Title: Essential COVID-19 information for all AHS staff on priority indications for use of serologic testing.

Question: What are the highest priority indications for use of serologic testing for COVID-19 clinically and to inform public health efforts?

Context:
- Serologic testing will soon be available in Alberta and is anticipated that the demand from clinicians, researchers and public health officials will be high.
- Once the SARS-CoV-2 panel is validated, it will be important to prioritize who can/should receive serologic testing so that lab capacity can meet health system needs.
- Media stories from Germany and the United Kingdom suggest using proof of immunity (via serosurvey) to SARS-CoV-2 as a tool to determine eligibility for return to normal society (an "immunity passport").

Recommendations: – Provided by: AHS COVID-19 Scientific Advisory Group

1. Currently, dynamics of COVID-19 serological response are not well understood and are dependent on the assay used. Therefore, it is not recommended that serological testing be used to inform decisions around healthcare worker return to work policies or for acute care diagnostics.

2. A multi-disciplinary working group coordinated with Alberta Precision Laboratories (APL) including public health should be formed to coordinate serologic priorities for clinical and public health purposes, establish and research requests, and establish appropriate serum banking to meet these needs. The priorities identified should inform the selection of serologic assay chosen by APL.

3. Before serology is adopted for routine use in Alberta for any purpose, testing platforms must undergo rigorous evaluation to determine analytical and clinical sensitivity and specificity. This should include validating tests across a broad range of well characterized samples (e.g. from stored serum prior to pandemic onset acute blood at set times from acute presentation of proven infection, COVID-19 swab negative patients with clinically suspected infection).

4. Once a serological assay is available for use, the following will need to determined:
   a. An outline of the evidence supporting that primary infection leads to immunity to reinfection (and its duration);
   b. Operationalization/capacity of the testing program;
   c. Priority lists of populations for testing
   d. An analysis of the economic and health benefits
   e. An evaluation framework for the serological problem
Groups to be considered as potential priorities for serological testing include those for whom it could facilitate return to work decisions (healthcare workers, essential services workers), those who present late in the course of illness when nucleic acid testing may be negative, those from whom convalescent plasma for therapeutic purposes could be collected, and participants in vaccine and surveillance studies.

A reliable serological assay would contribute greatly to the understanding of the epidemiology of COVID-19.

Summary of evidence:

- No evidence was identified to inform the clinical or public health implications of serological testing in special populations, such as immunocompromised people, critical care patients, or the organ transplantation community.
- There was no direct evidence for using serology to inform ‘return to work’ (RTW) policies. However, RTW decisions for healthcare personnel may be informed once a better understanding of the antibody response to infection is gained through a combination of RNA testing, IgG testing and IgM testing.
- This rapid review did not include an analysis of neutralizing antibody and its use in convalescent plasma therapy. This may be addressed in a future review.