



COVID-19  
IMMUNITY  
TASK FORCE

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

OCTOBER  
2022

# CITF MONTHLY REVIEW

Findings about  
COVID-19 and  
people with other  
**health conditions**

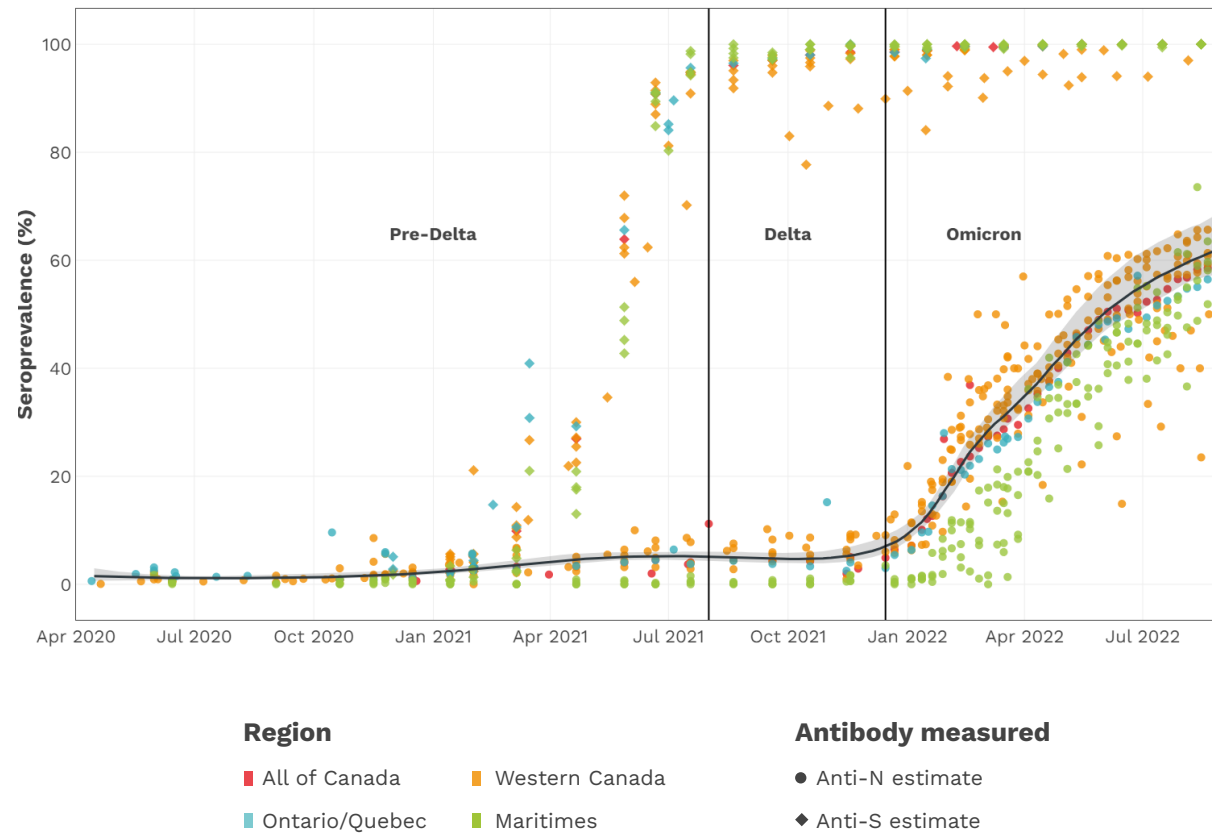
How vulnerable  
are **older  
Canadians** to  
COVID-19?

**Omicron-induced  
seroprevalence**  
continues to rise  
across Canada



SEROPREVALENCE IN CANADA | AUGUST RESULTS

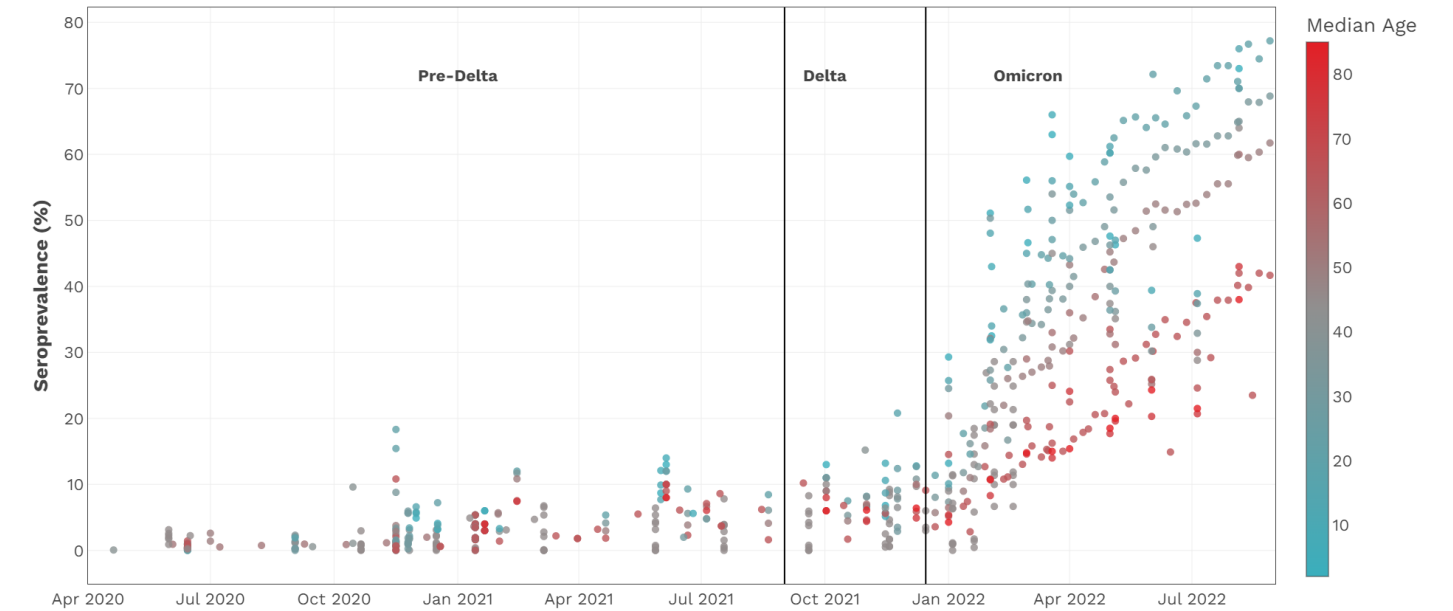
Percentage of Canadians with infection-acquired antibodies exceeds 60%



The COVID-19 Immunity Task Force's (CITF) latest data synthesis from funded and partner studies shows that seropositivity due to infection continued to increase across Canada, reaching **62.5%** (95% Confidence Interval (CI): 57.5-69.0) by the end of August 2022. It was up across all Canadian provinces.

We estimate this rise in seroprevalence during the Omicron era corresponds to at least **19.6 million** (95% CI: 17.8-26.9) Canadians being infected between December 15, 2021 and August 15, 2022. The infection rate over this eight-month period is equivalent to about **80,000 infections per day**. The actual number of newly infected (or reinfected) Canadians may have been higher because some people infected early in the Omicron phase of the pandemic may no longer have detectable antibodies due to infection.

Seroprevalence due to infection continues to rise in all age groups



Infection-acquired seropositivity continued to increase in all age groups in August. The highest levels of seropositivity due to infection were in young adults (17-24 years), with about 77% seropositivity in the last week of August. Estimates of seropositivity due to infection declined with increasing age in the last week of August: 25-39 years (69%), 40-59 years (60%), and 60+ years (44%).

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Data on our Seroprevalence in Canada webpage are updated at least once a month and can be visualized via interactive graphs.

Those looking for population-level data in Excel format can now find download buttons throughout the page (please note there are several tabs).

» DISCOVER



As another wave begins in parts of the country, researchers continue to investigate how many boosters are needed for various populations and the effectiveness of each dose. Here are a few of the CITF-funded publications answering those questions this month.

### **Third dose of vaccine enhances antibody response, particularly among older adults**

A study in preprint, not yet peer-reviewed, by Drs. Marc Romney (University of British Columbia), Zabrina Brumme and Mark Brockman (Simon Fraser University), demonstrated that a third dose of an mRNA vaccine significantly enhanced the magnitude and durability of antibody responses. This applies, as well, to adults over the age of 70 who remained COVID-naïve (those who were not infected with SARS-CoV-2). Their antibody concentrations were comparable to those found in younger healthcare workers (median age of 40 years) who were triple vaccinated. The findings also suggest that COVID-naïve individuals, particularly older adults, would benefit from a fourth dose within six months of the third.

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### **Pre-Omicron infections and vaccination provide continued protection in the Omicron era**

A study published in *The Journal of Infectious Diseases* by Drs. Brian Grunau, David Goldfarb, and Agatha Jassem (University of British Columbia), and Drs. Sheila O'Brien and Steven Drews (Canadian Blood Services) shows that higher antibody levels against the original (wild-type) SARS-CoV-2 virus are associated with a significantly reduced risk of subsequent infections with SARS-CoV-2 variants, both preceding and during the Omicron era. The association, however, was weaker during the Omicron wave.

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### **Cytomegalovirus (CMV) does not prevent an antibody response to SARS-CoV-2 vaccination in older adults**

A study by Drs. Dawn Bowdish and Andrew Costa (McMaster University), published in the *Journal of Immunology*, showed that individuals who are seropositive for cytomegalovirus (CMV) (found in 60-90% of adults worldwide) did not have a higher incidence of COVID-19. Additionally, CMV seropositivity may alter the composition of naïve and memory T cells, but does not impede the durability of humoral protection or cellular memory responses after SARS-CoV-2 mRNA vaccination in people 65 years and older.

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Because different medical histories can put people at a higher risk from COVID-19 or affect their response to vaccines, the CITF has funded research that addresses a variety of comorbidities that can leave people, including those with HIV or stem cell transplant recipients, especially vulnerable.

### Effectiveness of COVID-19 vaccines in people living with HIV

A study led by Drs. Aslam Anis (University of British Columbia) and Ann Burchell (University of Toronto), published in *AIDS*, highlights that – prior to Omicron – two doses of COVID-19 vaccines offered substantial protection against symptomatic illness, as well as hospitalization and death in people living with HIV (PLWH). The results contradict the widely held conclusion that the effectiveness of COVID-19 vaccines is lower among PLWH who are under active medical care, taking antiretroviral medication, or are virally suppressed.

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### A third dose of COVID-19 vaccine yields greater protection in allogeneic stem cell transplant recipients

A study from Dr. Deepali Kumar (University of Toronto), published in *Transplant Cell Therapy*, shows that a third dose of COVID-19 vaccine resulted in stronger humoral and cell-mediated immunity in allogeneic stem cell transplant (human donor blood stem cells) recipients when compared to the initial two-dose vaccine regimen.

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### Wastewater surveillance proves effective in pinpointing COVID-19 outbreaks

A CITF-funded study published in the *Canadian Journal of Public Health*, from Dr. Sharon Straus (University of Toronto) and her team, showed that wastewater surveillance was an effective technique for detecting an outbreak of COVID-19 in a Toronto homeless shelter before cases were otherwise identified. This process served as an early warning signal and allowed the timely preventive screening of residents.

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## COVID-19 and older Canadians: Where are we now?

The pandemic has taken a devastating toll on older Canadians: as of September 16, 2022, people aged 70+ accounted for **82% of all COVID-19 related deaths** and **50% of all SARS-CoV-2 related hospitalizations** in Canada.

While vaccination-induced immunity has greatly improved their situation, older Canadians, whether living in long-term care facilities, seniors' residences, or within the community, remain more vulnerable than the general population to reinfections, hospitalizations, and death.

For our 10<sup>th</sup> *Research Results and Implications* seminar, we assembled a panel of CITF-funded experts to address where we stand with respect to COVID-19 among older Canadians during the Omicron era.

### KEY POINTS:

- 1 Among seniors, infection rates have been **highest in residents of long-term care facilities** because congregate settings have been susceptible to the spread of the virus. Other factors included fragility, older age and underlying medical conditions.
- 2 Because immunity wanes over time, keeping up to date on vaccines means being vaccinated every **four to six months** and ideally before the next wave.
- 3 **Hybrid immunity** (a combination of vaccination and infection), particularly when the infection followed a third dose of vaccine, produces the highest antibody boost, but infection does not come without risks.

- 4 The effects of hybrid immunity are **mixed and short lived**, and immunity following Omicron BA.1/BA.2 infection is not protective against Omicron BA.5.

- 6 It is recommended that older Canadians continue to **exercise caution** by masking, maintaining social distance, and avoiding crowded settings.

- 5 Each dose of vaccine succeeds in increasing anti-receptor binding domain (RBD) antibodies in everyone, but **antibodies decline more rapidly in older populations**.

[» FULL SUMMARY & VIDEO](#)



## People at higher risk of severe COVID-19 due to other health conditions

People who are at a higher risk of severe COVID-19 include individuals with poor immune function due to underlying medical conditions or due to immune-suppressant medications. In these populations, risk mitigation measures against COVID-19 are particularly important. This includes non-pharmaceutical interventions such as masking and distancing to prevent infection, as well as following recommended vaccination schedules.

The CITF has funded multiple studies looking at vaccine safety and effectiveness in these populations, including those with HIV, immune-mediated inflammatory diseases such as inflammatory bowel disease and inflammatory arthritis, chronic kidney disease, recipients of solid organ transplants, and people living with or being treated for cancer.

In this synthesis on the state of research on people whose health conditions put them at higher risk of severe COVID-19, we present findings from CITF-funded research to inform protection in this population.

### The key takeaways:

- ▶ Vaccines have worked well at generating immune responses and warding off severe disease and death in various immunocompromised populations, though in many cases three doses (not two) should be considered the primary regimen.
- ▶ COVID-19 vaccines have proven to be safe for immunocompromised people.
- ▶ Keeping up to date with the recommended vaccine booster schedule (i.e. a dose every four to six months) is important to sustain adequate levels of protection.
- ▶ Vaccines based on the original virus strain have been less effective in protecting against Omicron compared to earlier variants. The new bivalent vaccines recently approved in Canada may offer greater protection, however it is too early to say for certain for these populations.
- ▶ Because of their vulnerability to infection, it is recommended that immunocompromised people continue to be cautious, wear masks, maintain physical distancing, and avoid crowded settings.

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Seminar Series | Research Results & Implications

# People at higher risk due to other health conditions & COVID-19

**REGISTER NOW**

**Thursday, November 24, 2022**  
**11:30 a.m. to 1 p.m. EDT**

People who suffer from health conditions and/or take medications that leave their immune systems compromised are at greater risk of more severe COVID-19. Our 11<sup>th</sup> *Research Results and Implications* seminar brings together CITF-funded researchers studying people with HIV, immune-mediated inflammatory diseases (IMID), inflammatory bowel disease (IBD), chronic kidney disease (CKD), and solid organ transplant recipients (SOTR).

Researchers will discuss their findings and address questions of concern including: What are the risks that individuals with immune problems face from SARS-CoV-2 infection? Are vaccines safe and effective for these individuals? How do medications that impair the immune system affect COVID-19 and vaccine effectiveness? Are all medications alike? What added precautions should people with these health conditions take to prevent themselves from being infected with SARS-CoV-2?

..... • **Presenters** • .....

**Host**



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