Virtual Remote Attending Supervision in an Academic Emergency Department During the COVID-19 Pandemic

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NEED FOR INNOVATION

As the surge of COVID-19 patients increased, our academic university faculty needed to explore ways to protect the more vulnerable physicians in the group from infection while maintaining the service to our patients and the educational objectives of our residency training program.

BACKGROUND

In December 2019, a novel coronavirus (SARS-CoV-2) was identified in Wuhan, China. The disease caused by this virus, COVID-19, typically presents with a viral prodrome that may subsequently progress to severe pneumonia and has been associated with significant morbidity and mortality in those most affected. This novel pathogen has since spread widely and is now the cause of a global pandemic[1] and likely represents the greatest global health crisis since the 1918 Spanish influenza pandemic. Approximately 20% of COVID-19 cases progress to severe disease. The case fatality rate (CFR) varies widely across the globe but has a median of approximately 2% to 3%[2] and has been directly associated with increasing age. In the United States, the CFR is 0.1% to 0.2% for those less than 45 years of age, with dramatic increases starting in the 55- to 64-year age group whose fatality rates are 1.4% to 2.6%. The CFR is as high as 27.3% for those > 85 years.[3]

Although multiple treatments for COVID-19 are currently under investigation, none have yet been definitively identified as either effective or protective.[4] While many health care professionals can move to telemedicine or telephonic modes of patient care or simply cancel office visits and elective procedures, those involved in essential patient care activities involving COVID-19 patients may not have this ability. Emergency physicians are on the front lines caring for these patients and thus risk exposing themselves to the disease. Reports from across the globe have warned of dangerous shortages of personal protective equipment (PPE) that is necessary to prevent health care providers from becoming infected.[5,6] Despite precautions, hundreds of health care providers have already died of COVID-19.[7] Because of the increased risk of morbidity and mortality for older physicians and the immunocompromised, a number of emergency physician groups have taken measures to decrease the risk of COVID-19 exposure for these health care professionals. A recent informal Twitter poll revealed a variety of institutional and departmental policies aimed at protecting the most vulnerable medical personnel. Many excluded physicians who are older than 60 to 65 years, immunocompromised, or pregnant from contact with suspected COVID-19 patients. Some kept

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physicians older than 50 out of higher risk aerosolizing procedures, such as endotracheal intubation.[8] Since the beginning of the pandemic, the younger faculty at our institution, the University of Alabama at Birmingham, have volunteered to perform all aerosolizing procedures and intubations in lieu of the more vulnerable physicians.

OBJECTIVE OF INNOVATION

Our objective is to allow the use of telemedicine resources to decrease physician exposure to SARS-CoV-2 and decrease risk of morbidity and mortality for the most at-risk attending physician group while maintaining appropriate emergency medicine (EM) resident supervision, training, and teaching. We also endeavor to maintain excellence in bedside patient evaluation and care.

DEVELOPMENT PROCESS

As preparations were being made for a surge of COVID-19 patients in April 2020, a more formal strategy was instituted at our facility. A vulnerable group of physicians ($N = 7$) who are > 59 years or immunocompromised were assigned to a novel telemedicine shift, which allows the attending physician to remotely supervise the resident directly involved with patient care. Our site is a 1,100-bed university hospital with a fully accredited, 3-year ACGME EM residency training program with a total of 32 residents and over 40 faculty.

University of Alabama at Birmingham has invested in telemedicine since 2017 and during the pandemic, our ED started an aggressive plan to utilize the telemedicine carts to evaluate patients remotely, with the primary goal of protecting vulnerable faculty from exposure, while also decreasing the use of PPE. With these goals in mind, we implemented a novel use of the telemedicine carts to allow an attending physician to be in a remote location while still providing care to ED patients and supervising residents.

IMPLEMENTATION

In our university ED, the staffing model provides full-time triple attending physician coverage, with one attending physician covering one of three resident pods. This level of physician staffing permits the replacement of one physically present attending with a remote attending in one of the pods. The remote physician-staffed pod is also covered by a senior EM resident and is in a central location, which allows the physically present attending to be immediately available for any critically ill patients or to assist with the performance of a necessary procedure if needed. These remote shifts are staffed by the vulnerable attending group. If needed, these could also be covered remotely by an attending infected with COVID-19 who is well enough to work a shift from home but not yet beyond the recovery period allowing return to physical work. In this model, the attending physician works from home and can sign the electronic medical record (EMR) remotely, as well as access all information available to the resident on shift. Figure 1 shows one author and the telemedicine cart. The attending can control camera motion and a robust zoom lens to allow for closer inspection of physical examination findings. Conversations with residents regarding patient care may occur "face to face" on the video monitor or by telephone.

When a new patient arrives in the pod, the resident takes the telemedicine cart (with the embedded telemedicine attending) into the patient room. This process allows the attending to observe the entire initial history, physical examination, and assessment and ask additional questions. Formal case presentation is often

Figure 1. An author working as a virtual remote attending using the telemedicine cart.

not necessary given the participation of the telemedicine physician in the initial patient assessment. The resident and attending can create a patient management plan together; can view electrocardiogramss, radiography, and laboratory results; and plan patient disposition.

OUTCOMES

There are several benefits we, as remote attendings, have discovered during this process. One is the ability to observe the entirety of the resident's interaction with the patient. As academic physicians, we often do not have this opportunity unless we make specific efforts to do so. We can also observe and participate in the discussion of the plan with the patient at the end of the initial assessment. To be able to provide constructive feedback on this less commonly observed skill is useful. We are also able to review the patient's chart in real time as the resident is gathering patient information. This interaction provides valuable insight into the resident's thought process.

To assure that this process was functional and continuing to meet the needs of our residents, we conducted and informal survey of those remotely supervised. The vast majority (85%) of the residents agreed that the remote attending was able to supervise patient care and provide appropriate resident feedback, which allow them to continue to progress in their training. Seventy-three percent agreed that it was easy to communicate with the remote attending. The residents, however, were split on the question of whether having the remote attending in the room while they perform the initial assessment allowed them to learn during this process. They all agreed that the remote attendings were dedicated to teaching and supporting their education.

This telemedicine remote process has some drawbacks. While the overall audio quality is good, it can be difficult to hear conversations that take place in loud environments or farther from the telemedicine cart. We also feel more distant and detached from our fellow attendings who are staffing other patient care areas. Communication is limited to the telemedicine cart or to the telephone. From a practical perspective, we cannot directly supervise procedures because we would not be able to provide physical directive advice or correction. When a procedure becomes necessary, one of the two physically present attendings provides the resident supervision and the note is sent to that attending for countersignature.

REFLECTIVE DISCUSSION

We describe a novel approach to telemedicine that came out of the desire of our academic faculty to protect the more vulnerable in the group from exposure to COVID-19. While we understand that it is not as optimal as in-person supervision, it appears to be a viable method to provide resident supervision in an academic EM residency program during this difficult time. Although there are some drawbacks, we have also discovered some advantages in this mode of supervision. We feel that we can provide appropriate resident supervision, teaching, and feedback. However, to truly measure the feasibility of this modality, a more formal study would be warranted, including a carefully designed, validated survey instrument. This could be evaluated in the future. We are thankful to be a part of such a large and compassionate academic faculty that allows us the opportunity to continue to be an active part of residency education and patient care while respecting the increased risks to our own health. Like many innovations that have occurred in a short period of time during the COVID-19 pandemic, we hope that this option might be useful to other academic programs or community hospital physician groups who may have an at-risk group of physicians.

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References

1. Yee J, Zadravacz F, Criello P, et al. Novel coronavirus 2019 (COVID-19): emergence and implications for emergency care. J Am Coll Emerg Physicians Open 2020;1:63–9.
2. Oke J, Heneghan C. Global Covid-19 Case Fatality Rates. Oxford COVID-19 Evidence Service. Available at: https://www.cebm.net/covid-19/global-covid-19-case-fatality-rates/. Accessed Apr 11, 2020.
3. Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19) – United States, February 12-March 16, 2020. MMWR Morb Mortal Wkly Rep 2020;69:343–6.
4. Crosby C, Heimann M, Burleson S, et al. COVID-19: a review of therapeutics under investigation. J Am Coll Emerg Physicians Open 2020. Available at https://onlinelibrary.wiley.com/doi/full/10.1002/emp2.12081. Accessed May 8, 2020

5. Kaltwasser J. Not Just Masks: WHO Warns of Looming Shortages of PPE. Available at: https://www.contagionlive.com/news/not-just-masks-who-warns-of-looming-shortages-of-ppe. Accessed April 11, 2020.
6. Jacob A, Richtel M, Baker M. 'At War with No Ammo': Doctors Say Shortage of Protective Gear Is Dire. NYTimes. Available at: https://www.nytimes.com/2020/03/19/health/coronavirus-masks-shortage.html. Accessed on Apr 11, 2020.
7. In Memoriam: Healthcare Workers Who Have Died of COVID-19. Medscape. 2020. Available at: https://www.medscape.com/viewarticle/927976. Accessed Apr 22, 2020.
8. Amal Mattu Twitter Feed. 2020. Available at: https://twitter.com/amalmattu/status/1243671979405856769. Accessed Apr 11, 2020.