Answers to questions asked during our webinar on May 26, 2021: Seroprevalence results from across Canada: what they mean for the future

Questions for Canadian Blood Services

1. **Can you please clarify which assay was used to test for nucleocapsid in the two slides on age and material deprivation?**

   Abbott Architect SARS-Cov-2 IgG assay (chemiluminescent microparticle immunoassay (CMIA)

2. **Did you account for seroreversion in your data, believed to be higher for anti-N rather than anti-S? How much would you estimate that this would increase seroprevalence?**

   Seroreversion was not accounted for in the estimates. The impact of seroreversion in wave 2 will depend on the extent of wave 1, but it is unlikely that it could be more than double by wave 2, hence still very low.

3. **Are there any plans to introduce variant-specific serological testing in these surveys going forward, to attempt to assess for both vaccine-induced immunity and breakthrough infections, as well as circulating strain types?**

   Currently there are assays that measure the neutralizing capacity of antibodies to VOCs, but these are not high throughput. As improved assays are developed, they will be evaluated for suitability. The CITF is funding a range of studies which may be able to enhance understanding of this important area.

4. **Was the large proportional increase seen in Wave 2 as compared to Wave 1 blood donors in Quebec observed in other provinces?**

   The largest increases between wave 1 and January were seen in Alberta (0.5% wave 1 to 3.4% January) Saskatchewan (0.5% to 2.5%) and Manitoba (0.6% to 3.9%).

5. **Can you please explain the graph "S-only assay identified 82% of donors with history of vaccination"?**

a. **Specifically, how many doses does this reflect?**

   We do not have data on the number of doses, but as this was very early in vaccine roll-out, they were likely only first dose.

b. **And which vaccines?**

   We do not have data on the type of vaccine received.

c. **82% is notably less than the 98% noted in Quebec; presumably this does not reflect 2 weeks post-vaccine?**

   The graph (see presentation slide 19) shows all donors who tested positive using the S assay, and of those who tested positive to S but not N. 82% reported vaccination. It is likely that some S-only donors had a previous infection but either did not have antibodies, or they have waned. As more donors are vaccinated, it is expected that this percentage will increase from 82%. Of 85 people who donated blood more than two weeks after vaccination, 81 (95%) were reactive on the S assay.

6. **Did these seroprevalence studies exclude the COVID-19 plasma donors because of the CONCOR1 trial?**

   They were excluded because they were specially recruited for convalescent plasma after recovering from COVID-19 and the study is intended to be a random sample of donors.

7. **Will you ethically be able to look at correlates between blood group and rates of natural infection?**

   Yes.

Questions for Héma-Québec

1. **Were the results for seropositivity post-vaccination from the Quebec study reflective of two doses or one dose? Do you have it subcategorized by vaccine type?**

   The vast majority of study participants who received the vaccine had received only one dose at that point in time. We did not perform an analysis according to the type of vaccine that was received.

2. **Do the HQ data suggest a time frame to seroreversion or rate of decay?**

   As mentioned in the presentation, we tested two groups of people for seroreversion: donors found to be seropositive after the first wave and convalescent plasma donors. These people were re-tested after various timeframes following their initial positive result, with most re-tested between seven to 10 months later. As mentioned, the seroreversion rate is estimated to

be around 20% within this timeframe. It is likely that seroreversion will increase as time evolves, but we do not yet have the data to confirm this.

3. **What accounted for the discrepancies in seropositivities in the Quebec population across different ethnicities in Quebec?**

   Our study results do not offer any evidence as to the reason(s) for these differences. However, when stratifying according to social and material deprivation indices, these differences persist, suggesting that different levels of socioeconomic status are not the explanation for this observation.

4. **Thank you very much! How do you explain the much higher seroprevalence among Blacks and Latinos?**

   See question #3.

Questions for the CITF

1. **Are children included in the denominator for immunity rates?**

   Yes, in decade-long age groupings. Included in the denominator were the 0-9 year age group and the 10-19 year age group.

2. **It seems that most of these very valuable analyses have (so far) been performed for the first two waves of infection. When can we expect seroprevalence estimates that include the third wave (in regions where a third wave has occurred)? Where will these results be published when available?**

   We are planning to release the results of our updated analyses in late-June. This analysis will include estimated infections up to May 31, 2021. The model will include estimated seropositivity from vaccination as well as natural infection.

3. **Is there any data on indigenous populations?**

   We do not account for race/ethnicity in this analysis, but our data sources include any Indigenous peoples who participated in the study or survey.

4. **Can assays provide information about the acuity of the infection?**

   The serosurveys generally use qualitative serology results; that is, the outcome is ‘positive’ or ‘negative’ according to the threshold of the assay used. Therefore, these studies do not provide information about the magnitude of the antibody response.

5. **How does Canada compare with the US in seroprevalence rates pre- and post-vaccination?**

   We are not aware of an American study that used the same estimation method as we did (O’Driscoll et al, 2020). Nor are we aware of recent US blood

donor studies (preprints date before November 2020). However, on February 28, 2021, vaccine coverage was higher in the US (15%) than in Canada (3.6%). By late May, Canada had caught up and surpassed US coverage.

6. **To minimize seroconversion individual variance in a highly vaccinated population, what guidance would you provide to research teams regarding longitudinal/serial blood testing collection over a one-year period in study cohorts? Should collection be done every four or six months or something else?**

   Antibodies seems to persist >four months so six-month sampling may be sufficient. Individual-level seroconversion may be more influenced by antibody assay. Reliable assays with a good limit of detection would be an important design consideration.

7. **With the seroprevalence showing three times the amount of infections that are reported based on testing, will there be any work conducted to adjust the COVID mortality rates based on this?**

   The observed relationship between seroprevalence and confirmed cases indicates the extent to which confirmed cases underestimate the true number of infections. While it is also likely that deaths among confirmed cases underestimate the true number of deaths from COVID-19, the CITF is not currently attempting to estimate the true mortality rate.

8. **Is there any study done/undergoing with school-age kids to evaluate whether the in-person learning in schools would help to increase the immunity?**

   Several studies of Canadian children and school staff are ongoing at the moment, with some concluding their studies. Watch this page for results from CITF-supported pediatric studies that will be updated as new results come in: https://www.covid19immunitytaskforce.ca/category/pediatric/.

9. **What are the digital means (digital biomarkers) put in place to track the long-term Immune System Response (and the short-term side effects) of the different COVID-19 vaccines, for a given population?**

   There are a range of efforts funded through the CITF and Vaccine Surveillance Reference Group (VSRG) to look at short and long-term immune response using apps (e.g. CANImmunize), web portals (e.g. The Canadian National Vaccine Safety), and the surveillance of electronic medical records and administrative claims data (The Canadian Immunization Research Network).