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How To Maximize Trainee Education During the Coronavirus Disease-2019 Pandemic: Perspectives From Around the World



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The emergence of coronavirus disease-2019 (COVID-19), caused by the severe acute respiratory syndrome novel coronavirus-2 (SARS-CoV-2), in late 2019 has dramatically altered the practice of medicine. SARS-CoV-2 spreads mainly through respiratory droplets with the risk

of spread increasing with closer proximity to an infected person. Owing to both the community spread of SARS-CoV-2 and the morbidity and mortality caused by COVID-19, social distancing is a central cornerstone of disease management. Furthermore, COVID-19 has resulted in additional health care system constraints, including a need to preserve personal protective equipment (PPE) and conserve health care personnel for management of critically ill patients. All of these factors have worked in concert to dramatically limit the performance of non-emergent endoscopy and delivery of in-person clinical visits. Although this management strategy has clearly impacted clinical activities, it has had an even greater impact on gastroenterology and endoscopy training. In this article, we present an assessment of the impact of COVID-19 on GI trainees, highlight strategies to mitigate its impact on education and well-being, and ultimately propose strategies to return trainees to a “new normal” endoscopic and clinical practice.

Impact of COVID-19 on Trainee Clinical and Endoscopy Experience

Trainees have been uniquely impacted by the COVID-19 pandemic. Owing to the significant increase in hospital admissions of COVID-19 patients and the need to manage surge capacity, many clinicians—including trainees—have been deployed in units dedicated to the management of these patients; in fact, Repici et al¹ found that a majority of Italian endoscopy units relocated endoscopists to other hospital departments. Furthermore, owing to the high virulence of SARS-CoV-2, emergent demand for stringent standards of infection control, and rationing of necessary

PPE,² the overall endoscopy volumes decreased dramatically, with only a minority of units performing outpatient procedures. To further minimize risk, staffing was restricted to essential personnel, often excluding fellows from endoscopic procedures. Consistent with this, approximately one-half of North American endoscopy units reported that they completely eliminated trainee involvement in endoscopy during the pandemic.³

Adapting GI Fellowship Training During the COVID-19 Pandemic

Even in the best of times, gastroenterology and endoscopy training is characterized by a perceivably unyielding consolidation of diverse sets of cognitive and technical skills. Strategies for rebuilding training programs must address these issues of training with innovative solutions that accommodate the constraints created by the pandemic. Importantly, both trainees and trainers alike need to adopt these changing models. Although having gained some early momentum in pre-COVID days, the implementation of new teaching paradigms needs to be greatly accelerated. Successful transformation of training programs will require embracing a technology-driven future. It is important that programs not allow the pandemic to arrest training, but instead begin implementing these changes.

Role of GI Societies

The GI societies have been at the forefront in providing unique and impactful educational opportunities to trainees both regarding the COVID-19 pandemic as well as general gastroenterology and endoscopy. In the United States, all 3 major societies have produced high-quality content in association with physician leaders. For example, the American Gastroenterological Association has a specific web destination for fellows (GI Distance Learning; <http://agau.gastro.org/diweb/catalog/q/GI-Distance-Learning/>). In a similar fashion, the American College of Gastroenterology

Most current article

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0016-5085/\$36.00

<https://doi.org/10.1053/j.gastro.2020.05.012>

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offers programs such as a weekly Virtual Grand Rounds (<https://gi.org/education/acg-virtual-grand-rounds/>) on topics such as celiac disease and *Clostridium difficile* infection; and, on GI LEAP (<https://learn.asge.org>), the American Society for Gastrointestinal Endoscopy (ASGE) is hosting weekly interactive sessions (ASGE Endo Hangouts) focused on trainee education led by world-class endoscopic experts. Of note, all programs are free to trainees, allowing fellows to take advantage of multiple activities. Local and regional GI societies are similarly addressing trainee member needs by offering new fellows' series and sharing virtual educational opportunities across institutions. Similarly, in Europe, many national societies have begun dedicated programs to keep fellows engaged on the topics of inflammatory bowel disease, liver disease and transplantation, endoscopy and general GI practice. Access to well-known international thought leaders is being offered through webinars and international collaborations to develop endoscopic online learning platforms for live endoscopy as well as on-demand videos are underway.

Social Media and Webinars

Social media, specifically Twitter, has emerged as a unique source of education for trainees. Although social media "education" traditionally occurred in an unstructured manner via presentation and discussion of unique cases as well as journal articles, there has now been a movement towards increasing rigor to such education. In the gastroenterology community specifically, several structured conversations now occur weekly such as @MondayNightIBD, @GIJournal, and #ScopingSundays. In these weekly chats, trainees and staff physicians discuss clinical and endoscopic dilemmas as well as impactful journal articles. Although conversations occur "live," they are permanently available for trainee review and can be accessed on any mobile device.

Trainees should also join the larger GI community by participating in webinars directed toward practicing gastroenterologists. These webinars may be hosted by the GI societies, as well as by industry. Importantly, these on-line learning programs are almost always available on demand to accommodate complexities in trainee schedules.

Remote Patient Care and Rounding

Both inpatient and outpatient consultative care is of central importance to gain the cognitive skills required for independent practice. During the pandemic, gastroenterologists were initially "forced" to adopt telehealth technology, but it seems that this will be a welcome, lasting remnant of the pandemic. As with established GI providers, trainees will need to quickly incorporate telehealth into their future practice, as well as associated nuances such as billing and reimbursement. Thus, trainee exposure to these new platforms is vital.

Inpatient consultative services have largely remained intact with virtual rounds. Although live visits by trainees with inpatients have been significantly decreased, teams have retained some semblance of normalcy by reviewing clinical history and imaging together (virtually) and jointly devising diagnostic and treatment plans. Similarly, the optimal methods of including trainees in ambulatory care telemedicine are

unknown, because most existing options are cumbersome. Ideally, the practice of having a trainee present their independently formulated patient management plan to the attending for review and critique can and should be preserved.

Video-Based Education

There is a plethora of high quality, full-length and edited endoscopy videos for procedures that are both "routine" and novel. Although some of these videos are available on social media, YouTube remains the most consistent repository of high-quality endoscopic videos. Although review of these single videos may be useful, it is important to consider obtaining access to more comprehensive endoscopic video libraries (such as those produced by GI societies) that more thoroughly discuss all aspects of procedures (eg, ASGE GI Leap). Additional independent learning platforms that combine video libraries, journal articles, webinars, and endoscopy courses are being developed.

Training programs are encouraged to install video recording capabilities, if not already in place. This process allows for trainees to review "their" cases remotely and facilitates a more thorough case discussion. Fellows should also be encouraged to develop video libraries that can be reviewed and shared with other trainees.

Simulation

In general, and even before the pandemic, the GI community had been slower to adopt simulation-based learning. This may be, in part, related to the traditionally high procedure volume leading to trainees seeking out "actual" cases rather than utilizing simulation. However, given the pandemic-associated limitation on endoscopy volume and trainee participation, this is a time for training programs to "rediscover" simulation. Simulators now exist for all major domains of gastrointestinal endoscopy including esophagogastroduodenoscopy, colonoscopy, endoscopic retrograde cholangiopancreatography, and endoscopic ultrasound examination.⁴ Furthermore, there is ample evidence that use of simulators facilitates trainee acquisition of the necessary technical skills to achieve competence in these endoscopic procedures.⁵ Partnership with industry will be critical in this space to offset costs and have access to expertise in innovation in this space. Industry partners will benefit from this investment as they can help to play a role in ensuring their future in the endoscopy market. GI societies will also play an important role in this area as educational grants become restricted to larger national groups.

Additional Considerations

This time period of decreased endoscopy volume also offers opportunities to refine medical knowledge in increasingly complex fields such as inflammatory bowel disease and hepatology, as well as develop proficiencies in techniques such as manometry, video capsule endoscopy and other nonendoscopic procedures. This time may also be ideal to initiate or complete research projects, depending on the availability of existing data. Programs should encourage fellows to practice self-directed learning and tailor their time

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Table 1. Phased Approach to Gastroenterology Training During and After the COVID-19 Pandemic

	Peak Phase	Plateau Phase	Recovery Phase
Hands-on endoscopic training	Eliminate/significantly reduce trainee involvement to decrease exposure/preserve PPE	Introduce trainees to inpatient endoscopy Introduce senior trainees to ambulatory endoscopy	Consider adding trainees to new ambulatory endoscopy sessions (eg, evening and/or weekend sessions)
Consultations	Implement telemedicine for nearly all consultations (inpatient and outpatient) to reduce exposure	Consider in-person visits for new inpatient consultations Continue telemedicine for follow-up inpatients and most outpatient visits	Continue to include trainees in outpatient telemedicine consultative training
Simulation-based training	Develop a resource library for trainees regarding institutional, regional and national simulation-based training opportunities	Introduction of local simulation-based learning opportunities while maintaining appropriate physical distancing	Societies work in concert with training programs to offer regional-based simulation opportunities (multiple institutions pooling resources)
Virtual learning	Local web-based lectures (eg, grand rounds) with a focus on interactive learning Enhance video-based education (ie, recorded endoscopy cases) with joint trainee/senior attending review of cases National webinars/didactics, primarily via GI societies Use social media resources		

COVID-19, coronavirus disease-2019; PPE, personal protective equipment.

during this phase. Although a first-year trainee can benefit from augmenting their knowledge in all topics cognitive and endoscopic, a graduating trainee would do best to reflect on areas of deficiency and adjust their schedule to areas in need. The impact on training may be hardest felt by those trainees undergoing advanced additional training in either endoscopy, inflammatory bowel disease, esophageal diseases or hepatology. The successful ascent during this year of training requires a steep learning curve and heavily depends on the patient and procedure volume and intensity. In a recent North American survey conducted during the pandemic, nearly one-half of advanced endoscopy trainees were not participating in procedures and the overall therapeutic endoscopy volume had greatly decreased.³ A month “out” of advanced training represents nearly 10% of the entire fellowship and, thus, supplementing the patient volume during the residual months will be critically important.

How to “Restart” Training after the COVID-19 Pandemic

Discussions around restarting gastroenterology training are in full swing and are slowly being enacted around the world.^{6,7} Although the “ideal” strategies are quite varied and will constantly evolve, there is some consensus that local disease prevalence, availability of personnel, access to PPE and testing, and monitoring for resurgence will be critical factors guiding implementation. There is universal recognition that the “pause” on elective patient care has created a tremendous backlog of deferred cases. As an example, given the annual endoscopic volume in the United States⁸ and the duration of the pause, it is estimated that there will be >3 million GI procedures that need to be performed in addition to the typical caseload. If outpatient gastroenterology and hepatology patients are included, these numbers become

significantly higher. Thus, GI practices will need to balance atypically large case volumes while continuing to provide high-quality training. A framework that emphasizes safety and efficiency when reincorporating trainees into this unprecedented era of patient care must be adopted (Table 1).

Safety

GI fellows must receive appropriate training in infection control and use of PPE as it pertains to inpatient rounds, outpatient clinics, and endoscopic procedures. Physical distancing should be continued during resumption of training activities, and fellows should be assigned designated seats and phones. Moreover, pairing individual fellows with a single dedicated gastroenterology faculty member may decrease the risk of cross-infection. Additionally, these teams can develop specific aims to achieve for each patient to facilitate goal-oriented training. Finally, unit leadership must emphasize the importance of longitudinal adherence to these measures, because fatigue may result in safety lapses.

Efficiency

A primary emphasis should be placed on filling all available patient care slots to maximize training opportunities and provide the necessary patient care. If patient care and work hours are expanded, such as offering weekend sessions, trainees should have the opportunity to participate when possible. However, these schedules must be arranged thoughtfully, wherein junior trainees may reinstate their endoscopy in a less time-sensitive area (eg, inpatient endoscopy) and senior trainees may assist in the high-volume ambulatory practice areas. Programs will also have to be mindful of the availability of resources such as PPE when creating these strategies. Similarly, trainees will

need to efficiently manage their own schedules and may even consider reducing vacation, while being mindful to balance trainee well-being.

Well-Being and Career Perspectives

During the recovery from the pandemic, training programs should not underestimate the emotional toll it will have had on trainees. New and incoming trainees, who endured the challenges of medical residency and the fellowship application process knowing that their efforts would be rewarded by beginning hands-on GI training, now face concerns dominated by redeployment, isolation from GI colleagues and family, and potentially drastically curtailed learning opportunities. More senior trainees, particularly those poised to enter practice, may view the economic impact on their job options with fear, and those entering academic practices may face freezes in research that hinder them from entering a planned research pathway. Common to all senior trainees is the fear that this time to sharpen skills before graduation has been lost.

Expediting and enhancing peer networks and mentorship will be key strategies to offset these concerns. Discussions about career development, building leadership skills, and learning practical office-based fundamentals (eg, coding and billing) should be initiated early in this recovery period allowing for a more streamlined, individualized curriculum for the trainee. In addition, encouraging and facilitating the creation of communication networks for graduating fellows may provide the trainees with important perspective on their future careers and navigation of the changing health care landscape. This has already occurred to an extent via global expansion of fellow networks through GI societies and shared web-based resources, providing trainees with a perspective on the global impact of this pandemic on training. Such a perspective may help trainees to understand the importance of focusing on long-term goals rather than the more uncertain, immediate future. Finally, programs should be attuned to emotional trauma that may be induced by the pandemic. Encouraging open communication and identifying resources for well-being will be critical to negate the effects these wounds may have on future careers.

Conclusions

Although the pandemic has exacted a terrible toll on the health care system and gastroenterology training, it now offers us an opportunity to rebuild our existing approach to training. Although we have traditionally relied on a model of high case volumes and passive learning through didactics, it is time now to embrace disruptive philosophy and

technology—such as Internet-based learning, simulator training, and adoption of new educational models. During the pandemic and its associated recovery, trainees should be encouraged to make weekly schedules of educational opportunities and individualized goals. Similarly, attending physicians must adapt to implement new training methods. Working together, we can reimagine what it means to be a trainee both during and after the pandemic.

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Conflicts of interest

The authors have made the following disclosures: Rajesh N. Keswani is a consultant for Boston Scientific. Amrita Sethi is a consultant for BSC, Olympus, Fuji, Medtronic, and serves on the advisory board for EndoNow. Alessandro Repici serves on the advisory board for Medtronic; has received consulting fees from Medtronic, Fujifilm, and Erbe; and a research grant from Boston Scientific. Philip Chiu is a scientific advisor for EndoMASTER Pte Ltd and APTORUM Co Ltd. Helmut Messmann discloses: Olympus (advisory board), Boston, Erbe (Consultant).