OPSEU: Managing personal protective equipment (PPE) supplies

Always (even if PPE is plentiful) use and make the most of "At the source" and "Along the path" controls

Put in place and ensure use of engineering and administrative controls to reduce exposure to the greatest extent possible. Ensure everything that can be done is being done. Joint health and safety committees (JHSCs) should be having weekly check-ins in addition to remote regular and emergency meetings to quickly address issues that arise.

The Centre of Disease Control (CDC)'s report *Guidance on Preparing Workplaces for COVID-19* *https://www.osha.gov/Publications/OSHA3990.pdf?deliveryName=USCDC-10_4-DM23416&deliveryName=FCP_2_USCDC-10_4-DM23416* has a good list of Engineering and Administrative Controls that JHSCs and unions can check for in workplaces.

Engineering Controls involve isolating employees from work-related hazards and eliminating exposure if possible. In workplaces where they are appropriate, these types of controls reduce exposure to hazards without relying on worker behaviour and can be the most cost-effective solution to implement. Engineering controls for COVID-19 include:

- Installing/using high-efficiency air filters.
- Increasing ventilation rates in the work environment
- Installing physical barriers, such as clear plastic sneeze guards.
- Installing a drive-through window for customer service if possible.
- Specialized negative pressure ventilation in some settings, such as for aerosol generating procedures (e.g., airborne infection isolation rooms in healthcare settings and specialized autopsy suites in mortuary settings).

Administrative Controls require action by the worker or employer. Typically, administrative controls are changes in work policy or procedures to reduce or minimize exposure to a hazard. Examples of administrative controls for COVID-19 include:

- Encouraging sick workers to stay at home.
- Minimizing contact among workers, clients, and customers by replacing face-to-face meetings with virtual communications and implementing telework if feasible.
- Establishing alternating days or extra shifts that reduce the total number of employees in a facility at a given time, allowing them to maintain distance from one another while maintaining a full onsite work week.
- Discontinuing nonessential travel/transfers/attendance to locations with ongoing COVID-19 outbreaks.
- Developing emergency communications plans, including a forum for answering workers' concerns and internet-based communications, if feasible.
- Providing workers with up-to-date education and training on COVID-19 risk factors and protective behaviors (e.g., cough etiquette and care of PPE).
- Training workers who need to use protecting clothing and equipment how to put it on, use/wear it, and take it off correctly, including in the context of their current and potential duties. Training material should be easy to understand and available in the appropriate language and literacy level for all workers.

Safe Work Practices are types of administrative controls that include procedures for safe and proper work used to reduce the duration, frequency, or intensity of exposure to a hazard. Examples of safe work practices for COVID-19 include:

- Providing resources and a work environment that promotes personal hygiene. For example, provide tissues, no-touch trash cans, hand soap, alcohol-based hand rubs containing at least 60 percent alcohol, disinfectants, and disposable towels for workers to clean their work surfaces.
- Requiring regular hand washing or using of alcohol-based hand rubs. Workers should always wash hands regularly, when they are visibly soiled and after removing any PPE.
- Post handwashing signs in restrooms.

Managing the supply of PPE

The following is taken from the Health Sciences Association of British Columbia's March 19, 2020 report by John Murphy to the National Union of Public and General Employees (NUPGE).

It is likely that limitations in the supply of N95 or better respiratory protection will necessitate the adoption of risk-based approaches to allocation. This in turn raises the question of how to assess the level of risk in caring for infected patients.

As a starting point in answering the question, it is important to recognize that experimental and observational evidence with respect to the transmission of deep lung viral infections supports the notion of there being an inhalation dose-response relationship. In other words, risk of infection increases with quantity of viral material inhaled.

The factors affecting virus exposure and inhaled dose by a health care worker when caring for an infected person will include the following:

a) Quantity of virus shedding by the patient, which appears to increase with the severity of infection, and in the case of COVID-19 probably with the extent of coughing (increases exposure). (e.g. workers doing frozen tissue suction or take throat swabs which causes a person to cough?)
b) Performance of procedures that increase the patient's ventilation rate and expulsion of both non-visible and visible droplets from the patient's airway (increases exposure).
c) Proximity of the health care worker to the breathing zone of the patient (increases exposure).
d) Frequency and duration of time in close proximity to the patient (increases exposure). (Within 2 meters and more than 15 minutes?)
e) Number and frequency of close proximity interactions with the patient (increases exposure).
f) Extent of dilution of large expelled droplets from the patient by having the patient wear a surgical mask (SM) (decreases exposure).
g) Extent of dilution and removal of airborne viral material by the general ventilation system of the patient room (decreases exposure). E.g.—Is it a negative pressure room?

Match your job or task using the above principles. Consult these factors when setting priorities for allocating respiratory protection, with the basic principle being that personnel having higher potential inhalation exposures (and hence doses) are presumed to face higher risks, and accorded higher levels of protection. For example, quick infrequent tasks in a patient room performed 2 meters away from a patient's breathing zone would contribute very little to a worker's overall potential exposure, while

frequently performed longer duration tasks carried out very close to the patient would make a large contribution to the worker's overall potential exposure.

Recommendations

1. In regards to PPE use, OPSEU believes the Centre of Disease Control (CDC) has the best guidance:

    a) **Where possible (and where supply exists) health care workers should use N95** respiratory protection when providing care for COVID-19 patients—for all the virus load reasons above and because the science is far from clear regarding airborne transmission. However, where it is anticipated that logistical constraints may cause supplies of N95 disposable respirators to run out, prioritize allocation based on assessment of the extent of potential exposure and risk. Use SMs if N95s become unavailable due to supply constraints but resume use of N95s if and when possible.

    b) **Optimize room general ventilation operation** if possible to maximize air change rates when performing aerosol-generating medical procedures (AGMPs), and use the full suite of protective equipment listed by US CDC--powered air-purifying respirators (PAPRs)) if available. At a minimum, and N95 respirator for aerosol procedures.

    c) **Use eye protection** that provides protection from both visible and non-visible droplets (i.e. vapour and splash protection goggles) in conjunction with whatever manner of respiratory protection is needed.

2. **Require wearing of SMs by patients to the extent practical.** If extended wearing by patients is not practical, having patients don SMs prior to and during close proximity interactions with health care workers would confer some protection against large droplets that the patient could expel by coughing. Delaying entry into ventilated patient rooms for sufficient time to allow several air changes would also afford further aerosol exposure risk reduction.

3. **Employers in consultation with the JHSC shall perform qualitative aerosol exposure risk assessments and point of care risk assessments** considering the aforementioned risk factors, and make decisions with respect to respiratory protective equipment allocations based on the outcomes of the analysis.

6. **Use expired N95s if the elastic is still strong.** NIOSH has already tested some old N95's and it appears the vast majority are still good (some as old as 2006) - https://www.cdc.gov/coronavirus/2019-ncov/release-stockpiled-N95.html#f1 It seems the filter of the N95 stays good for a long time but the elastic deteriorates.

4. **Consider deployment of re-usable versus disposable N95s if insufficient supplies.** As part of the risk assessment described in recommendation consideration should be given to identifying occupations in health care settings where persons could be issued re-usable N95 masks in preference to disposable N95s. For example, personnel who have more opportunity to clean N95 between uses (Ie not rushing from patient to patient) who periodically perform tasks in patient rooms might be good candidates for issuance of re-usable N95s, as it is likely to be more practical for those occupational groups to clean and maintain re-usable masks as compared to treatment and care personnel. This would extend the supply of N95 disposables.

7. **Consider "extended use" and "re-use" of N95 if insufficient supplies.** A few years ago, the Centre of Disease Control (CDC) developed guidance for extending and re-using N95 masks in cases of shortage. While not recommended, it is and always has been done or considered in shortage situations. https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html

   Extended: using the same N95 without taking it off or touching it to provide close contact care with more than one patient with COVID-19. Extended use may be implemented when multiple patients are infected with the same respiratory pathogen and patients are placed together in dedicated waiting rooms or hospital wards.

   Re-use: refers to the practice of using the same N95 respirator for multiple encounters with patients but removing it ('doffing') after each encounter. The respirator is stored in between encounters to be put on again ('donned') prior to the next encounter with a patient.

   The CDC says the decision to implement policies that permit extended use or limited reuse of N95 respirators should be made by the professionals who manage the institution's respiratory protection program, in in consultation with their occupational health and infection control departments with input from the local public health departments. And we say include the JHSC.

   The decision to implement these practices should be made on a case by case basis taking into account respiratory pathogen characteristics (e.g., routes of transmission, prevalence of disease in the region, infection attack rate, and severity of illness) and local conditions (e.g., number of disposable N95 respirators available, current respirator usage rate, success of other respirator conservation strategies, etc.). Some healthcare facilities may wish to implement extended use and/or limited reuse before respirator shortages are observed, so that adequate supplies are available during times of peak demand. For non-emergency (routine) situations, current CDC recommendations specific to that pathogen should also be consulted.

   A big priority when extending or re-using N95 is to be doing the maximum number of possible administrative and engineering controls, such as screening, deep cleaning, and regular cleaning of high traffic surfaces. Also, the donning and doffing instructions, training, and procedures are paramount if re-using and handling the respirator again and again. A designated and adequate space not in the work area should be used for donning and doffing. If there are questions about when and how to re-use or extend use of N95 then this information from the CDC is the best guidance we can provide.

Sources:

1. Centre of Disease Control (CDC)'s report *Guidance on Preparing Workplaces for COVID-19-19* *https://www.osha.gov/Publications/OSHA3990.pdf?deliveryName=USCDC-10_4-DM23416&deliveryName=FCP_2_USCDC-10_4-DM23416*

2. Murphy, John. March 19, 2020. Health Sciences Association of British Columbia. REA Project No. 16769.