COVID-19 IMMUNITY TASK FORCE

# Spotlight on CITF-FUNDED RESEARCH

## CITF Events

COVID-19 IMMUNITY TASK FORCE | GROUPE DE TRAVAIL SUR L'IMMUNITÉ FACE À LA COVID-19

Seminar Series | Research Results & Implications

### How social determinants of health affected the COVID-19 pandemic in Canada

January 25, 2023 | 12:30 p.m. to 2:00 p.m. EST

## Register for our seminar NEXT WEEK

Social and economic inequities have contributed to how certain communities in Canada have been disproportionately affected by COVID-19. For the 12th seminar in our *Research Results & Implications* series we have gathered CITF-funded experts to present their findings on how those factors - income or material deprivation, employment, education, and racialization, among others – have led to a higher likelihood of becoming infected and/or

suffering more severe outcomes (hospitalization and death) from COVID-19. Furthermore, these social determinants have had a measurable effect on access to vaccines and vaccine uptake across the country.

Casting light on these social drivers of COVID-19 disease risk and vaccine coverage clarifies the urgent need for policies and practices to redress these inequities.

**Panelists:**

- **Upton Allen O.Ont., MBBS, MSc, FAAP, FRCPC, Hon FRCP (UK), FIDSA**, Professor, Department of Paediatrics and Institute of Health Policy Management and Evaluation, University of Toronto; Chief, Division of Infectious Diseases, The Hospital for Sick Children (SickKids); Senior Associate Scientist, The Hospital for Sick Children (SickKids)
- **Sonia Anand MD, PhD, FRCPc, FRSC,** Professor of Medicine and Epidemiology and Associate Chair Equity, Diversity, Department of Medicine, McMaster University; Vascular Medicine Specialist, Hamilton Health Sciences; Senior Scientist, Population Health Research Institute
- **Simona Bignami PhD**, Professor, Department of Demography, Université de Montréal
- **Jack Jedwab PhD**, President and CEO Metropolis Institute and the Association for Canadian Studies
- **Sheila O'Brien PhD,** Associate Director, Epidemiology & Surveillance, Canadian Blood Services; Adjunct Professor, School of Epidemiology & Public Health, University of Ottawa

**Moderator:**

**Tim Evans, MD, DPhil,** Executive Director, COVID-19 Immunity Task Force

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## CITF-Funded Research Results

## Infection-acquired seroprevalence exceeded 70% by the end of November: Canadian Blood Services

Among Canadian blood donors, infection-acquired seroprevalence continued to rise in the month of November 2022, up to 71%, from 67.4%, at the end of October. This reflects the continued circulation of Omicron subvariants. Young donors (17-24 years of age) continued to have the highest seroprevalence (84.6%) compared to all other age groups. These latest results are from Canadian Blood Services.

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## Striking differences in SARS-CoV-2 seroprevalence across Canada by social determinants of health

In a paper published in *Microbiology Spectrum*, CITF-funded researchers, including at Canadian Blood Services, showed that infection-acquired immunity to SARS-CoV-2 varied, in 2021, by age, region, racial group, the neighbourhoods in which people lived and whether they were materially or socially deprived (had fewer contacts). Interestingly, these factors were not consistent throughout all provinces and regions.

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## The microbiome may play a powerful role in vaccine-induced immunity

In a letter published in *Gut*, CITF-funded researchers identified a link between the composition of one's gut microbiota and COVID-19 vaccine-induced immunity. The research suggests that those with higher microbial-derived branched-chain fatty acids (produced via microbial protein fermentation) have more trouble developing a strong immune response with vaccine-induced antibodies effectively binding the virus. On the other hand, those who consume a lot of fiber exhibit a more effective immune response.

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## Intranasal administration of protein vaccines shows potential for protection against SARS-CoV-2 infection

A CITF-funded study published in *Vaccines* revealed that novel protein vaccines administered intranasally can elicit strong systemic and mucosal antibody responses against SARS-CoV-2 variants in mice. Though studies in humans are needed to guide the design of potential new intranasal vaccines, they hold potential to stave off SARS-CoV-2 infection.

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## COVID-19 vaccine immunogenicity in people with HIV

A CITF-funded study, published in *AIDS*, found that vaccine-induced antibodies to SARS-CoV-2 were elicited in over 90% of people living with HIV (PLWH). Of those, most (92%) maintained those antibodies for six months following a second dose, although this percentage is less than it was for HIV-negative controls. One month after a third dose, 100% of PLWH had detectable receptor binding domain and spike levels. The results demonstrate the importance of keeping up with booster doses for PLWH.

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## Derivation and validation of a clinical score to risk-stratify COVID-19 patients discharged from the emergency department

A CITF-funded study published in the *Journal of the American College of Emergency Physicians Open* (*JACEP Open)*, showed that the Canadian COVID-19 Emergency Department Rapid Response Network (CCEDRRN) COVID discharge score can identify patients at risk of hospital admission or death within 72 hours of emergency department discharge. The score assesses variables such as age, sex, temperature, arrival mode (ambulance/police versus self), pregnancy, respiratory distress, and arrival respiratory rate.

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## Perceptions and experiences of Canadian dental hygienists during the pandemic

A CITF-funded study published in *BMC Health Services Research*, showed that Canadian dental hygienists were stressed by conflicting messaging they received from regulators and guideline interpretations in December 2020, early in the COVID-19 pandemic. They said that this negatively impacted their professional practice and satisfaction. One year later, they reported a positive shift in perception of how regulators disseminated and communicated timely guidelines, but still perceived inconsistent messaging.

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## Delays in publishing seroprevalence studies reduce their usefulness for public health policy

A study relying on data from CITF-funded SeroTracker, published in *Epidemics*, showed that peer-reviewed scientific papers and preprints of COVID-19 seroprevalence studies are published more slowly than those published via other means, thereby diminishing their usefulness to public health decision-makers during a time-sensitive health emergency response. The researchers recommend the development of a global platform or data repository to enable continuous and fast-track dissemination of serosurveillance data for more timely use.

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# From Preprint to Publication

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

A study now published in *PLOS Medicine*, carried out by CITF-funded SeroTracker, found global SARS-CoV-2 seroprevalence (due to infection and vaccination) was 59.2% by September 2021. After the emergence of the Omicron variant in March 2022, infection-acquired seroprevalence reached 47.9% and 33.7% in Europe and the Americas' high-income countries, respectively.

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## CITF Announcements

### Seroprevalence in Canada data updated to the end of November 2022

Our seroprevalence data is now updated to cover the state of immunity in Canada until November 30, 2022. It shows that seroprevalence due to infection continues to rise across the country.

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### The Biobanque Québécoise de la COVID-19 receives funding from CITF to conduct a project on hybrid immunity

The *Biobanque québécoise de la COVID-19* (BQC19) is pleased to announce that it has been awarded $1.175 million from the Public Health Agency of Canada (PHAC) through the COVID-19 Immunity Task Force (CITF) for a project to study hybrid immunity. The goal is to study the impact of hybrid immunity on outcomes (e.g., whether people get infected with SARS-CoV-2, acquire asymptomatic infection, have mild sickness or have experienced severe COVID-19).

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