

COVID-19 CADTH BRIEFING NOTE

Workplace COVID-19 Prevention Measures and the Role of Testing in Workplace Safety

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Issue and Purpose

As provinces and territories progress toward re-opening businesses in different sectors affected by the COVID-19 pandemic, many questions remain about safety and reducing the spread of severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) in the workplace. Jurisdictions and employers are interested in the role of testing in keeping workplaces open and in safeguarding employee health. This briefing note explores:

- workplaces at high risk of COVID-19 spread
- workplace COVID-19 control strategies
- the potential role of COVID-19 testing in enhancing workplace safety.

Key Messages

What Is Known?

- Testing for active infection provides a “snapshot” in time and must be repeated at regular intervals for individuals in high-risk workplaces.
- Testing is one element of a robust strategy to prevent COVID-19 outbreaks in the workplace. Strategies must also consider workplace engineering and administrative controls, use of personal protective equipment (PPE) and community protective equipment (CPE; like non-medical masks), contact tracing, and supporting workers required to complete self-isolation and quarantine measures.
- Workers in high-risk sectors may also have a higher likelihood of COVID-19 exposure outside the workplace due to housing insecurity or congregate living environments.

What Isn't Known?

- Serological testing for late-stage or past infection provides great promise to advance our knowledge of COVID-19 prevalence and potential immunity. However, until there is a greater understanding of COVID-19 immunity, including how long antibodies are present and the possibility of reinfection, this will be of minimal benefit for workplace prevention. Serological testing is currently not recommended for diagnostic purposes.
- No guidance was identified on how often tests should be repeated for workers at high risk of workplace exposure.
- Rapid point-of-care diagnostics available at the workplace also hold great promise, but are not yet widely available. Legal and privacy implications of employer-led testing, whether performed directly by the employer or by a contracted third party, are not yet well understood.

As our scientific understanding of COVID-19 evolves and new technologies enter the market and become widely available, regulations and guidelines for workplaces will need to keep up.

Background

All provinces and territories have developed re-opening plans with the intent of balancing public health measures aimed at reducing the spread of COVID-19 with the need to stimulate local, provincial, and territorial economies and keep businesses afloat. Additionally, many non-health care workplaces deemed essential to the provincial, territorial, and national economies (e.g., manufacturing, food production, and transportation services) have continued to operate with restrictions and enhanced safety measures throughout the pandemic.

High-Risk Workplaces

Specific attention has been paid to essential, non-health care, workplaces that are of importance to local, regional, and national economies but where infectious disease spread may be more likely due to the work environment or workforce characteristics. High-profile COVID-19 outbreaks have occurred in meat processing facilities and in the agricultural sector, which has highlighted the increased risk in these workplaces. Provincial and territorial public health authorities have issued workplace-specific guidance for a number of essential but high-risk sectors, including food processing, agriculture, manufacturing, mining, and construction. Some characteristics that make these sectors higher risk include:

- confined spaces where physical distancing is not possible in production lines, job sites, and transportation to and from job sites
- speed and physical demands of the work that constrain effective PPE use and sanitation practices
- work environment, including ventilation (and lack thereof) and air temperatures that may allow the virus to survive longer in air and on surfaces
- precarity of work, as employees may not have access to paid sick leave and may be reluctant to refuse work they feel is unsafe; additionally, seasonal and contract workers (including temporary foreign workers) in sectors like agriculture and fish processing may reside in communal dwellings provided by their employers, which limit their ability to effectively self-isolate if they develop COVID-19.¹

Workplace COVID-19 Control Strategies

Although there has been significant focus on the availability of testing, this represents only one component of a robust strategy to control the spread of COVID-19.² Specific to workplaces, the hierarchy of occupational health and safety controls has been adapted to reflect the challenges of ensuring workplace safety.³ The hierarchy of controls begins at the highest level with the most effective strategy (elimination of the hazard) and outlines controls that could be implemented at various levels if eliminating the hazard is not possible. For COVID-19, this includes:

- **Elimination:** Eliminating or reducing the number of people in a given area of the workplace; ensuring no one with symptoms of COVID-19 or with potential contact with someone with COVID-19 enters the workplace. Testing may play a role in elimination by providing some degree of certainty that an employee is not infected with the virus.
- **Engineering controls:** Constructing physical barriers (e.g., plexiglass shields in grocery stores); restricting access to areas by erecting barriers; adding handwashing stations and ensuring adequate amounts of water, soap, or hand sanitizer; using equipment to eliminate the need for workers to be in close contact; increasing air flow and air filtration; redesigning entrances, exits, walking paths, and workspaces.

- **Administrative controls:** Developing and communicating new policies, procedures, and schedules within the workplace; mandating that employees maintain physical distancing, complete screening questionnaires before entering the workplace, and so forth.
- **PPE and CPE:** The last form of defence, aimed at protecting employees in cases where other measures have failed or where close contact cannot be avoided. This includes providing staff with necessary PPE, including gloves, eyewear, coveralls or gowns, respiratory equipment, and/or masks. Non-medical masks or face coverings worn in work settings where medical-grade masks or respirators are not necessary are considered to be CPE rather than PPE as these are meant to reduce the diffusion of large droplets expelled by the mask-wearer and not necessarily to provide filtration to protect the wearer.⁴

While responsibility for ensuring the hierarchy of controls is followed falls largely to the employer, with enforcement by local occupational health and safety bodies, broader public health and workplace policies can also play a role in creating safe work environments. As one example, the Johns Hopkins University Bloomberg School of Public Health released a policy brief in late May 2020 making recommendations for safeguarding the US food supply during the COVID-19 pandemic by protecting food and agricultural workers. It recommended that federal and state policy-makers implement a Shield-Test-Trace-Treat framework informed by guidance from WHO and the Centers for Disease Control and Prevention. Potential actions include:

- **Shield:** Actions largely covered under the hierarchy of controls, aimed at in-plant mitigation strategies.
- **Test:** Prioritizing workers for frequent testing, with supplementary screening measures at the workplace.
- **Trace:** Any identified case of COVID-19 in the workplace must be subject to contact tracing by state and local public health departments.
- **Treat:** Provide infected or potentially infected workers with access to health care and paid sick leave to cover absences due to isolation and quarantine.¹

Provincial and Territorial Workplace Guidance

Workplace-specific guidance for high-risk workplaces from provinces and territories largely focuses on the hierarchy of controls as described earlier in this note, with emphasis placed on ensuring individuals who are experiencing symptoms do not come to work, engineering controls like installing handwashing stations and physical barriers, administrative controls like adjusting production schedules or onsite times to limit the number of people present in the workspace to just those needed, and the proper use of PPE. In some provinces and territories, for contact tracing purposes, employers are required to track where workers have been in cases where workers may travel between different job sites or areas within a production site. Additionally, employers are required to inform the ministry responsible for labour if a worker has tested positive for COVID-19 if a workplace safety or compensation claim will be submitted.⁵⁻⁸

The Role of COVID-19 Testing

Currently all COVID-19 diagnostic testing in Canada is conducted using polymerase chain reaction (PCR)-based testing, which identifies the SARS-COV-2 virus by detecting its genetic material. PCR-based testing identifies only active cases of COVID-19 and not past exposure to the virus.⁹ Using currently available tests, laboratory capacity has presented a

significant challenge in the timeliness and volume of COVID-19 testing. Rapid point-of-care molecular diagnostic testing has the promise to increase testing volume while reducing lab volumes and wait times. One Health Canada–approved point-of-care molecular testing device is the Xpert Xpress SARS-CoV-2 (commonly referred to as GeneXpert), manufactured by US firm Cepheid.¹⁰ GeneXpert is in use in a number of provinces and territories, largely in smaller laboratories that otherwise would need to have specimens transported to larger labs located in urban centres.¹¹ One additional point-of-care solution for rapid molecular diagnostic testing (Spartan Bioscience’s Spartan Cube) was approved by Health Canada but was later restricted to research use only due to issues with the swab used to collect specimens.¹²

Serological Testing

In contrast to PCR-based testing, which identifies active infection, serological testing measures immune response in those in later stages of the illness or who have been previously infected with the virus and recovered. The promise of serological testing is that it can identify individuals who have developed antibodies that may protect them from future SARS-COV-2 infection.⁹ No serological tests for COVID-19 are currently available in Canada, but Health Canada has provided conditional approval for two serological tests that are currently being validated for research use.¹³ WHO currently recommends against the use of point-of-care serological tests for clinical diagnostic purposes.¹⁴

On June 17, 2020, the Government of Canada announced that 140,000 serological tests have been procured from Abbott Laboratories. These tests will be used as part of a partnership between the federal COVID-19 Immunity Task Force, Canadian Blood Services, and Héma-Québec. Canadian Blood Services and Héma-Québec have previously collected blood samples from thousands of volunteers that will now be analyzed using these serological test.¹⁵ On June 29, 2020, Canadian Blood Services announced that this testing of existing samples would begin “in the coming weeks.”¹⁶

Limitations of Testing

A variety of research has highlighted that under real-world conditions, existing PCR-based tests for COVID-19 likely have appreciable false-positive and false-negative rates,¹⁷⁻¹⁸ with some clinical groups going as far as recommending that individuals who are symptomatic but have negative test results still be cared for using COVID-19 care protocols.¹⁹ Similarly, results from broad-based testing (e.g., testing all employees, patients, or residents on a given day or week) represents a snapshot in time. An individual who tested negative for COVID-19 on a given day may contract the virus before their next opportunity to be tested. Thus, repeating tests at regular intervals would be key for any strategy involving testing entire cohorts.²

Although serological testing holds great promise for research purposes in understanding the prevalence of the virus and in treatment and vaccine development, little is known about potential immunity. The vast majority of people infected with COVID-19 will show some antibody response; however, it remains unclear how long these antibodies last, how much antibody is required to guard against infection, if individuals who have recovered can be re-infected, and the role of immunity in viral transmission.⁹ A better understanding of immunity may also inform both corporate practices and federal, provincial, and municipal policies relating to the re-opening of businesses and necessary safeguards like physical distancing, PPE, and non-medical mask use.⁹

Analysis and Implications

Expanded Testing Capacity

As testing eligibility criteria have expanded, some provinces and territories have begun to make testing available to all those who are currently working outside the home, whether or not they display symptoms. This increased test availability will allow for greater diagnostic certainty to support self-isolation and quarantine measures, and hopefully reduce the likelihood of asymptomatic spread within high-risk workplaces.

Rapid diagnostic tests hold significant promise for allowing for more frequent testing in high-risk industries. As more rapid diagnostic tests come to market, some large employers may wish to procure their own testing equipment or partner with private providers that can perform regular testing of employees. A testing regime for high-risk environments may require employees to be tested multiple times per week, which could challenge even the increased testing capacity now available in provincial and territorial health systems. Professional sports leagues that have returned to play or have put forward plans for an eventual return to play, like Germany's Bundesliga, require players to be tested twice per week.²⁰

A Newfoundland and Labrador company, Avalon Laboratories, has announced that it intends to provide COVID-19 testing to private sector employers, with results being available in four hours.²¹ Officials from Newfoundland and Labrador confirm that the results of privately administered COVID-19 tests are required to be reported, with test results recorded in the employee's electronic medical record. Governments and public health authorities across Canada will similarly wish to ensure that employer or third party–led testing results are appropriately reported and included in local and provincial COVID-19 statistics. There may also be issues with health information privacy associated with employer or third party–led testing.

Understanding of Immunity

A better understanding of COVID-19 immunity is needed to allow serological testing to realize its promise.¹³ The ability to identify those who likely have immunity would allow for more calculated risks in the workplace and would help inform planning for return to work and regular activities.

Social Determinants of Health and Workplace Prevention

Given the challenges in relying on testing as a primary prevention strategy, there are other policy considerations related to reducing spread in high-risk workplaces. High-risk sectors like food processing, agriculture, and manufacturing have continued operating in some capacity throughout the pandemic because of their importance to the Canadian economy and supply chain. However, these industries rely on work that can be precarious and that is performed by an often-vulnerable workforce. The agricultural and food processing sectors in particular rely on labour performed by temporary foreign workers and recent immigrants who may not be able to effectively advocate for safer working conditions due to the precarity of their employment and the terms of their contracts or immigration status.¹ Additionally, workplace incentives to encourage staff to work overtime and discourage missing shifts may create an environment where individuals downplay symptoms or fear taking time off due to illness.²² Federal rules require that temporary foreign workers entering Canada observe a mandatory 14-day quarantine period during which they are paid a minimum of 30 hours per week at their specified rate of pay. For employers who provide housing, quarantined

workers must be housed separate from those who are not subject to quarantine, and anyone who becomes symptomatic must immediately be provided with accommodations that include a private bedroom and washroom so they may effectively quarantine.²³ Alberta officials have acknowledged that risks outside the work environment, such as congregate housing and a lack of clarity around self-isolation and quarantine procedures, contributed to the high-profile outbreak at the Cargill meat processing plant in High River, Alberta, in April 2020.²⁴

A number of policy solutions have been proposed related to risks outside the workplace to support and protect workers in these crucial sectors, while also decreasing the risk of outbreaks that may force closures and supply chain interruptions. These include:

- **Housing security:** Individuals residing in congregate housing may struggle to self-isolate effectively while awaiting test results. There is also anecdotal evidence that landlords have in some cases threatened tenants who work in high-risk sectors with eviction due to the fear and stigma associated with COVID-19. Isolation hotels have been utilized in some Canadian jurisdictions to provide individuals experiencing housing insecurity or who may be unable to effectively self-isolate at home with a private space while they await test results or self-isolate for precautionary reasons.²² Provincial and territorial authorities may also need to enforce or reiterate rules in residential tenancies acts that prohibit discrimination on the basis of occupation or identity.
- **Financial incentives:** Access to isolation and quarantine pay has been proposed as a potential solution to support workers in following isolation guidance from public health authorities, to enhance truthfulness in reporting symptoms potentially related to COVID-19, and to facilitate participation in voluntary testing programs.¹ Furthermore, workplace incentives aimed at reducing absenteeism and encouraging overtime may create a perverse incentive for workers to not report symptoms and may not be appropriate at this time.
- **Culturally and linguistically appropriate public health supports:** The 2,300 employees of the High River, Alberta, Cargill meat processing plant spoke more than 80 languages. Having public health messaging, including workplace signage, available in languages other than English or French may enhance awareness and knowledge among workers. Interpretation at testing sites may also be helpful. Similarly, having contact tracers who can communicate in different languages can assist with reaching those who are not first-language English or French speakers. Civil society organizations can also play a role; for example, Alberta's Centre for Newcomers delivered culturally appropriate food to households that needed it to help support self-isolation.²²

Other Resources

CADTH has compiled evidence related to COVID-19 prevention, infection control, and screening that may be of interest, including:

- [a rapid response search of guidelines related to contact tracing](#)
- [a briefing note on the use of contact tracing apps](#)
- [a bulletin discussing emerging technologies, including contact tracing apps and self-sampling for diagnostic testing](#)
- [a horizon scan discussing serological tests](#)
- [a knowledge mobilization tool outlining the role of different types of tests in the COVID-19 pandemic.](#)

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