

# Flattening the Curve: Minimizing the Impact of COVID-19 on a Pulmonary and Critical Care Medicine Fellowship Training Program

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## ABSTRACT

A pandemic threatens to disrupt many aspects of a fellowship training program. The University of Washington pulmonary and critical care fellowship program was the first in the United States to encounter coronavirus disease (COVID-19), and it has had the luxury of having adequate staffing and resources to date. In response to questions and concerns from our fellows about the pandemic, our program prioritized patient care, effective communication, and efforts to support fellow well-being. Additional considerations for programs during a health crisis include impacts on clinical care, scheduling, training, and formal education programs. Although we continue to adapt to the needs of our fellows, these early lessons learned may be helpful to those who are just beginning to experience the repercussions of COVID-19.

### Keywords

pandemic; communication; well-being; graduate medical education

The University of Washington pulmonary and critical care medicine fellowship program began the academic year with a new program director, a new program administrator, and all the challenges that accompany programmatic change. Six months in, we had fallen into the rhythm of the program life cycle and were enjoying our first diastole after submission of midyear milestones to the Accreditation Council for Graduate Medical Education

(ACGME). Our lull was broken when, in late January 2020, the first case of coronavirus disease (COVID-19) was identified in the state of Washington (1) and the first patient with COVID-19 died on February 29, 2020 (2). Soon thereafter, a COVID-19 outbreak in a long-term residential care facility near Seattle made national news, eventually leading to the death of 43 of its residents (3). As of early May 2020, there were nearly 1.2 million

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cases of COVID-19 in the United States and over 68,000 deaths (4). Although Washington has seen a plateau in cases (5), many health systems across the United States remain severely affected. At the onset of the pandemic, we awaited a massive surge of cases in Seattle that never came. Although our hospital systems have been stressed, we have not faced the critical shortage of physicians and resources that other programs have experienced.

Like most programs, ours was completely unprepared for the myriad ways in which it would need to respond to this health crisis. As COVID-19 cases in the community began to increase, our fellows came to program leadership with a variety of suggestions, questions, and concerns. They were worried about their personal safety, as well as the impact of COVID-19 on clinical care, training requirements, and their education. We were equally concerned with their well-being. We began preparing for a significant burden on our healthcare system while prioritizing exceptional patient care and trainee education. The conceptual framework for our response came from the ACGME's three stages of graduate medical education (GME): 1) "business as usual," 2) increased clinical demands, and 3) pandemic emergency status (6). In stage 1, many ACGME activities, such as site visits and ACGME surveys, are suspended, and telemedicine requirements are put into effect. With increased clinical demands in stage 2, guidance is provided for fellows working as attendings, education program changes, and review committee evaluation of disruptions. In stage 3, most or all trainees may be needed to shift to patient care and the majority of educational activities are suspended. Regardless of stage, programs must adhere to the overriding requirements of work hour limitations,

provision of resources and training, supervision requirements, and allowance for fellows to function in their core specialty. As members of a program that was affected early in the pandemic but has spent little time in stage 3, we share our approach to the crisis in several domains (Table 1). We hope that lessons learned from our fellowship program's experience with COVID-19 are helpful for other training program directors and faculty who work with trainees.

## COMMUNICATION

Communication is a challenge during any emergency response as information streams from multiple sources and policies rapidly evolve. From the outset of the COVID-19 pandemic, our fellows were simultaneously receiving information from their division, department, medical school, the GME office, individual hospitals, and the public health department, together with state and national updates from the news and social media. Fellows immediately noted the difficulty of keeping up with these many sources of information, with new and changing policies getting lost in the deluge of communications.

Effective communication with fellows can be modeled after the recommendations for Crisis and Emergency Risk Communication from the Centers for Disease Control and Prevention (7). The six principles of the Crisis and Emergency Risk Communication model are 1) be first, 2) be right, 3) be credible, 4) express empathy, 5) promote action, and 6) show respect. At times, these elements can be at odds with one another. Being first can be undermined by being right, but we found that our fellows preferred transparency and appreciated our acknowledgment of the many unknowns. We created a communication plan targeted specifically

**Table 1.** Considerations for fellowship training programs during a pandemic

Domain	Considerations	Examples
Communication	Format and frequency	Weekly e-mail to fellows summarizing clinical updates and providing access to important resources  Weekly video conference with fellows to address questions and concerns and to remain socially connected
	Stakeholders	E-mail to faculty with fellowship program updates such as surge team staffing or policies involving fellows  Targeted communication with clinic and research mentors regarding fellow schedule changes
	Policies and procedures	Keep policies and procedures in an easily accessible location with clearly dated documents
Well-being	Attend to physical and mental health of fellows	Consider the well-being of all fellows, not just those on affected services  Ensure fellows have access to counseling services  Extend support services (e.g., childcare, eldercare, and pet care) to fellows
	Address fellow questions and concerns	Weekly video conference with fellows to address questions and concerns and to remain socially connected
Clinical	PPE	Track PPE training for fellows at all clinical sites
	Role of fellows in clinical care	Invite trainees to share health concerns in caring for patients with suspected or proven COVID-19  Create policies for fellow involvement in procedures (e.g., bronchoscopy, intubation)
Scheduling	Existing clinical rotations	Restructure demanding clinical services (e.g., 1 wk on, 1 wk off or on a less strenuous clinical rotation)  Create an expanded risk pool for existing rotations; allow fellows to volunteer and select dates when possible
	Surge teams	Partner with other specialties and the graduate medical education office for surge planning  Create an expanded risk pool for staffing of surge teams; allow fellows to volunteer and select dates when possible
Training	Leave time	Clarify institutional leave policies and share these with fellows
	Board eligibility	Monitor board specialty websites and reassure fellows regarding board eligibility  Protect non-ICU clinical experiences as able
	Procedures	Closely track procedural competence
	ACGME requirements	Regardless of ACGME pandemic stage, ensure adherence to work hour limitations and provision of adequate resources, training, and supervision

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**Table 1. Considerations for fellowship training programs during a pandemic (continued)**

Domain	Considerations	Examples
Education	Conferences	Maintain educational conferences but move to a virtual format  Encourage faculty to protect educational time as clinical demands permit  Provide interactive education using video conference technology
	Pandemic-related educational endeavors	Include fellows in pandemic-related educational endeavors

*Definition of abbreviations:* ACGME = Accreditation Council for Graduate Medical Education; COVID-19 = coronavirus disease; ICU = intensive care unit; PPE = personal protective equipment.

at fellows that would highlight key messages, clarify pertinent policies, and summarize important revisions during a time of change. First, we considered various formats for communication, including a website or shared online space, e-mail, video conference, and group text messaging. As we have all experienced during this health crisis, the exponential increase in the volume of e-mail renders this medium relatively ineffective. We also considered relevant supervisory stakeholders, including program leadership and administrators; division and department leaders; site, rotation, and clinic directors; and research mentors. Ultimately, we used different communication strategies for different goals and target audiences. For fellows, a curated weekly e-mail provides clinical updates; quick links to resources such as recent town halls, symposia, or policy changes; and guidance on what to expect during the upcoming week. We also set up a weekly video conference with fellows to promote discussion and encourage fellows to ask questions and express concerns. Group text is used by fellows on clinical rotations for the more rapid communication needed to respond to clinical demands. General fellowship updates pertaining to COVID-19, such as

schedule changes and policies regarding procedures, were shared with faculty by e-mail and at section meetings. We have closely communicated with research and clinic mentors when schedule changes have impacted fellow responsibilities.

As hospital protocols rapidly developed and were revised, we recognized the need to have them available in a central location with clear language. An internal University of Washington Medicine (UW Medicine) COVID-19 website includes information on patient care protocols, personal protective equipment (PPE), telehealth, and policies on everything from parking to visitation. These are regularly updated and include easily discernable posting dates. For fellows, we have highlighted the most pertinent materials on this website, including protocols for airway management and other procedures, guidelines for critical care for COVID-19, and recommendations on PPE use.

**WELL-BEING**

Even before the COVID-19 pandemic, critical care physicians experienced one of the highest rates of burnout, a syndrome characterized by emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment (8). Compared

with the general population, medical trainees are more likely to experience burnout (9). The COVID-19 pandemic introduced multiple new stressors for fellows working in busy intensive care units (ICUs): a survey of students and affected trainees at the University of Washington revealed concern for one's personal health and that of family, friends, and colleagues, as well as moral distress arising from caring for critically ill patients who were often alone due to a strict no-visitation policy (10). In addition, daycare and school closures created additional stress and unanticipated new responsibilities for fellows with young children.

Almost all of our communication strategies targeted fellow well-being as uncertainty increased levels of anxiety and stress. We wanted fellows to have a clear path to receive help for physical and emotional health. The University of Washington GME office offers free and confidential counseling services for trainees and their partners. Fellows are encouraged to attend these sessions, and our program has committed to freeing fellows from clinical responsibilities to allow self-care. In addition, we shared resources available to all healthcare team members at UW Medicine, with topics ranging from how to manage anxiety and uncertainty to support for partners. The university also collated offers of help from the broader community with childcare and pet sitting that we shared with fellows. Changes to the clinical schedule were made to allow breaks from demanding clinical rotations. To address the challenges of caring for patients without family visitation, we partnered with palliative care teams to use video conference platforms to connect more meaningfully with patients' families. Most importantly, we have focused on staying socially connected during a time of physical

distancing. A weekly "happy hour" video conference allows program leaders to check in and fellows to share questions and concerns. This venue has been particularly valuable as a way to celebrate wins—whether clinical or in personal life.

## CLINICAL CARE

During a pandemic caused by a respiratory virus, the first priority for healthcare workers is appropriate training in PPE. Policies may be hospital specific, and programs are responsible for ensuring that trainees have undergone N95 respirator mask fit testing and other PPE training at all clinical sites. Next, we tackled questions from fellows about their role in clinical care. Early on, our hospital leadership restricted trainees from participating in the care of patients with suspected or proven COVID-19, but this decision changed as we began to see patients with COVID-19 in a wide variety of clinical settings. Trainees are an essential part of the workforce, and their expertise in critical care during such a pandemic is invaluable. Fellows were invited to share their concerns about participating in clinical care so that we could reallocate those who were pregnant, immunocompromised, or had other health concerns to rotations that minimized their risk. This included having fellows with health concerns on non-COVID ICU rotations and avoiding contact with those patients being evaluated for COVID-19. Other fellows remained in the outpatient setting, providing telehealth. Procedurally, we decided to have airway management for patients with suspected or proven COVID-19 performed by the most experienced attending anesthesiologists at each hospital. Bronchoscopy, a highly aerosol-generating procedure, is discouraged in patients with proven COVID-19; for patients with

suspected or proven COVID-19, our division has elected to have attendings perform bronchoscopy without a fellow to minimize risk and preserve PPE.

## SCHEDULING

Even before a surge in the number of patients with COVID-19, fellows experienced the emotional strain of the pandemic. It quickly became evident that our standard 4-week-long rotations on medical ICU rotations with limited days off per month would not be a sustainable model during a time of high stress. With fellows spread across four different clinical sites, each providing single-source funding allocation, this required careful consideration of schedule changes. For fellows on existing medical ICU/COVID-19 ICU rotations, we instituted a respite plan of 7 days in the ICU, followed by 1 week off or on a lighter rotation at the same clinical site before returning to the ICU again. Although each clinical site had a slightly different respite plan, our goal was to be equitable and transparent in this process.

We also considered how our trainees would participate in our surge plan. On the basis of fellow feedback, our priorities were to 1) accommodate trainees with health concerns that would preclude working in COVID-19 ICUs; 2) allow fellows to select their dates of additional coverage, if possible; and 3) provide advanced notice, when possible, about coverage needs to allow fellows to plan their personal schedules. In anticipation of a surge, we expanded our risk pool from one fellow per month to three or four fellows per day to cover multiple hospitals, recognizing that additional coverage needs would arise for fellows unable to work due to illness or childcare responsibilities. Fellows in the risk pool included those on ambulatory or non-

ICU electives, as well as fellows on research blocks. Fellows could continue moonlighting, provided that they prioritized their risk pool obligations. This pool provides coverage for fellows on existing rotations as well as staffing for new surge teams. Currently, fellows are not asked to serve in any role but that of a fellow. Importantly, we have had the luxury of making these decisions regarding fellow roles and responsibilities because we have not experienced a critical shortage of physicians.

Emergency medicine, internal medicine, and pulmonary and critical care medicine have been the specialties most affected by the COVID-19 pandemic. All three training programs independently began creating risk pools early in the course of the pandemic, anticipating that our trainees would be at the front lines. Recently, our GME office has partnered with the healthcare system to participate in surge planning. They have asked program directors to identify a cross-specialty pool of residents and fellows to help care for patients during a time of increased strain. In retrospect, earlier collaboration with partners in other specialties and the GME office could have considerably streamlined the surge-planning process to align rotation schedules and ensure equity in days worked and time off.

## TRAINING

As it has disrupted everything else, the COVID-19 pandemic has also affected the training experience in a number of unique ways. Fellows have limited sick and vacation leave and may accrue absences owing to illness, quarantine, or childcare needs. Early on in the pandemic, because of difficulty obtaining appointments and slow turnaround time, individuals who



underwent COVID-19 testing were out of work for several days and concerned about not having sufficient leave time. At our institution, this time has been covered with paid administrative leave. Clarifying institutional leave policies up front and sharing this with fellows provided reassurance.

Because clinical experiences during the pandemic will be disrupted and prolonged illness may occur, some fellows have been concerned about board eligibility after the pandemic. Trainees must complete the required duration of training, as well as a minimum duration of full-time clinical training, to be eligible for board certification. Many of our core clinical services have seen a significant decline in non-COVID-19 cases: less trauma, less postoperative surgical care, and fewer solid organ and hematopoietic stem cell transplants. Fortunately, the American Board of Internal Medicine communicated on March 13, 2020, that they did not “anticipate interruptions in training related to COVID-19 as adversely affecting board eligibility for the vast majority of otherwise competent residents and fellows.” In addition, they clarified leaves of absence and vacation, as well as deficits in required training time to be eligible for boards (11).

Because most of our graduating fellows are on a research training pathway, they have already completed nearly all of their clinical responsibilities. Training programs that are primarily clinical may be more affected, especially by a protracted pandemic. We have intentionally not included fellows on nonmedical ICUs (e.g., trauma ICU or neurocritical care) in the risk pool to try to protect those clinical experiences. Many fellows who have helped with clinical care have taken time from their research endeavors, and it is not yet

known how their research training will be affected.

The pandemic will also affect procedural exposure. Our hospitals stopped performing pulmonary function and cardiopulmonary exercise testing during our surge, and our fellows are not participating in airway management for patients with suspected or proven COVID-19. Ensuring adequate breadth of clinical exposure will require increased attention in the coming months to years to ensure that fellows are able to achieve procedural competence before graduation. Even during a pandemic, programs need to ensure that fellows adhere to ACGME work hour limitations and receive adequate resources, training, and supervision.

## EDUCATION

Fellows are both medical providers and learners. The increased clinical demands of caring for a large surge of seriously ill patients threatens to push formal educational endeavors to the sidelines. We found we needed to make a concerted effort to maintain the educational mission of the program despite the pandemic. Our primary educational conferences include a case-based conference for fellows and faculty, a teaching conference for fellows on core topics in pulmonary and critical care medicine, and a research works-in-progress meeting. Despite high clinical volumes, we believed there would be value to maintaining normalcy and prioritizing education. All conferences were moved to virtual formats via video conference, and we were surprised and pleased to see attendance for all conferences increase. We have invited faculty and fellows to present “the best thing that happened to me this week” at our weekly case conference and share their photos and stories with our community. On four occasions, we have

used this block of time to hold a 2-hour symposium on COVID-19. Faculty, fellows, and colleagues in the region have presented clinical, laboratory medicine, and pathology updates; discussed ethics and resource allocation; and answered questions from the 300 people in virtual attendance. We have maintained the interactive nature of our fellows teaching conference using features available in our video conference platform. We have also invited fellows to participate in additional educational activities during the COVID-19 pandemic. Fellows in our clinician-educator track have worked with faculty on creating training materials on critical care topics for non-critical care providers who may be called on to provide help during the COVID-19 surge (12, 13).

### SUPPORTING OTHER PROGRAMS

Whether through donations of food and PPE, evening serenades for healthcare workers, or collaboration across regional hospital systems, we have all seen our communities grow stronger as a result of the COVID-19 pandemic. There are many ways that less affected programs can support training programs under greater strain. As we recognized that Seattle would be relatively spared and witnessed the overwhelming burden on other programs across the United States, our fellowship program and division sought to share their early experiences with others. Early in the pandemic, the Association of Pulmonary and Critical Care Medicine Program Directors moved its annual meeting to a virtual format. Just as patients with COVID-19 began to present to hospitals in Seattle, the Association of Pulmonary and Critical Care Medicine Program Directors (APCCMPD) created time and space at their virtual conference for program leaders to share their

approaches to the oncoming pandemic. This group has proved invaluable as a support network. Program directors have been informally sharing their program responses and also checking in on one another personally. In addition, UW Medicine has shared its policies and procedures with the public, and our division has shared recordings of our COVID-19 symposia. Finally, several of our faculty and a fellow have traveled to help programs with physician shortages.

### CONCLUSIONS

An unanticipated global pandemic affects every facet of a fellowship training program. Thoughtful questions from our fellows allowed us to identify the domains most in need of consideration and response. Prioritizing clear and consistent communication and supporting fellow well-being during a time of great uncertainty are paramount. Fellows were also eager for guidance on clinical care, the impact of a pandemic on their training, and plans for maintaining education as a core focus of training. Our program's responses to the pandemic have been possible because our system has only experienced moderate strain. We hope our early experience will help others as they work to support their fellows during an unexpected and tumultuous time.

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**Author disclosures** are available with the text of this article at [www.atsjournals.org](http://www.atsjournals.org).



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