

Creating a COVID-19 Action Plan for GME Programs

Marja Anton, MD
Josephine Wright, MD
Matthew Braithwaite, MD
Greg Sturgeon, MD, MPH

Brian Locke, MD
Caroline Milne, MD
Aaron Crosby, MD

In December 2019, an infectious respiratory illness of unknown causes was first identified in the city of Wuhan, in the Hubei province of China. The virus responsible for this syndrome was identified as a novel strain of coronavirus (SARS-CoV-2). It has subsequently undergone global spread, with the first case of the coronavirus disease (COVID-19) in the United States reported on January 20, 2020.¹ As of April 30, 2020, there were over 3 million confirmed cases globally.²

Graduate medical education (GME) programs face numerous challenges posed by the spread of COVID-19, including short staffing due to resident illness and quarantine measures, heavy workloads from a high burden of disease in the population, and disruption of normal training activities and schedules. Training programs all over the world are currently experiencing this initial surge of COVID-19 infections, but it is possible that programs will need to plan for multiple waves of the disease.³

An institution's COVID-19 action plan should be developed by GME leaders in conjunction with clinical operations, employee health, and infection control leadership. Programs should develop strategies that balance resident and patient safety, clinical service, and education.

Resident and Patient Safety

During previous pandemics of viral illness, such as the global H1N1 influenza pandemic of 2009, physicians in training have reported high levels of exposure to circulating viruses, as well as low levels of adherence to work restrictions and personal protective equipment (PPE) recommendations.⁴ Appropriate PPE usage is as important for specialty training programs as it is for generalist services, as specialty programs care for patients on units throughout the hospital and draw from smaller pools of staff members. At all stages of pandemic preparedness, trainees should be given the opportunity to practice appropriate PPE

techniques. For patient care requiring airborne precautions, trainees should be able to demonstrate the ability to appropriately use a powered air-purifying respirator and/or a N95 mask. Programs should be mindful that the model of N95 mask for which their residents are fit must match those available at each of their sites; fit testing is required for each model used. Consideration at some institutions has been given to excluding trainees from aerosolizing procedures on patients suspected of having COVID-19.⁵ Trainees often serve as leaders on cardiac arrest response teams. While the risk of COVID-19 transmission during cardiopulmonary resuscitation is not precisely known, the role of residents on cardiac response teams and any need for changes to standard "code blue" protocols should be discussed.⁶

Modification of normal program activities to comply with public health recommendations regarding social distancing must be considered.⁷ One of the most challenging elements of COVID-19 epidemiology is the high rate of presymptomatic transmission.⁸ There is a possibility that the virus could spread within a residency program before any residents even report symptoms. Adjustments should be made to decrease or eliminate close resident contact when possible.⁹ Programs have devised electronic means of performing patient handoffs, educational conferences, meetings, and social events.^{5,10,11} High-touch surfaces in shared workspaces (including keyboards, telephones, mobile workstations, door handles, and pagers) should be cleaned regularly using an agent approved for disinfection.¹² When appropriate, conversations with patients can occur using communication equipment. Physical examinations by trainees can be grouped with attending physician assessments so that trainees do not have to enter patient rooms multiple times. This also has the benefit of decreasing the already limited amount of PPE used in caring for patients. Some surgical services have increased the use of dissolvable sutures so that fewer return visits for suture removal need to be performed.¹³

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TABLE

Checklist of Considerations for GME Pandemic Preparedness

Resident and Patient Safety	Baseline Preparedness	ACGME Stage 1	ACGME Stage 2	ACGME Stage 3
Perform personal protective equipment training and practice	x	x	x	x
Ensure fit testing for correct personal protective equipment	x	x	x	x
Develop policy outlining trainee role in aerosolizing procedures		x	x	x
Evaluate need for adjustments to cardiac arrest response protocol		x	x	x
Make adjustments to reduce close trainee-trainee contact		x	x	x
Perform regular cleaning of shared workspaces		x	x	x
Changes to care delivery aimed at decreasing chance of viral transmission		x	x	x
Review institutional illness and return to work and testing policies		x	x	x
Monitor resident emotional well-being	x	x	x	x
Clinical Service				
Review pandemic materials on ACGME website		x	x	x
Discuss patient surge plan with clinical operations leadership			x	x
Identify emergency roles suitable for different groups of trainees		x	x	x
Ensure adequate supervision of redeployed trainees			x	x
Educate trainees in the use of telehealth resources	x	x	x	x
Design expanded backup coverage plan		x	x	x
Identify backup childcare resources for trainees		x	x	x
Education				
Develop system for using teleconferencing software for didactics		x	x	x
Identify ways to use the pandemic as educational opportunity		x	x	x
Monitor trainee exposure to required procedures	x	x	x	x
Develop alternative ways of exposing residents to procedures		x	x	x
Consider using downtime for board review and scholarship		x	x	x
Develop protocol for clear, consistent updates to trainees		x	x	x
Have protocol for modified onboarding/offboarding procedures	x	x	x	x
Evaluate ways to promote sense of community in pandemic		x	x	x

Abbreviations: GME, graduate medical education; ACGME, Accreditation Council for Graduate Medical Education.

Note: ACGME Stage 1 "Business as Usual": No significant disruption of patient care and educational activities; ACGME Stage 2 Increased Clinical Demands: Some residents/fellows need to shift to patient care duties; some educational activities are suspended; ACGME Stage 3 Pandemic Emergency Status: Most or all residents/fellows need to shift to patient care; majority of educational activities are suspended.¹⁴

Institutional policies for returning to work after illness vary depending on available resources. Programs should be familiar with their institution's illness and COVID-19 testing policies. In general, residents with symptoms such as fever, cough, malaise, and myalgias should be excluded from work-related activities. Residents at risk of developing complications from COVID-19, such as those with immunosuppression or pregnancy, should be given an opportunity to confidentially contact program leadership with their concerns so that accommodations can be made to limit their exposure as much as possible. Finally, trainees during prior pandemics have reported high levels of stress and anxiety: programs should ensure mechanisms are in place for monitoring trainee emotional well-being.¹⁵

Clinical Services

Resident physicians are a critical component of the health care workforce and can be an asset in caring for those infected with COVID-19. Challenges to maintaining required clinical services faced by training programs will vary by specialty and disease prevalence. The Accreditation Council for Graduate Medical Education has outlined 3 levels of disruption to training programs, ranging from "business as usual" to emergency status (TABLE).¹⁴ In areas with high COVID-19 prevalence, health systems have been strained to the breaking point. Training programs in hospital systems overwhelmed by COVID-19 cases may find that they must shift their residents to help meet increased patient care demands. Training programs must partner early with clinical operations leaders in their health care system to develop a plan

for what increased staffing requirements will be needed, as well as what can reasonably be provided by trainees. In a pandemic emergency, trainees will likely be asked to shift to higher acuity settings, such as intensive care units or hospital wards. In some cases, trainees may be asked to provide care in areas in which they have not traditionally been assigned.⁵ Institutional GME leadership should identify potential roles suitable for different groups of trainees before emergency status is reached. Programs should ensure that adequate supervision of trainees is provided, especially for those assigned to units with which they are less familiar.

Clinical services also become disrupted in areas of lower COVID-19 prevalence due to the canceling of elective procedures and limiting of travel outside the home. Educating trainees in the use of telehealth equipment, procedures, and etiquette is vital to ensure patients are still able to receive care.¹³ Due to the likelihood of trainees becoming ill during the pandemic, thought should be given to expanding backup coverage of critical service lines.^{9,10} With the closure of schools and day care facilities, alternative sources of childcare should be identified.

Education

The challenges to trainee education from the COVID-19 pandemic vary by specialty. Many programs have reported success in providing didactics over video-conferencing software, even for interactive sessions such as morning report.^{11,16–18} In addition to maintaining education as a priority, continuing educational conferences helps maintain a feeling of normalcy, which programs have reported residents desire.¹⁰ The COVID-19 pandemic itself has served as an educational opportunity for residents to learn about epidemiology, population health, systems-based care, and advocacy.¹¹

Some programs will experience an impact on their trainees' ability to participate in enough cases or clinical activities to advance their training. This has been noted as a concern in surgical specialties, radiology, and radiation oncology.^{16–19} Possible methods proposed for providing exposure to a larger number of cases include the use of simulation centers, faculty-led review of surgical videos, and online discussion of board examination questions and topics.¹⁷ The cost of online and teleconferencing resources and simulation center time must be considered. Institutional subscriptions to these services should be leveraged when possible. Blinded historical radiology studies can be considered for evaluating reading aptitude.¹⁶ Time away from clinical duties due to canceled elective cases can be

spent on scholarly activity.¹⁹ Ultimately, program leadership will need to closely monitor resident exposure to critical procedures in order to ensure they have the experience necessary to progress.

Finally, providing trainees with clear, consistent messaging is both challenging and important. Programs should consider developing a standardized format and frequency of updates to prevent confusion from information overload.^{10,20} The pandemic also threatens the sense of community within programs. Programs should consider using virtual hangouts, social media, and check-ins with mentors to maintain this sense of community during the pandemic. The trajectory of the pandemic is uncertain; therefore, programs should have protocols for onboarding and graduating trainees if in-person orientations and graduations are not possible.

The world currently faces perhaps the greatest acute public health crisis since the 1918 influenza pandemic. It is not known how long the challenges imposed by the COVID-19 pandemic will persist. However, GME programs will likely need to be prepared for future waves of infection. Each institution's response must be tailored to its unique circumstance and constantly adjusted as the situation develops. Now is the time to refine strategies that balance safety, clinical service, and education in order to weather the storm.

References

- Holshue M, DeBolt C, Lindquist S, Lofy KH, Wiesman J, Bruce H, et al. First case of 2019 novel coronavirus in the United States. *N Engl J Med*. 2020;382(10):929–936. doi:10.1056/NEJMoa2001191.
- World Health Organization. Coronavirus Disease 2019 (COVID-19) Situation Report—101. <https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200430-sitrep-101-covid-19.pdf?sfvrsn=2b>. Accessed May 21, 2020.
- Leung K, Wu JT, Liu D, Leung GM. First-wave COVID-19 transmissibility and severity in China outside Hubei after control measures, and second-wave scenario planning: a modelling impact assessment. *Lancet*. 2020;395(10233):1382–1393. doi:10.1016/S0140-6736(20)30746-7.
- Perio MAD, Brueck SE, Mueller CA, Milne CK, Rubin MA, Gundlapalli AV, et al. Evaluation of 2009 pandemic influenza A (H1N1) exposures and illness among physicians in training. *Am J Infect Control*. 2012;40(7):617–621. doi:10.1016/j.ajic.2012.01.014.
- Ammar A, Stock AD, Holland R, Gelfand Y, Altschul D. Managing a specialty service during the COVID-19

- crisis [published online ahead of print April 17, 2020]. *Acad Med*. doi:10.1097/ACM.0000000000003440.
6. Couper K, Taylor-Phillips S, Grove A, Freeman K, Osokogu O, Court R, et al. COVID-19 in cardiac arrest and infection risk to rescuers: a systematic review. *Resuscitation*. 2020;151:59–66. doi:10.1016/j.resuscitation. 2020.04.022.
 7. Centers for Disease Control and Prevention. Infection Control: severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). https://www.cdc.gov/coronavirus/2019-ncov/infection-control/control-recommendations.html?CDC_AA_refVal=https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control.html. Accessed May 21, 2020.
 8. Arons MM, Hatfield KM, Reddy SC, Kimball A, James A, Jacobs JR, et al. Presymptomatic SARS-CoV-2 infections and transmission in a skilled nursing facility [published online ahead of print April 24, 2020]. *N Engl J Med*. doi:10.1056/NEJMoa2008457.
 9. Nassar AH, Zern NK, McIntyre LK, Lynge D, Smith CA, Petersen RP, et al. Emergency restructuring of a general surgery residency program during the coronavirus disease 2019 pandemic [published online ahead of print April 6, 2020]. *JAMA Surg*. doi:10.1001/jamasurg. 2020.1219.
 10. Rakowsky S, Flashner BM, Doolin J, Reese Z, Shpilsky J, Yang S, et al. Five questions for residency leadership in the time of COVID-19 [published online ahead of print April 13, 2020]. *Acad Med*. doi:10.1097/ACM.0000000000003419.
 11. Liang ZC, Ooi SBS, W. Wang Pandemics and their impact on medical training [published online ahead of print April 17, 2020]. *Acad Med*. doi:10.1097/ACM.0000000000003441.
 12. United States Environmental Protection Agency. List N: Disinfectants for Use Against SARS-CoV-2. <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>. Accessed March 21, 2020.
 13. Eichberg DG, Shah AH, Luther EM, Menendez I, Jimenez A, Perez-Dickens M, et al. Letter: academic neurosurgery department response to COVID-19 pandemic: the University of Miami/Jackson Memorial Hospital model [published online ahead of print April 11, 2020]. *Neurosurgery*. doi:10.1093/neuros/nyaa118.
 14. Accreditation Council for Graduate Medical Education. Three stages of GME during the COVID-19 pandemic. <https://acgme.org/COVID-19/Three-Stages-of-GME-During-the-COVID-19-Pandemic>. Accessed May 21, 2020.
 15. Rambaldini G, Wilson K, Rath D, Lin Y, Gold WL, Kapral MK, et al. The impact of severe acute respiratory syndrome on medical house staff: a qualitative study. *J Gen Intern Med*. 2005;20(5):381–385. doi:10.1111/j.1525-1497.2005.0099.x.
 16. Slanetz PJ, Parikh U, Chapman T, Moutzas C. Coronavirus disease 2019 (COVID-19) and radiology education—strategies for survival [published online ahead of print April 23, 2020]. *J Am Coll Radiol*. doi:10.1016/j.jacr.2020.03.034.
 17. Chick RC, Clifton GT, Peace KM, Propper BW, Hale DF, Alseidi AA, et al. Using technology to maintain the education of residents during the COVID-19 pandemic [published online ahead of print April 21, 2020]. *J Surg Educ*. doi:10.1016/j.jsurg.2020.03.018.
 18. Crosby DL, Sharma A. Insights on otolaryngology residency training during the COVID-19 pandemic [published online ahead of print April 21, 2020]. *Otolaryngol Head Neck Surg*. doi:10.1177/0194599820922502.
 19. Dinh TT, Halasz LM, Ford E, Rengan R. Radiation therapy in King County, Washington during the COVID-19 pandemic: balancing patient care, transmission mitigation, and resident training [published online ahead of print March 27, 2020]. *Adv Radiat Oncol*. doi:10.1016/j.adro.2020.03.007.
 20. Poonia SK, Rajasekaran K. Information overload: a method to share updates among frontline staff during the COVID-19 pandemic [published online ahead of print April 21, 2020]. *Otolaryngol Head Neck Surg*. doi:10.1177/0194599820922988.



Marja Anton, MD, is Chief Medical Resident, Department of Medicine, Division of General Internal Medicine, University of Utah School of Medicine; **Josephine Wright, MD**, is Chief Medical Resident, Department of Medicine, Division of General Internal Medicine, University of Utah School of Medicine; **Matthew Braithwaite, MD**, is Chief Medical Resident, Department of Medicine, Division of General Internal Medicine, University of Utah School of Medicine; **Greg Sturgeon, MD, MPH**, is Chief Medical Resident, Department of Medicine, Division of General Internal Medicine, University of Utah School of Medicine; **Brian Locke, MD**, is Chief Medical Resident, Department of Medicine, Division of General Internal Medicine, University of Utah School of Medicine; **Caroline Milne, MD**, is Professor of Medicine and Program Director of Internal Medicine Residency, Department of Medicine, Division of General Internal Medicine, University of Utah School of Medicine; and **Aaron Crosby, MD**, is Adjunct Assistant Professor of Medicine, Associate Program Director, Internal Medicine Residency, Department of Medicine, Division of General Internal Medicine, University of Utah School of Medicine and Hospitalist, Department of Medicine, Intermountain Medical Center.

Corresponding author: Aaron Crosby, MD, University of Utah, Internal Medicine Residency, 30 North 1900 East, Room 4C104, Salt Lake City, UT 84132, 801.581.7606, aaron.crosby@hsc.utah.edu