COVID-19 IMMUNITY TASK FORCE

GROUPE DE TRAVAIL SUR L'IMMUNITÉ FACE À LA COVID-19

APRIL
2022

CITF MONTHLY REVIEW

35% jump in Canadian adults with infection-acquired antibodies: Canadian Blood Services

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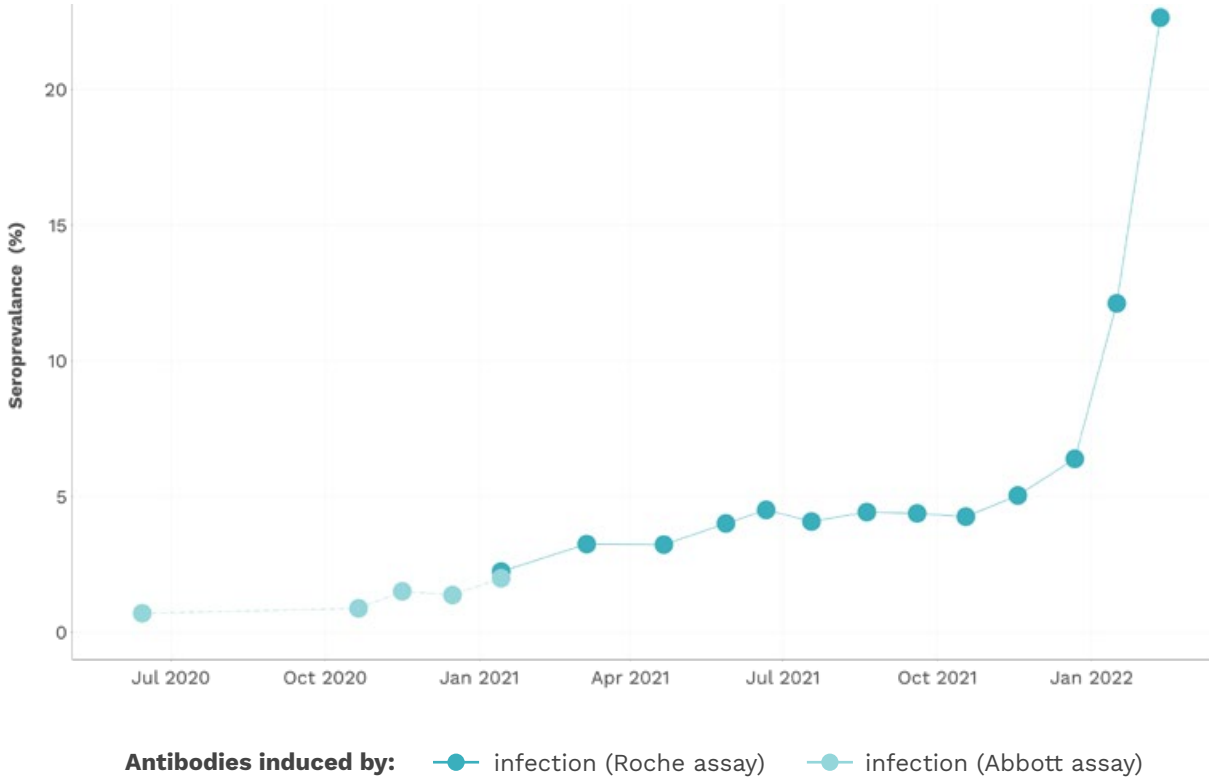
The need for **pediatric vaccination**

CITF-funded **SeroTracker** contributes to global serosurveillance data

Canadian Blood Services Report

MID-FEBRUARY REPORT

35% more Canadian blood donors had infection-acquired antibodies by mid-February 2022



In its latest report, Canadian Blood Services revealed the toll of Omicron's spread through mid-February 2022. Not only did almost a quarter (22.7%) of all blood donors have evidence of a prior SARS-CoV-2 infection, but this represented a 35% jump during the 22-day sampling period (January 24 to February 15). Consistent with the rapid spread of the Omicron variant, this rate climbed steeply throughout the study period. As antibodies targeting the nucleocapsid protein (anti-N, reflecting that they were acquired from infection) appear on average one to two weeks following symptom onset, this report likely captures infections during the peak of the fifth wave, up until the end of January.

Mid-February's seropositivity rate was **quadruple** that seen in Canadian Blood Services' seroprevalence reports for the months of March through November 2021. These findings unmistakably reflect Omicron's hold. While it may be the highest rate recorded so far, it is likely an underestimation of the toll of past infections due to the seroreversion of infection-acquired antibodies (antibodies wane after a certain time) in people who had COVID-19 earlier in the pandemic.

Young donors, aged 17 to 24 (36.6%), and those self-identifying as a visible minority (32.4%) continued to be most at risk to infection. Nevertheless, nearly all (99.7%) blood donors exhibited spike antibodies against the virus, which reflects the very high levels of vaccination, including the recent third dose or boosters.

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*The CITF-funded **SeroTracker** initiative monitors, synthesizes, and visualizes findings from SARS-CoV-2 antibody testing around the world. Its dashboards, including one specifically for Canada, provide a snapshot of the evolving state of immunity. Two recent publications highlight its contributions to the state of knowledge on the pandemic.*

Global seroprevalence of SARS-CoV-2: Updated data from SeroTracker

In this pre-print, not yet peer-reviewed, SeroTracker, in partnership with the World Health Organization (WHO), found that global SARS-CoV-2 seroprevalence (due to infection or vaccination or both) was 45.2% by the end of June 2021. Depending on the region, seroprevalence varied from as low as 2.5% to as high as 94.9%. In the second quarter of 2021, the ratio of seropositive blood samples to identified cases in low- and middle-income countries was approximately 45.3:1, suggesting that many infections were still going undetected in a period when vaccines were not yet widely available.

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A systematic review and meta-analysis of seroprevalence of SARS-CoV-2 in Africa

This SeroTracker systemic review - in pre-print and therefore not yet peer-reviewed – also in partnership with the WHO, estimated that seroprevalence in Africa (due to infection or vaccination) rose from 3% in Q2 2020 to 65.1% in Q3 2021. When looking at the ratio of seroprevalence from infection to confirmed cases, there was a very wide spread across countries, ranging from 10:1 to 958:1, meaning many infections were left undetected.

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SeroTracker
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Summary Statistics
2505 seroprevalence studies
in 118 countries and territories
including 24,246,917 participants
SeroTracker is a dashboard and data platform for SARS-CoV-2 serosurveys.
We conduct an ongoing systematic review to track serosurveys (antibody testing-based surveillance efforts) around the world and visualize findings on this dashboard.
Antibodies against SARS-CoV-2, the virus that causes COVID-19, indicate previous infection or vaccination.
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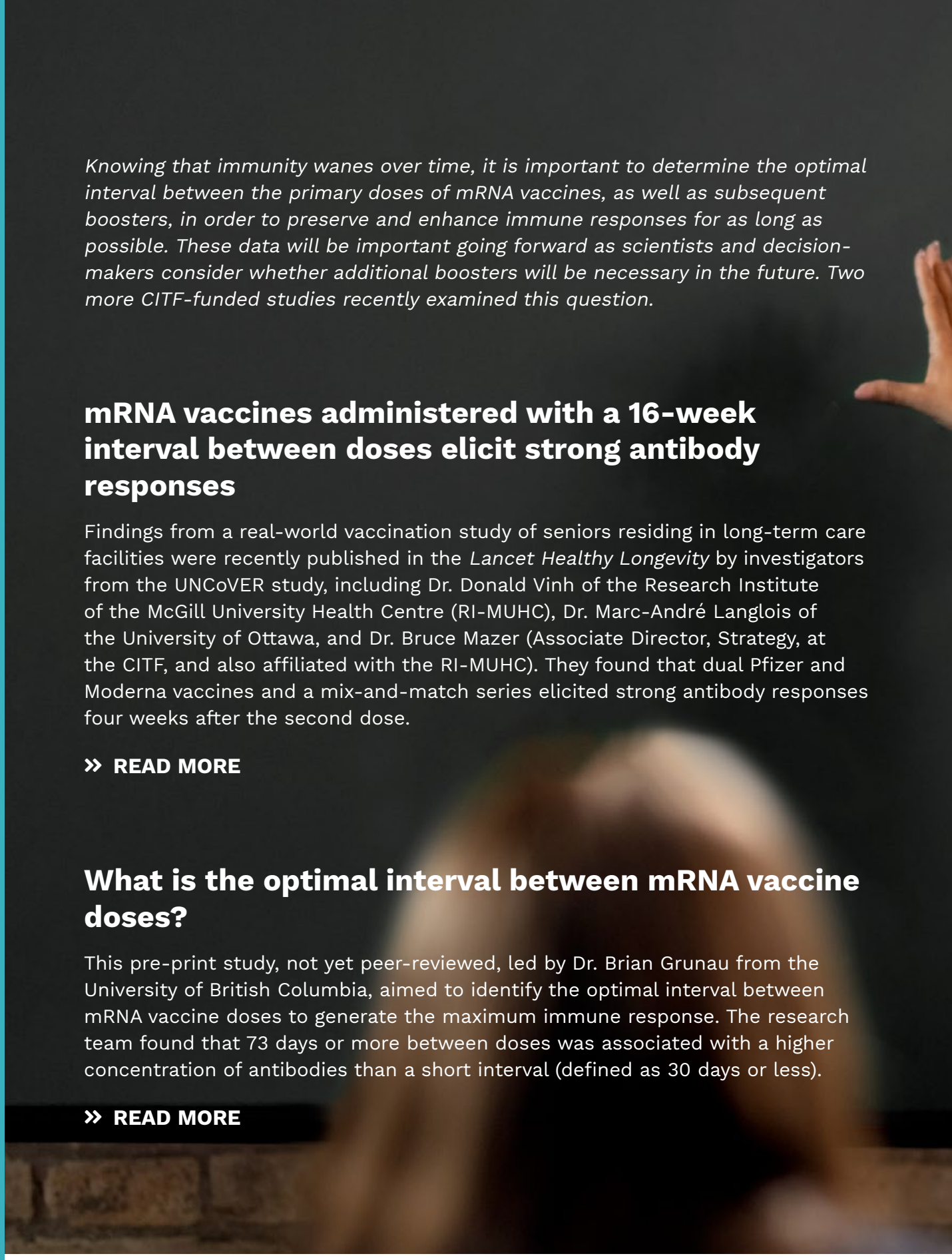
2021/10/6
Start Date
2020/04/20
End Date
2021/10/06
Country/Territory-Wide Studies
Regional Studies
Local Studies
Seroprevalence Estimates
No Seroprevalence Estimates
Not Applicable
mapbox



Knowing that immunity wanes over time, it is important to determine the optimal interval between the primary doses of mRNA vaccines, as well as subsequent boosters, in order to preserve and enhance immune responses for as long as possible. These data will be important going forward as scientists and decision-makers consider whether additional boosters will be necessary in the future. Two more CITF-funded studies recently examined this question.

mRNA vaccines administered with a 16-week interval between doses elicit strong antibody responses

Findings from a real-world vaccination study of seniors residing in long-term care facilities were recently published in the *Lancet Healthy Longevity* by investigators from the UNCoVER study, including Dr. Donald Vinh of the Research Institute of the McGill University Health Centre (RI-MUHC), Dr. Marc-André Langlois of the University of Ottawa, and Dr. Bruce Mazer (Associate Director, Strategy, at the CITF, and also affiliated with the RI-MUHC). They found that dual Pfizer and Moderna vaccines and a mix-and-match series elicited strong antibody responses four weeks after the second dose.

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What is the optimal interval between mRNA vaccine doses?

This pre-print study, not yet peer-reviewed, led by Dr. Brian Grunau from the University of British Columbia, aimed to identify the optimal interval between mRNA vaccine doses to generate the maximum immune response. The research team found that 73 days or more between doses was associated with a higher concentration of antibodies than a short interval (defined as 30 days or less).

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COVID-19 among Ontario elementary and secondary school education workers

Drs. Brenda Coleman, Sharon Straus and Allison McGeer, from the University of Toronto, studied the risk of SARS-CoV-2 infection among elementary and high school education workers in Ontario. Their results, published in the *Canadian Medical Association Journal*, found that a significantly higher proportion of education workers got SARS-CoV-2 within their households than from work or social situations. The researchers emphasize that using protective measures at home when a family member has been exposed to SARS-CoV-2 would help reduce the risk of infection.

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The importance of pediatric vaccination

The Public Health Agency of Canada estimates that vaccines have probably saved more lives in Canada in the last 50 years than any other health intervention. As of November 2021, Canada's National Advisory Committee on Immunization (NACI) recommended that children aged 5 to 11 get vaccinated against COVID-19. While there has been good progress in vaccine uptake in this age group – roughly 57% have received at least one dose – it has been insufficient in the context of fast-spreading variants such as Omicron and its subvariant, BA.2.

This begs the question whether children under the age of 11 can be adequately protected against SARS-CoV-2 at the current rate of vaccination, especially as most mandatory public health measures have been withdrawn across the country. With this in mind, the CITF assembled a panel of experts to address what we know about pediatric vaccination against COVID-19 for the 6th in our *Research Results and Implications* seminar series, in partnership with CanCOVID.

KEY POINTS:

1. **Vaccines can protect children** against the worst effects of Omicron.

2. **COVID-19 infection can cause severe illness** in children. Since the Omicron wave, more children have become infected with COVID-19, with a concomitant rise in pediatric hospitalization.

3. **Evolving variants have changed the game** for children. While severe illness, including hospitalization, was rare with the original SARS-CoV-2 virus and during the Delta wave, Omicron was a different story, putting children at more significant risk.

4. The vast majority of children experience nothing more than **local temporary symptoms** at the vaccine injection site – redness, swelling, pain – although some experience short-term effects, most often after a second dose, such as flu-like symptoms, headache, fever, nausea, vomiting, diarrhea.

5 The risk of myocarditis (inflammation of the heart muscle) and pericarditis (inflammation of the lining of the heart) is **6 times higher after COVID-19 infection** than after vaccination among adolescents and young adults.

6 **Vaccine-induced risks can be mitigated** with a lower dose of mRNA vaccine and a longer interval (more than 8 weeks) between doses.

7 **Vaccine hesitancy** among parents remains a key factor in the rate of pediatric vaccination. Some parents continue to be hesitant about vaccinating their children. Factors include:

- **Safety concerns**
- **Failure to understand** the importance of COVID-19 vaccination
- **Belief that children won't become seriously ill** if infected with SARS-CoV-2

8 **Parents' vaccine status correlates to their likelihood to have their children vaccinated.** Lower parental education was associated with higher vaccine hesitancy. Lower family income was associated with parents feeling that vaccines are not important and/or not safe for children.

» FULL SUMMARY

COVID-19 rapid antigen tests: how useful are they? CITF-affiliated experts evaluate their utility in everyday settings

Canada has opted to ensure the wide availability of rapid antigen tests for COVID-19. These devices, named for their ability to detect active SARS-CoV-2 infections within one hour, have garnered mixed reviews. Questions remain regarding their accuracy - as they are often self-administered - and their ability to detect asymptomatic infections. CITF-affiliated experts Drs. Jesse Papenburg, Matthew Cheng, and Cedric Yansouni from the McGill University Health Centre, as well as Dr. Lisa Barrett from Dalhousie University, have undertaken two distinct studies to evaluate the tests' utility in a variety of settings.

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Experts identify social determinants relevant to COVID-19

In a study published in *Canadian Medical Association Journal (CMAJ)*, CITF-affiliated experts found that across all Canadian metropolitan areas included in the study, COVID-19 cases were disproportionately concentrated in areas with lower income, a higher proportion of people living in high-density housing, lower levels of education, higher proportions of visible minorities, more recent immigrants, and higher concentrations of those deemed essential workers during the pandemic. The team, led by Drs. David Buckeridge and Mathieu Maheu-Giroux from McGill University and Sharmistha Mishra from the University of Toronto, used COVID-19 surveillance data from January 23, 2020, to February 28, 2021 to identify relevant social determinants of health – those factors influencing health outcomes that go beyond the strictly medical. The insights provided by this research can enable a better allocation of resources, the tailoring of policies, and the implementation of context-specific strategies to curb local transmission more effectively and efficiently.

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CanCOVID

Seminar Series | Research Results & Implications

COVID-19 vaccine safety

SAVE THE DATE

Thursday, May 5, 2022
11:30 a.m. to 1:00 p.m. EDT

Our 7th seminar will bring together experts affiliated with the CITF to discuss vaccine safety: a topic of concern for everyone. Our presenters will report on results of ongoing vaccine safety monitoring in Canada in both adults and children, details about serious adverse effects in Canada including their frequency after various vaccine doses, and measures to mitigate the occurrence of serious adverse events, as well as other topics.

Presenters include:

Julie Bettinger
PhD, MPH

Scott Halperin
MD

Karina Top
MD, MSc, FRCPC

CITF Host

Tim Evans
MD, PhD

covid19immunitytaskforce.ca