Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Commentary

A care escalation framework to address lapses in donning and doffing of personal protective equipment during the COVID-19 pandemic

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Adherence to infection prevention and control (IPAC) measures is challenging for health care workers (HCW) in nonoutbreak settings. Now more than ever, during the current coronavirus disease 2019 (COVID-19) pandemic, it is imperative that HCW strictly adhere to IPAC measures to prevent both the nosocomial transmission of infection and self-contamination and infection. System-level interventions that incorporate human factor engineering will provide the most robust means of ensuring best IPAC practices, especially as it relates to the appropriate use of personal protective equipment (PPE).

SCENARIO

A resident is rounding with their attending physician on a ward dedicated to the care of patients with COVID-19. The attending physician completes a clinical assessment and moves to exit the room. While removing their gown and gloves, the attending physician starts to discuss the management of the patient. Without performing hand hygiene, the attending reaches to remove their face shield and mask. The resident notices this impending breach in infection control measures but hesitates to alert the attending physician while they are still speaking. What should the resident do?

CARE ESCALATION TO CREATE A CULTURE OF SAFETY

Escalation of care involves prompt recognition of deterioration in a patient's clinical status, and timely communication of concerns to the care team.[1,2] In some circumstances, this may require junior trainees to speak to up to those more senior. Communication failure has been recognized to cause sentinel events and delayed escalation can lead to safety issues resulting in significant morbidity and mortality for patients.[3] Regarding IPAC measures, this may also result in harm to HCW. The ability of HCW, including trainees, to feel empowered and comfortable to raise concerns is central to creating a culture of safety, and improved quality of care.

Escalation of care can be negatively and positively influenced by organizational and interpersonal factors.[2] Interpersonal factors include traditional hierarchical structures, fear of appearing incompetent, and desire for autonomy by junior members of the team.[1,2,4] Communication across hierarchies can be challenging. Resident physicians may be reluctant to alert attending physicians to safety concerns, as the attending physician may be in a position to have a direct influence on the resident's future career.

APPLYING A CARE ESCALATION FRAMEWORK TO PROMOTE A CULTURE OF SAFETY TO PREVENT LAPSES IN IPAC MEASURES

We believe that spotting for appropriate PPE use is critical to prevent the nosocomial transmission of COVID-19 related to breaches in donning and doffing.[5] This can be fit into a care escalation framework that includes speaking up about observed lapses in the technique of others. Lapses in infection control measures must be immediately recognized and communicated to prevent both self-contamination and the nosocomial spread of infection. If the safety climate is complacent, we believe this will translate to lower adherence to IPAC guidelines and its resultant consequences. At a local academic and community institution, recent baseline adherence to PPE protocols were found to be only 56%.[6] Addressing lapses in IPAC measures, in outbreak and nonoutbreak settings, represents opportunities for improvement aimed at increasing workplace safety.

Like many institutions, we decided to geographically cohort patients with COVID-19 on dedicated units. We have adopted a model where 2 physicians are buddied for patient care. This was designed to allow for specific task delegation to improve efficiency, to support optimal IPAC practices, and to reduce cognitive fatigue.[7] One physician performs patient assessments (the assessor) while the other reviews laboratory investigations, performs computer order entry, and completes chart documentation outside of the room. As the assessor moves between patient rooms, the second physician acts as the spotter for the donning and doffing of PPE.

A strong safety climate is positively reinforced by effective communications between members of the health care team and frequent safety-related feedback.[5] Strategies to improve upon these interpersonal factors have been studied. They include fostering a safe

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Table 1
Care escalation strategies for donning and doffing procedure

Donning and doffing	Action	Example safety statements
Prior to rounding	Assign roles, including the clinical assessor and the personal protective equipment (PPE) spotter. This sets expectations and provides role clarity.	Both physicians: "When we round today, let's agree that during donning and doffing, that no other tasks will be completed so that we can maintain our focus."
Predonning	Review tasks that need to be completed inside the patient's room before the assessor pauses to don PPE. Signal this with a safety statement.	Assessor: "Please spot me when I'm donning my PPE. Do not hesitate to correct errors to ensure my safety and the safety of our team."
Donning	Employ silence during application of PPE to ensure the assessor focuses on the task and the spotter actively observes.	Assessor: "I have now put on my PPE. Am I safe to enter the patient's room?"
Predoffing	Assessor announces exit from patient's room. This cues the spotter to observe the doffing of PPE and to be alert for lapses to create situational awareness.	Assessor: "All eyes on me. I am leaving the patient's room and I will be removing my PPE."
Doffing	Assessor focuses on the task of doffing while the spotter actively observes. If focus is broken, or an impending error occurs, use a safety statement for correction.	Spotter: "Stop! You are about to touch your face. Please perform hand hygiene before removing your mask".
After patient assessment	Debrief any safety issues and lapses in infection control procedures. This normalizes the shared responsibility for safety.	Spotter: "You were speaking while you were doffing your PPE. I believe this lead to your distraction and subconscious attempt to touch your face. Let's agree that we will remain silent during doffing so that you can focus on removal of PPE while I spot you."

environment to promote communication across hierarchies by making expectations clear, setting expectations early, standardization of communication, and practice of these skills in a safe environment, such as in simulation.[1,2,4] Improving patient safety, including adherence to IPAC measures, requires a culture of mutual respect, accountability, and commitment to improvement. This must be reflected in the learning environment, and role modeled by those more senior. Care escalation relies on effective communication.

RETURN TO THE SCENARIO

In this scenario, the attending physician was observed to be making an error while doffing their PPE. The attending physician's discussion of the management plan while doffing may have led to distraction that resulted in this error. The resident physician should have felt empowered to speak up and alert the attending physician without hesitation. Applying the principles of care escalation, we provide some examples in which this lapse in doffing of PPE could have been addressed both prior to rounding and in the moment in which it occurred. These are summarized in the Table 1.

We believe that in creating role clarity and accountabilities for both members of the team, and through the creation of scripted responses to observed lapses in infection control measures, that it is possible to improve safety in the donning and doffing process. These scripts can also be used for role-play in educational sessions including simulations. Now, more than ever, members of the health care team must be comfortable identifying breaches in infection control protocols and speaking up in order to improve provider and workplace safety.

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