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Notes From the Eye of the Storm
Trainees at the Frontlines of the COVID-19 Pandemic

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The coronavirus disease-2019 (COVID-19) pandemic is a global health emergency that has changed our world in an unprecedented way. As cases throughout the United States are steadily rising, we are only now getting a picture of its true extent. The numbers are staggering, and health care systems are struggling under the burden of this rapidly spreading disease. In this situation, it would be easy to forget how the pandemic is affecting the physical and emotional lives of residents and fellows, who are at the front lines of this battle. However, thanks to traditional and social media, the situation of the health care worker (HCW) has now come into the spotlight, and many physicians have even begun to consider the impact this pandemic will have on the training of residents and fellows.

IMPACT ON HOSPITAL-BASED CARE

New York City (NYC), where our hospital (Mount Sinai Morningside) is located, is now the epicenter of the pandemic, with more than 150,000 cases and 15,000 deaths (1). Despite a gradual decline in the number of daily new cases, we are operating at maximum capacity. With rooms in the emergency department (ED) now fully occupied with patients with COVID-19 who are waiting for hospital beds, stretchers are lined up wherever there is space, and many hospitals have tents outside their EDs to house additional patients. Some patients are being transferred to the nearby Javits Convention Center, which has been converted into a field hospital, and others have been sent to the USNS Comfort docked on the Hudson River.

Because of the active community spread of the infection, any patient with a cough and fever may have the virus, and seemingly healthy patients can be carriers. Thus, our hospital and other hospitals now require the use of masks when interacting with patients. Yet given the limited supplies, precious N95 masks and face shields are rationed, and just 1 of each is given to providers each day. Further, the hospital has been broadly divided into non-COVID-19 and COVID-19 areas, with the latter now forming the vast majority. All intensive care units (ICUs) (cardiac or surgical) are now COVID-19 ICUs, and temporary ICUs have been created on medicine floors, in perioperative spaces, and even in endoscopy suites. All HCWs, regardless of their prior roles, are now taking care of hospitalized COVID-19 patients.

In this situation, it has been especially challenging for specialists providing advanced services. For instance, last month, during the initial surge of patients, because of the lack of resuscitation rooms, we received a patient presenting with an ST-segment elevation acute myocardial infarction (STEMI) in a makeshift curtained-off room in the ED before rushing her to our cardiac catheterization laboratory. Patients with STEMI often present in extremis, which is why they are brought to the resuscitation rooms first, but that night, this was not an option. It was touch and go, and we were lucky that all went well.

Despite the surprising fall in the number of patients with STEMI presenting to our hospital during the pandemic, every new case presents a similar logistical challenge. It is not just because of a lack of space to triage patients, but it also reflects the fact that time-
sensitive therapies of STEMI management need to be counterbalanced against the time and care that are required to deploy personal protective equipment, don gear, and ensure isolation precautions to protect the staff (any new patient could have COVID-19).

**IMPACT ON HOUSE STAFF TRAINING**

With the surge of hospitalizations for COVID-19, all elective procedures, tests, and clinic visits have been postponed to conserve hospital resources, re-allocate personnel, and reduce potential exposure for patients and staff. Yet fellowship training in cardiovascular diseases relies heavily on experience in interpreting echocardiograms, nuclear tests, and other imaging studies, as well as performing cardiac catheterizations and electrophysiology procedures. Because most of these tests and procedures are elective, they have been canceled. Additionally, outpatient clinics, which are key components of a fellow’s clinical training, have also been suspended and replaced by the rare telehealth visit. This may have less of an effect on fellows engaged in 3 years of training, who may be able to make up for lost time in the subsequent years. However, this is especially problematic for our procedure-based specialty fellows, such as interventional and electrophysiology fellows, whose training lasts only 1 to 2 years. Interventional fellows are required to perform 400 procedures (Accreditation Council for Graduate Medical Education [ACGME]) and 250 procedures (American Board of Internal Medicine [ABIM]) before graduation (2,3). Electrophysiology fellows are required to perform 160 catheter ablations, 100 implantations of cardiac electrical devices, and 30 device replacements/revisions (4,5). Assuming up to 2 months of lost time in the laboratories during this pandemic, it is estimated that the total number of cases performed will be reduced by 20%.

Trainees in programs that provide only the minimal requisite number of cases may not meet the required numbers this year. Additionally, a procedure-based trainee generally gains the most experience in fellowship at the end of their year of training, when they operate with more independence. Yet, during the last months of this year, fellows, like most trainees, are instead working as medical residents in COVID-19 wards. Additionally, national, international, and local conferences, including grand rounds and morning reports, have been canceled. Programs are making efforts to move these conferences to a virtual platform. However, given competing clinical demands, there has been limited time for trainees to attend these conferences.

**IMPACT ON PERSONAL LIFE**

House staff who have become symptomatic have been quarantined at home. This has been a complicated situation for those staff working in NYC, who often live in small apartments. Even those who are well worry about transmitting the virus to their loved ones and have considered living away from them; given the indefinite duration of this pandemic, for many it is unreasonable to consider living apart. Some trainees have indeed chosen to live apart from their families at great personal expense, others have tried to be especially diligent about distancing themselves while at home, and still others have accepted the possibility of transmitting the infection and hoping that they develop immunity. Some of the more stressful situations are those of pregnant house staff, who have concerns that this virus may cause harm not only to themselves but also to their unborn child. Many of our house staff have become ill, but have ultimately recovered. Sadly, the pandemic has taken the lives of members of the system’s wider health care community, including a nurse and a technician very dear to our trainees. These great losses have taken an emotional toll on all. Residents and fellows rely on their friends and families for emotional support. Given the social distancing in place, however, these support networks have become strained. Some trainees are experiencing depression, anxiety, insomnia, and distress, just as were seen in many HCWs early in the pandemic in China (6).

**IMPACT ON PATIENT CARE**

It goes without saying that the greatest suffering during this pandemic is being endured by our patients. Apart from the suffering brought on by COVID-19 itself, patients have to endure many other ordeals. They are isolated and alone and see their providers only through layers of face shields, masks, and other protective gear. Further, to limit exposure to HCWs, direct patient interactions are reserved for essential issues. The tragedy of this pandemic is that the necessity of every treatment for the patient has to be measured against the safety of HCWs. At no time is this more evident than when a patient is in extremis or goes into cardiac arrest. The need to gain rapid access to the patient and institute lifesaving and resuscitative measures is sharply at odds with the time and care needed to don protective gear and ensure isolation precautions.

Isolation has taken on a whole new meaning in this pandemic. Patients say goodbye to loved ones at the door of the ED because families are no longer allowed to visit. Patients often spend weeks in the hospital.
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For us, the suffering of patients and their families is cause for great anguish, and the scale of the hardships brought on our patients will no doubt have a lasting impact.

ADDRESSING THE CHALLENGES

The ACGME has allowed programs to self-declare a Pandemic Emergency Status, which permits all medical trainees to care for patients in EDs, ICUs, and on patient floors, regardless of their designated training track. As such, the ACGME and ABIM acknowledge that even if a resident or fellow is unable to complete all rotations, they will be eligible to graduate and sit for the boards, provided the trainee has otherwise demonstrated competence in their area of specialty and can practice independently.

Thus, our training and education must evolve during the pandemic. Although we cannot lose focus on the task at hand—battling this disease and providing the highest quality of care to our patients—some creative steps and thoughtful measures need to be taken to ensure the continuity of resident and fellow education. Trainees need to continue to receive dedicated education and training in their specialties, in small, but hopefully meaningful, ways. For example, our cardiovascular department has implemented online conferences, journal clubs, case reviews, and question banks for fellows (Table 1). We have also instituted measures such as mandated days off to recuperate, backup fellows, and daily check-ins. Online meditation classes and “remote” happy hours have been used.

Beyond this, we have received incredible support from the NYC community at large. Every evening, the eerie silence that fills our city is replaced by collective applause from people all over, in an effort to give thanks for the work we do. Restaurants are donating food; others are donating handmade hats, masks, and shields for personal protective equipment. These measures are deeply meaningful, and they are the fuel that keeps us moving each day.

CONCLUSIONS

These are trying times, but HCWs and trainees will continue to persevere, and we will get through them. On the other side of this crisis, the rest of our lives and careers await.

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