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EDITORIAL

# COVID-19 in Canada and the use of Personal Protective Equipment

On 30 January 2020, the World Health Organization (WHO) declared the coronavirus disease 2019 (COVID-19) outbreak a Public Health Emergency of International Concern and on 11 March 2020 it was declared a pandemic by the WHO Director-General, Dr Tedros Ghebreyesus. In his speeches Dr Ghebreyesus first called on countries to, 'review preparedness plans, identify gaps and evaluate the resources needed to identify, isolate and care for cases, and prevent transmission' [1]. When declaring the pandemic, he urged countries to, 'Communicate with your people about the risks and how they can protect themselves – this is everybody's business; find, isolate, test and treat every case and trace every contact; ready your hospitals; protect and train your health workers. And let's all look out for each other, because we need each other' [2]. The protection of healthcare workers (HCWs), readiness of hospitals and protection of the public were clearly emphasized early by the WHO.

Canada's experience with the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003 led to the creation of the Public Health Agency of Canada (PHAC) [3]. This organization monitors and responds to disease outbreaks that could endanger the health of Canadians. The Canadian Government has contributed to international efforts to combat the COVID-19 pandemic, supporting WHO efforts as well as implementing travel restrictions and issuing guidance to the Canadian provinces and territories [4]. Since 2013 PHAC has produced a federal guideline entitled, 'Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Healthcare Settings' which provides a framework for organizations in developing policies and procedures [5]. This document details the circumstances in which contact, droplet or airborne transmission precautions should be used. It lists specific micro-organisms including the virus responsible for SARS, severe acute respiratory syndrome coronavirus (SARS-CoV), for which contact and droplet precautions are advised, except during aerosol-generating medical procedures, when airborne precautions are to be instituted. When respirators are used for airborne precautions (in the context of a full ensemble of appropriate personal protective equipment (PPE)), amongst instructions are, the importance of HCW being clean-shaven in the area of the face seal and that, in cohort settings, respirators may be used for successive patients. Upon discharge of the patient or discontinuation of airborne precautions, the recommendation is that sufficient time should be allowed for the air to be free of aerosolized droplet nuclei before housekeeping staff perform terminal cleaning, or else the housekeepers should wear a respirator, again together with other appropriate PPE. There is also guidance on modification for Long-Term Care, Ambulatory Care, Home Care and Pre-hospital Care settings.

The routine practices and additional precautions lay out in some detail the PPE to be used together with descriptions of the different types of medical grade gloves, masks and respirators, and eye protection. Contact precautions direct that in addition to the use of PPE as for 'routine practices', gloves should be used and long-sleeved gowns, where it is anticipated that clothing or forearms will be in direct contact with the patient or with potentially contaminated environmental surfaces or objects. These gowns should be cuffed and cover the front and back of the HCW from the neck to mid-thigh. The type of gown worn is based on the degree of contact with infectious material, potential for blood and body fluid penetration and the requirement for sterility. In the instructions for gown use it is mentioned that the cuffs of the gown should be covered by gloves. Droplet precautions additionally specify facial protection (i.e. masks and eye protection, or face shields, or masks with visor attachment) should be worn: for the care of patients with symptoms of acute respiratory viral infection, or when within 2 m of a patient who is coughing at the time of interaction, or if performing procedures that may result in coughing. Airborne precautions are additional to the routine practices, contact and droplet precautions.

As well as federal guidance, there is national guidance in the form of technical standards issued by the Canadian Standards Association (CSA) who in September 2018 provided an update to the document CSA Z 94.4 'Selection, use and care of respirators' [6]. The standard covers the choice of respiratory protection for bioaerosols and adopts a control banding approach. It is noteworthy that if this approach were followed for exposure to SARS-CoV-2, a biosafety Risk Group 3 organism [7], the choice of respiratory protection for any patient encounter for suspected or known COVID-19

disease would be at least a filtering face-piece respirator. In North America, this would typically be an N95 respirator, European equivalent FFP2. During the COVID-19 pandemic, to assist in the response, the CSA Group have made their standards available at no cost. PHAC guidance has been in keeping with WHO recommendations [8] with the consistent application of routine practices, and to follow contact and droplet precautions. When performing aerosol-generating medical procedures on a person under investigation (PUI) for COVID-19, the use of an N95 respirator is recommended. Canada usually tends to align closely with US practices, but it is notable that the guidance from the US Centers for Disease Control and Prevention (CDC) is different in recommending an N95 respirator in all situations for a patient suspected or known to have COVID-19 [9]. CDC only suggests use of a facemask if a respirator is not available.

The availability of PPE has been a concern in Canada, with notable differences across Canadian jurisdictions. For example, Alberta has been able to send supplies to others. In common with other countries, items stockpiled in Canada have often been found to be many years past expiry, causing uncertainty about usability. Consequently, a number of provincial efforts have been started to determine the functional performance of such PPE, including respirators. In tandem, efforts to explore the potential for reprocessing respirators and other PPE are also being undertaken. HCWs have expressed concerns about the level of respiratory protection recommended when caring for PUI and have used occupational health and safety legislation to challenge provincial standards [10]. It seems that, in common with other countries, the Long-Term Care Homes have not been as well provided for as the hospital system although their residents were tragically vulnerable. Compensation for the health effects and any deaths from COVID-19 adjudicated to be acquired at work will be available from the provincial and territorial Workers' Compensation Boards. The Canadian Workers' Compensation system is a no-fault system which precludes any litigation against the employer where for instance it may be alleged that there was inadequate provision of PPE. The Ministry of Labour inspectors of each province or territory would address any such failings based on complaints or evidence presented. It is also these Inspectors who would judge whether a worker's right to refuse what was perceived as unsafe work was justified or not. Whilst the provision and use of PPE has certainly been, and remains, an issue during the COVID-19 pandemic, Canada has been well-served by having comprehensive guidance describing not only the minimum PPE provisions but that states, 'Although the use of PPE controls are the most visible in the hierarchy of controls, PPE controls are the weakest tier in the hierarchy of controls, and should not be relied on as a stand-alone primary prevention program' [5].

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## References

1. WHO. WHO Director-General's Statement on IHR Emergency Committee on Novel Coronavirus (2019-nCoV). 30 January 2020. https://www.who.int/dg/speeches/detail/who-director-general-s-statement-on-ihr-emergency-committee-on-novel-coronavirus-(2019-ncov) (26 April 2020, date last accessed).
2. WHO. WHO Director-General's Opening Remarks at the Media Briefing on COVID-19. 11 March 2020. https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020 (26 April 2020, date last accessed).
3. Government of Canada Takes Action on COVID-19. https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/canadas-reponse/government-canada-takes-action-covid-19.html#a3 (27 April 2020, date last accessed).
4. Chattu VK, Adisesh A, Yaya S. Canada's role in strengthening global health security during the COVID-19 pandemic. *Glob Health Res Policy* 2020;**5**:16.
5. Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Healthcare Settings. Public Health Agency of Canada, September 2017. https://www.canada.ca/en/public-health/services/publications/diseases-conditions/routine-practices-precautions-healthcare-associated-infections.html (27 April 2020, date last accessed).
6. Canadian Standard Association. *Selection, Use, and Care of Respirators (CAN/CSA-Z94.4-18)*. Toronto, Canada: CSA Group, 2018..
7. Government of Canada, Biosafety Advisory. SARS-CoV-2 (Severe Acute Respiratory Syndrome-Related Coronavirus 2). 29 February 2020. https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/biosafety-directives-advisories-notifications/

novel-coronavirus-january-27.html (27 April 2020, date last accessed).
8. WHO. Infection Prevention and Control During Health Care When Novel Coronavirus (nCoV) Infection Is Suspected. 19 March 2020. https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125 (27 April 2020, date last accessed).
9. Centers for Disease Control and Prevention. Using Personal Protective Equipment (PPE). https://www.cdc.gov/coronavirus/2019-ncov/hcp/using-ppe.html (27 April 2020, date last accessed).
10. National Post. Canadian Nurses Treating COVID-19 Patients Cite Unsafe-Work Laws to Demand N95 Masks. https://nationalpost.com/health/canadian-nurses-working-with-covid-19-patients-demand-legal-right-to-wear-n95-masks (28 April 2020, date last accessed).