial motives—or the desire to appear prosocial—can support prevention behaviors." [LINK](#)

Buildings: [Application of Portable Air Purifiers for Mitigating COVID-19 in Large Public Spaces](#) (July 29, 2021)

"The research outcomes reveal that the central air condition system only exhausts a small fraction of the particles released from the mouth of the infector, and most of the particles are spread out indoors and ultimately deposited on occupants, tables, equipment, ground, and walls. Both floor-standing and table air purifiers, with proper locations and capacities, can effectively attract room air to flow towards the purifiers and, therefore, clean the "contaminated" air. Similar behavior and performance were observed in the actual restaurant and the ballroom, while the results indicate that each space is unique in geometry, layout, and system and, thus, needs to be addressed individually. Flexible solution allows the redeployments of the cleaning devices throughout the property as needed. Portable air purifiers with HEPA filtration provide an effective means to help mitigate the airborne transmission of pathogens, which can be as effective as more elaborate solutions installed in the HVAC systems at a lower cost." [LINK](#)

Center for Infectious Disease Research and Policy: [What can masks do? Part 1: The science behind COVID-19 protection](#). (October 14, 2021)

"Cloth and surgical masks offer a very limited degree of source control, because, while they limit the number of larger respiratory particles in a space, they do not prevent the emission of most small particles (aerosols) exhaled during breathing, talking, singing, coughing, or other respiratory actions. Because masks offer limited source control and much more limited personal protection, their effectiveness can be improved only by combining them with other interventions.... None of these interventions, absent eliminating contact with other people, is effective on its own. But the greater the number of interventions implemented, the lower the risk of person-to-person... anyone wearing a mask should be aware that the longer they spend in a shared space with other people, the greater the risk of being infected." [LINK](#)

- See also: [What can masks do? Part 2: What makes for a good mask study — and why most fail](#)

Journal of the American Medical Association: [Association between Risk of COVID-19 Infection in Nonimmune Individuals and COVID-19 Immunity in Their Family Members](#) (October 11, 2021)

"In this cohort study of 1 789 728 individuals from 814 806 families in Sweden, family members without immunity had a 45% to 97% lower risk of contracting COVID-19 as the number of immune family members increased. These results suggest that COVID-19 vaccines play a key role in reducing the transmission of the virus within families, which likely has implications for herd immunity and pandemic control" [LINK](#)

- See also: JAMA Pediatric: [Incidence Rates, Household Infection Risk, and Clinical Characteristics of SARS-CoV-2 Infection among Children and Adults in Utah and New York City, New York](#). October 8, 2021

TREATMENT

Eurosurveillance: [Effectiveness of COVID-19 vaccines against SARS-CoV-2 infection with the Delta \(B.1.617.2\) variant: second interim results of a living systematic review and meta-analysis, 1 January to 25 August 2021](#) (October 14, 2021)

“These second interim results of our living systematic review show that COVID-19 vaccines approved in the EU have a moderate to high effectiveness against mild to moderate forms of SARS-CoV-2 infections caused by the Delta variant, while vaccine effectiveness against severe disease and hospitalisation was high to very high. Statistical heterogeneity was low in meta-analysis of the severe outcomes, further supporting a well-maintained effectiveness against these endpoints under Delta variant dominance.” [LINK](#)

Centres for Disease Control: [Effectiveness of Pfizer-BioNTech mRNA Vaccination against COVID-19 Hospitalization among Persons Aged 12 to 18 Years — United States, June to September 2021](#) (October 19, 2021)

“Among hospitalized U.S. patients aged 12–18 years, vaccine effectiveness of 2 doses of Pfizer-BioNTech vaccine against COVID-19 hospitalization during June–September 2021, was 93% (95% confidence interval = 83%–97%). This evaluation demonstrated that 2 doses of Pfizer-BioNTech vaccine were highly effective in preventing COVID-19 hospitalization among persons aged 12–18 years. Findings reinforce the importance of vaccination to protect U.S. youths against severe COVID-19.” [LINK](#)

New England Journal of Medicine: [Differential Kinetics of Immune Responses Elicited by COVID-19 Vaccines](#) (October 15, 2021)

“These data show differential kinetics of immune responses induced by the mRNA and Ad26.COVS vaccines over an 8-month follow-up period. As shown in previous studies, the BNT162b2 and mRNA-1273 vaccines were characterized by high peak antibody responses that declined sharply by 6 months; these responses declined further by 8 months. Antibody titers in recipients of the mRNA-1273 vaccine were generally higher than those in recipients of the BNT162b2 vaccine. The Ad26.COVS vaccine induced lower initial antibody responses, but these responses were relatively stable over the 8-month follow-up period, with minimal-to-no evidence of decline. These findings have important implications for waning vaccine immunity, although correlates of protection from SARS-CoV-2 are not yet defined.” [LINK](#)

- **See also:** Medical Press: [Eight months later: Researchers compare immune responses elicited by three COVID-19 vaccines](#) (October 15, 2021)
- **See also:** New England Journal of Medicine: [Waning Immune Humoral Response to BNT162b2 COVID-19 Vaccine over 6 Months](#) (October 6, 2021)

ars Technica: [Mix-and-match COVID boosters are as good as—if not better than—all the same shots.](#) (October 13, 2021)

“Mixing and matching COVID-19 vaccines for booster doses appears safe and as effective—if not more effective—than sticking with the same vaccine for a booster dose. That’s according to preliminary data posted online Wednesday from a clinical trial run by the National Institutes of Health” [LINK](#)

- **See also:** medRxiv: [Heterologous SARS-CoV-2 Booster Vaccinations – Preliminary Report](#) (October 13, 2021)

International Journal of General Medicine: [Efficacy of a Nasal Spray Containing Iota-Carrageenan in the Postexposure Prophylaxis of COVID-19 in Hospital Personnel Dedicated to Patients Care with COVID-19 Disease](#) (October 15, 2021)

“The results of this study suggest that the Iota-Carrageenan nasal spray is safe and effective to prevent COVID-19 disease in hospital workers managing COVID-19 patients. In our study we identified a risk reduction around 80%. The effect was obtained using the spray within the dosage that is approved for use by the health authority. A small number of individuals presented adverse effects, with no difference between the group treated with I-C and the placebo group. Adverse effects were mild, which is consistent with that described in other clinical trials and in short, medium, and long-term toxicity studies conducted in experimental animals.” [LINK](#)

MENTAL HEALTH & WELLNESS

Journal of Racial and Ethnic Health Disparities: [2020 Syndemic: Convergence of COVID-19, Gender-Based Violence, and Racism Pandemics](#) (October 14, 2021)

“Overall, we found that racialized women are experiencing what we name as a 2020 Syndemic: a convergence of COVID-19, gender-based violence, and racism pandemics, placing their wellbeing at a disproportionate risk. The term syndemic refers to two or more epidemics. A syndemic lens illuminates how diseases are aggravated by socioeconomic, political, or environmental contexts, and how they interact, leading to synergistic vulnerability to diseases and social inequities” [LINK](#)

Journal of Affective Disorders Reports: [Psychological problems and reduced health-related quality of life \(HRQoL\) in the COVID-19 survivors](#) (October 7, 2021)

“This review aimed to summarize the available evidence on the reduced HRQoL and the prevalence of psychiatric problems, including PTSD, depression and anxiety, and HRQoL among COVID-19 survivors. A significant number of patients who survived from COVID-19 might suffer from PTSD, depression, and anxiety beyond one month. Our systematic review also found evidence of reduced HQOL and limited social role in these survivors” [LINK](#)

Journal of Advanced Nursing: [Psychological impacts and online interventions of social isolation amongst older adults during COVID-19 pandemic: A scoping review](#) (October 9, 2021)

“This scoping review aims to synthesis the psychological impacts of social isolation amongst older adults during COVID-19 and +reviews the benefits and barriers of online interventions used to combat social isolation. With the COVID-19 pandemic still in progress, this review provides insights on the psychological impacts of social isolation amongst older adults. Nurses in the community and long-term care facilities could adopt strategies and online intervention to better support the older adults, contribute to a stronger COVID-19 response and support system, and an overall better road to recovery from this crisis.” [LINK](#)

This **COVID-19 e-bulletin** was prepared by researchers at the Newfoundland & Labrador Centre for Applied Health Research (Kazeem Adefemi, Waseem Abu Ashour, Wendy Lasisi, and Pablo Navarro) to summarize research evidence and grey literature produced by a variety of sources that were accessed online in September and October of 2021.

Given the rapidly changing nature of the coronavirus pandemic, some of the references included in this e-bulletin may quickly become out-of-date.

We further caution readers that researchers at the Newfoundland & Labrador Centre for Applied Health Research are not experts on infectious diseases and are relaying work produced by others.

This report has been produced quickly and it is not exhaustive, nor have the included studies been critically appraised.

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