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## Coronavirus — preventing an occupational hazard among doctors

### To the Editor

It all started in the last week of December 2019 when the World Health Organization (WHO) was alerted regarding several respiratory infections localized to a city in China. In January 2020, China confirmed a new virus, the Novel Coronavirus (nCoV), and the resulting disease was later termed COVID-19 (Coronavirus disease 2019). Since then, the spread, incidence, and death toll has taken a draconian leap with cases reported from over 4 continents with countries including China, Thailand, Hong Kong, Australia, Taiwan, Singapore, Malaysia, Japan, Canada, and Germany just to name a few. India has also reported over 100 confirmed cases as of March 16<sup>th</sup>, 2020 and the numbers are rising.

The reasons for COVID-19 quickly becoming a pandemic are numerous and include but are not limited to the following: a late reaction from public health agencies, an unrestricted flow of people across various borders, human to human spread even during incubation periods, and non-specific symptoms including fever, running nose, cough, breathlessness and headache.

Health care personnel including doctors are directly exposed during detection, isolation, and treatment of patients and contacts. In a resource constrained setting, this has the potential to turn into an occupational hazard [1]. The situation is further compounded by the fact that a vaccine may be at least one to two years away, even though trials for 35 vaccine candidates are planned for commencement. However, there are a few simple yet effective steps which can easily reduce this risk [2, 3].

### Hand hygiene — it's in your hands now

In a time when the general public is mass buying masks and other preventive gear, it is the duty and right of every health care worker (HCW) to use them during the entire time spent in contact with patients or contacts. The advantages are many and include a decreased risk of infection, decreased risk of spread to one's family, and a decreased risk of spread to other patients. Hand sanitizers and hand washing practices followed in operation theatres and intensive care units have to be ensured and used in all areas of the hospital. Hand hygiene (HH) should be performed before and after any contact with patients. If alcohol-based hand rubs are used, the concentration should be ensured to include > 60% alcohol. If hands are visibly soiled, soap and water should be used [3–5].

### Personal protective equipment — your very own security shield

Ensure that hand hygiene has been performed before donning (putting on) personal protective equipment (PPE). If a respirator (N95 respirator) is not available, a facemask should be used. For eye protection, goggles or face shields can be employed. It should be remembered that refractive-error correcting personal glasses do not qualify as eye protective gear. Further, care should be given towards not touching the eye/face protection or masks. Other important points to note regarding PPE include: not wearing a facemask inside an N95 respirator (as the former loosens it and renders it useless), doffing (removing PPE) in the order of glove, goggle, gown and mask, and performing

immediate hand hygiene after doffing. In case of a shortage of facemasks or eye protection gear, centres for disease control and prevention (CDC) advises changing gloves and gown (in addition to HH) while keeping the same facemask and eye protection gear between patients which have the same diagnosis [4, 5]. Diagnostic specimens should preferably be collected by dedicated collection teams, and team members should wear a respirator in addition to PPEs.

### **Segregation of hospital staff and doctors — divide to prevent I**

It may be difficult in view of limited staff, however, every attempt should be made to designate health-care teams dedicated to COVID-19 patient care during a single shift. Adequate training for PPE, sample collection, and waste disposal of personnel caring for COVID-19 patients should be mandatory for all HCWs. Further, it is important to have control checks on the shift hours and number of shifts to ensure adequate rest and avoid physician fatigue. As well, providing emotional support cannot be overstated in these testing times. Changing to hospital scrubs at the time of starting a shift may also contribute to prevention. HCWs should be advised to immediately report if they develop COVID-19 symptoms. Additionally, they should be actively monitored for these symptoms. The CDC has recently published interim guidance on the identification of the risk-level of HCWs [6].

### **Patient segregation — divide to prevent II**

COVID-19 patients requiring admission should be provided with a single room or a common room with at least 1m distance between patients. Hospitals must ensure that the block handling COVID-19 patients has separate entry/exit points, ventilation, and waste management from the rest of the hospital to avoid spreading to health care workers not working in other areas of the hospital. All individuals entering the block should adhere to strict HH/PPE guidance. Suspected/confirmed COVID-19 patients should be advised to wear a facemask as a source control measure to decrease droplet and secretion emission. In case of a shortage of facemasks, patients should be advised to use tissues, handkerchiefs or cloth masks to cover their mouth and nose, in addition to maintaining strict cough etiquette and respiratory hygiene. Engineering controls like proper ventilation of patients rooms with at least 12 air circulation per hour can decrease droplet concentration and

thus, decrease contamination of surfaces when these droplets settle. Either mechanical or natural ventilation can be employed but never both together. Further details can be accessed in WHO documents [2, 5].

Patient transport outside of the COVID-19 block should be minimized to reduce contact with non-COVID-19 medical staff. Lastly, early recognition and transfer of patients from non-Covid-19 wards or emergency wards should also be employed.

### **Additional precautions during aerosol generating procedures**

Procedures like induction of sputum, bronchoscopy, nebulization, non-invasive ventilation (NIV), endotracheal intubation/extubation, open endotracheal suction, open tracheostomy etc. generate aerosols and droplets. In addition to the usual precautions, HCWs should use particulate respirators (e.g. N95 respirator). All patient procedures should be performed preferably in the patient's room. In case this is not possible, a dedicated room in the COVID-19 block should be used to avoid exposure of non-COVID-19 staff. Additionally, in the case of the latter, room surfaces should be disinfected between patients. Cheung *et al.* recommend using rapid sequence induction for COVID-19 patients wherever Invasive Mechanical Ventilation is required [7]. They do not recommend using NIV or high flow nasal oxygen (HFNO) until the patient is cleared of COVID-19. However, the strength of these recommendations needs to be assessed in planned clinical trials. A few more points to remember regarding invasive mechanical ventilation include using a viral filter during bag and mask ventilation, using a video laryngoscope in place of a direct laryngoscope, and using closed endotracheal suctioning.

### **Visitor check**

A check on the number of visitors to patients admitted in the non-Covid-19 wards should not be forgotten during the community transmission part of a respiratory epidemic. An infected visitor can easily infect patients, other visitors, and HCWs. Ideally, all visitors should be actively assessed for Covid-19 symptoms.

### **Avoid public gathering — practice what you preach**

All HCWs should practice universal preventive measures like avoiding crowded public places/

/transport, non-essential travel, etc. Practicing ‘social-distancing’ as much as possible could be an effective method in the prevention of airborne infection transmission [8].

### Public education — preach what you practice

Hospitals should display posters and videos with instructions on HH and cough etiquette for visitors and patients alike throughout the whole hospital. In terms of limiting the community transmission phase of the epidemic, patients should be enquired about symptoms of COVID-19 at the time of appointment scheduling in order to ensure minimizing the exposure of non-COVID-19 HCWs. Additionally, since it may be difficult to screen patients at the time of first contact during emergency department (ED) visits, ED-HCWs should use preventive measures universally.

### Looking to the future

We should take advantage of technology as much as possible. Smartphones and tablet computers can easily be employed for telemedicine and are already being put into practice at certain institutions around the world [5, 9]. Tablet computers may be used to interview patients during their hospital visits or even before they arrive at the hospital. This can lead to easy and early segregation of patients.

The quest for a vaccine is already underway with some experts even calling for simultaneous clinical and pre-clinical trials. A Phase-I clinical trial is already underway [10]. Pharmacologists and molecular experts around the world are working hard to find a cure. Even so, we must not forget that such solutions will take time. When these do become available, national health administrators must ensure early access for HCWs.

### Conclusion

The cocktail of high infectivity, a massive susceptible population, and the lack of a preventive vaccine or therapeutic drug has brought

an unfortunate realization to long term fears of many health care experts. It has reminded us that the medical profession needs to push its limits further and faster than ever before to overcome this obstacle. As is the case with any pandemic, the healthcare infrastructure will be put through a cauldron and will be stretched to its thinnest limit. While the world measures us with their own yardstick, we must not forget that our own well-being is important to ensure the well-being of the world around us.

### Conflict of interest

None declared.

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