THE COVID-19 PANDEMIC ACROSS THE ACADEMY

Maintaining Core Values in Postgraduate Programs During the COVID-19 Pandemic

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The novel coronavirus identified in 2019 (COVID-19) pandemic has impacted pharmacy graduate and postgraduate education. This crisis has resulted in a cosmic shift in the administration of these programs to ensure core values are sustained. Adjustments may be needed at a minimum to ensure that postgraduate trainees complete program requirements while maintaining safety. Moving forward, additional issues may arise that will need to be addressed such as admissions and program onboarding, acclimating students to new training environments, and managing inadequate resources for distance education, distance practice, and remote versus in-person research opportunities.

Keywords: COVID-19, teaching, clinical service, research, trauma-informed practice

INTRODUCTION

Postgraduate programs in pharmacy are designed to further develop clinicians and researchers. These programs can include residencies, fellowships, and graduate education (eg, master's degree, PhD degree). The COVID-19 pandemic has challenged these programs to modify their training approaches, both immediately and potentially long term. Each program addresses these challenges in different ways. The purpose of this article is to describe how select postgraduate programs in pharmacy and pharmaceutical sciences (ie, pharmacy practice residency, community pharmacy practice residency, pharmaceutical sciences graduate programs, industry-sponsored fellowships) respond to the current crisis and anticipate impact moving forward by envisioning future best practices for postgraduate training.

Addressing Core Values of Postgraduate Programs

Postgraduate programs (residency, fellowship, graduate/doctoral education) have individual core values that may include, with varying emphasis, clinical practice, research, teaching, mentoring, and "high touch" culture.[1,2] During the COVID-19 pandemic, goals for these programs include maintaining the core values and

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verifying completion of requirements while ensuring their safety. To maintain core values, programs will be required to implement modified activities that may not return to baseline for months or years. While schools have managed to continue most regularly scheduled coursework, seminars, and forums by conducting them online, concomitantly maintaining routine engagement in advancing hands-on skills (eg, vaccinations, compounding, physical assessment) is challenging and requires modification. If not, identification of new processes for increasing such engagement should be necessary. For select programs, these challenges may be similar to those encountered within experiential education (see A Paradigm Shift in US Experiential Pharmacy Education Accelerated by the COVID-19 Pandemic in this issue regarding experiential education).

Pharmacy residencies, select fellowships, and some graduate programs have clinical components. Because of the pandemic, the number of face-to-face patient interactions that post-graduate students complete has been reduced with subsequent moves to remote clinical learning. While many inpatient and outpatient clinical activities have been smoothly transitioned to virtual interactions (eg, virtual conduct of patient "rounding" via allied health team review of therapy plan, medication histories, patient counseling), some activities have been placed on hold indefinitely. In contrast, new opportunities have unfolded, such as conducting transition of care

appointments remotely and trainees conducting inter-professional rural telehealth appointments. In fact, some clinicians have reported that transition of care appointments that have been held virtually have been better attended as many of the previous barriers, eg, conflicting meetings, commuting, have been mitigated by the stay at-home restrictions associated with the pandemic. Of course, remote learning is not without limitations. For example, loss of the in-person interaction of post-graduate trainees with medical teams may prevent them from gaining confidence, developing their own practice style, and becoming ready for independent practice. In some regards, the changes to pharmacy practice in response to the pandemic, such as moving clinical services to a minimal on-floor presence, mimic historical and anti-quated practice models. Hence, a new challenge in clinical postgraduate training is ensuring that post-graduate trainees understand how to advocate for inclusion and integration in this new model and to promote key components of an optimal face-to-face interaction. This is a critical time to ensure pharmacists do not lose foothold on our role in patient care and focus on redefining our responsibilities so that we emerge as leaders in a rapidly evolving health-care system.

While post-graduate trainees work to define their roles in the clinical environment, their safety and that of patients must be prioritized. During times of crisis, many health care trainees want to engage with health professionals and patients as they have been training to become essential members of the health care team. Post-graduate trainees may feel disheartened when they are told to "sit out" for their own safety and that of others. It is challenging to rationalize not involving current pharmacy residents and fellows in hands-on patient care given that, in less than a few months, they will be practicing independently. Therefore, postgraduate trainees and residents must be educated to provide patient care and conduct research in the new normal environment. As such, it is critical to identify ways to balance safety with the steep development curve that is expected in these training programs. This balance is particularly important to maintain during the final days of residency and post-graduate programs as to ensure trainees have developed the requisite skill sets and confidence levels to engage in clinical practice and clinical research.

As a result of the unique situation presented by the COVID-19 pandemic, those involved in ensuring post-graduate and resident education in the clinical environment have the opportunity to advance their own practice long term. The idea of virtual clinical work in a health system/institutional setting has been contemplated for many years, but the current health care crisis has forced it to finally become a reality. The workflow for clinical activities not previously completed remotely have been transitioned offsite. Now, pharmacists are remotely verifying orders and counseling patients and their families, among other meaningful clinical activities. From the community pharmacy perspective, remote ordering and teleservices for medication therapy management have now been implemented despite face-to-face interactions being preferred. While virtual clinical services are not the gold standard, there are lessons that can be learned from these circumstances, including ensuring that postgraduate trainees complete the activities necessary to meet the core values of their respective programs.

As we transition to training a new class of post-graduate students, fellows, and pharmacy residents, the challenges we will encounter with clinical service delivery will be different from both what we experienced in previous academic years and what we have recently experienced. As the new post-graduate students, fellows and residents are on-boarded, we will have recent Doctor of Pharmacy (PharmD) graduates with minimal, if any, experience practicing as fully licensed pharmacists and thus may require more oversite and guidance than those from previous years. Hence, our typical "transition period" with new trainees will be unique. It is imperative that we are sensitive to this unprecedented transition and focus on increased quality communication, added layers of support, flexibility, and potentially longer on-boarding periods to ensure postgraduate students and residents are comfortable in the practice environment.

Residencies, graduate programs, and most fellowships require their trainees to conduct research. During the pandemic, the majority of "benchtop" and "wet-lab" research was immediately placed on hiatus and most postgraduate students were transitioned to alternative activities that were allowable and feasible. Research activities shifted to writing (eg, proposals, manuscripts, grants, protocols), analysis of data (eg, statistical, modeling), and other *in silico* research methods, such as simulation and modelling. Active recruitment of patients into clinical trials was also placed on hold; however, select protocols continued to be conducted remotely (eg, e-consent, virtual appointments). Some learners were offered the opportunity to be redeployed to research efforts focusing on COVID-19. Unfortunately, these circumstances may have delayed completion of select requirements (eg, dissertation completion for graduate students). However, trainees close to completion were granted special accommodations (eg, laboratory access) to avoid disrupting crucial progress. Other programs that had not considered complete *in silico* projects, were forced to consider allowing such methodology because of

the "anytime/anywhere" access to virtual computing laboratories. Similarly, some students could perform select hands-on activities using a robot programmed from home to prepare samples, perform cell culture experiments, or other relevant research tasks. A major concern associated with the inability to maintain on-time graduation is unanticipated cost to the principal investigator, the student, and the school. Given the unique circumstances presented by the COVID-19 pandemic in terms of research, graduate students were advised to focus on manuscript writing, web-based training, development of proposals and grants, and teaching as these tasks contribute to the core requirements of most postgraduate programs.

As bench-top and clinical trial researchers have struggled with continuing their research during this crisis, so did residents and fellows as there also were limited venues for presenting and disseminating their research as they approached the end of their training. The core requirements for successful completion of many programs involve dissemination or presentation of research at a state or national meeting. As conferences were cancelled or offered limited scope for research presentations, programs were forced to revise their requirements or provide alternative means for formal presentation, such as in a local or virtual venue.

The modifications made within research for the various types of postgraduate programs demonstrate how COVID-19 has impacted and will continue to impact close to, if not all, cohorts of learners. Institutions will have to think outside the box and maintain flexibility to accomplish the goals of their training programs, while ensuring the safety of their trainees. The opportunities for trainees to complete research projects, present research findings, and receive meaningful feedback on their study methodology prior to completion of their postgraduate program will be integral to their success. The near future will be telling based on the success of virtual conferences, modifications in research requirements, and the engagement of the clinical and research communities.

As a core value, teaching impacts all aspects of postgraduate training, whether it is the education of the post-graduate students, fellows and the residents or their responsibilities to teach other individuals. During this crisis, the clinical and research core values have been challenging to maintain and, in fact, many of them have come further into focus. However, the ability to prioritize teaching within this context can be difficult. A conflict exists between the desire to provide a once in a lifetime teaching experience and the desire to keep residents or fellows safe in the health care environment.

Many residents, fellows, and graduate students engage in both didactic and experiential training of professional students. While many scheduled didactic sessions were conducted remotely to maintain the safety of students, this posed unique challenges for those who had been serving as teaching assistants, small group facilitators, and lecturers when the pandemic began. For example, timing of some remote meetings with clinical teams, which typically occurred in morning hours, may have had to be shifted to the afternoon, which conflicted with the time the postgraduate students were scheduled to be teaching. In systems with layered learning, there was a downstream effect of moving meeting times as all parties involved (ie, preceptors, residents, students on introductory and advanced pharmacy practice experiences [IPPEs and APPEs]) typically had a full calendar with prior commitments. In addition, some of the professional students had to move unexpectedly (eg, out of residence halls) and preceptors and residents needed to be aware of and sensitive to these situations. This virtual and distance teaching scenario may continue to occur as PharmD students or their families may be hesitant to relocate back to campus for face-to-face teaching at this time. With the alteration of teaching methods, venues, and requirements, the ability of trainees to complete teaching through certificate programs or as teaching assistants or instructors has been impacted. This impact on teaching, like research, can delay program completion and result in subsequent downstream effects.

In the short term, we can commit to teaching in a remote fashion and maximize ways to maintain communication between teams. However, this remote environment is far from perfect or ideal. Postgraduate trainees will have to adapt to new requirements and programs will have to determine ways for trainees to meet the core-values of teaching. In the long term, we will have to determine which parts of the "traditional" teaching environment are worth returning to and what parts can be converted to virtual learning formats.

A common denominator in all postgraduate training programs is mentoring. Mentors, principal investigators, and residency directors communicate regularly with trainees and this has been sustained throughout the crisis. Programs have maintained weekly, if not more frequent, communication with current and incoming residents, graduate students, and fellows to ensure they have an open line to voice their questions and concerns. Mentors can increase the frequency of planned group meetings with residents not only to overcome the lost hallway or by-chance conversations but also to provide added support. Additionally, anonymous polling of residents, fellows, and graduate students can ensure unfiltered feedback about their true struggles with isolation. Creating a variety of virtual social events (happy hours, group meal prep,

group book club, group Netflix viewing) can cater to different personality types and allow diverse trainee groups to maintain connections to those closest to them and others in the community with similar interests. As this pandemic may extend over a long period of time, faculty mentors and preceptors should conduct regular check-ins to assess connection, progress, and well-being, as individuals' tolerance for and through an extended period of stress and uncertainty can vary greatly. In addition, program-wide townhall meetings should be held to provide opportunities for graduate and postgraduate students and residents to present and share their concerns as a group. These practices are consistent with the literature on social support to improve outcomes in a variety of crisis situations.[3-8] Well-functioning, close relationships support functions of coping successfully with adversity, and participating in opportunities for growth and fulfillment in the absence of adversity. These support functions are rooted in attachment theory, a theory that proposes that all individuals enter the world with propensities to seek proximity to close others in times of stress and to support the attachment and exploration behavior of close others.[4]

Ultimately, postgraduate trainees need to feel more supported in their pursuit of flexibility in their work moving forward. The lessons and priorities learned over the course of the COVID-19 pandemic have given us the opportunity to consider these needs long term. While resilience has become an important topic in recent months, this interim period has provided many clinicians with the opportunity to fully implement and practice elements of wellness and balance. We must not lose sight of this new awareness and, equally important, we should share what we have learned with our postgraduate trainees

Admissions and Program Onboarding

Postgraduate programs require an admissions process. Traditionally, this process includes standardized assessments such as the Graduate Record Examination (GRE), assessment of grade point averages (GPAs), personal statements, and face-to-face interviews. However, each of these components of candidate evaluation are and will continue to be impacted by the COVID-19 crisis.

One of the major challenges during the pandemic has been to acquiring access to testing sites for applicants to complete the necessary standardized assessments. Educational Testing Services (ETS) launched the GRE General Test to be proctored at home in response to widespread test center closures. This creates potential inequity owing to differences in internet access and home computer quality. This concern will certainly increase the number of programs that make the GRE optional for the 2020-2021 admissions cycle. Many graduate programs

have already removed the GRE requirement or are considering making it optional, and the pandemic may accelerate this trend.[9-12] The long-term implications of dropping the GRE requirement will need to be assessed to determine whether this metric measures important qualities and if the GRE predict graduate student outcomes.

PharmD graduates must pass the North American Pharmacist Licensure Examination (NAPLEX) as a component of licensure. For graduating student pharmacists, the delay in available NAPLEX testing dates could impact their ability to obtain their license in a timely manner and subsequently their ability to participate in core clinical activities as many postgraduate and residency programs expect that students obtain their license within 60 to 90 days of starting the program; the residency accrediting body has extended the licensure requirement to early 2021. For fellowships, the licensure requirement varies as it may depend on the nature of the program. If the individual is expected to engage in direct patient care services as part of their fellowship training, then they must find a way to complete the NAPLEX in a timely manner. Graduate students who will have clinical responsibilities face the same situation. In either case, remote testing and proctoring are available for some standardized assessments (ie, GRE) and this format should be extended to others (ie, NAPLEX).

In terms of evaluating GPA, academic performance changed as some APPEs and classes completed during the spring 2020 semester had to be offered on a pass/fail or credit/no-credit basis, sometimes with the option being available for PharmD students after the final grade was submitted (ie, they can change to the Pass/Fail option after seeing their actual grade). Students at a variety of institutions were also given the opportunity to take a special COVID-19 related incomplete if the course could not be completed. If students were graded on a pass/fail basis, this impacted their overall GPA and class grades, subsequently limiting postgraduate committees' ability to accurately assess performance. Additionally, PharmD students may have had abridged APPEs or no APPEs in late spring (ie, May). While this may not have impacted their GPA, it may have impacted the diversity of experiential training programs students were exposed to prior to starting their postgraduate program.

Videoconferences had begun to take the place of face-to-face interviews with candidates in recent years as the cost associated with travel to in-person interviews (a few thousand dollars per interview) had become prohibitive. [13-15] Thus, some graduate, fellowship, and residency programs had started offering virtual information sessions and interviews prior to the pandemic. These programs may continue to conduct virtual face-to-face

interviews and at the same time offer a more cost-effective option for candidates. Additionally, programs are starting to offer Residency Showcases virtually in place of attending the American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting. Admittedly, the greater challenge will be facilitating tours of residency training facilities. However, borrowing from what has become customary in real estate, these facility tours are still a reasonable consideration. As for other graduate students, many PhD programs subsidize interview costs for potential candidates; thus, a move toward virtual engagement has the potential to reduce costs and allow for more students to be evaluated.

Finally, for those accepted to begin programs in fall 2020, continuous communication is needed to ensure that all positions remain intact and are not subject to loss. Regarding the transition, the onboarding of new trainees will prove challenging. While the trainees understand the significance of these unprecedented times, they have limited understanding of the onboarding requirements of a health system or university. High-quality communication must be used during virtual orientations to assure trainees receive appropriate training. Another onboarding issue is whether the trainee is relocating from another state. Many institutions will still be under state and local restrictions limiting employee travel in fall 2020 and thus are creating policies requiring new hires to be self-quarantined within the state for 14 days prior to starting orientation or reporting to a clinical or research site.

Given the aforementioned modifications that have been and will continue to be made to the admissions and postgraduate program onboarding process it is important to determine how each institution will implement modifications to ensure a maintenance of core values. All modifications to the standardized assessment process, admissions interviews, and program orientation must be undertaken with trainee safety at the forefront of decision making.

Moving Forward

To maintain the core values of postgraduate programs, several key components need to be implemented and maintained. The first component is technology, which will be used to maintain contact with outside parties. There can be major limitations to technology, including financial support for implementation and Wi-Fi availability for execution. One of the greatest challenges is the "digital divide."[16-21] Even though technology is widely available, not all learners have equal access to it, eg, some may not have Wi-Fi at home or it may have very low bandwidth. Other learners may not even have a laptop computer. Pharmacy programs may need to provide technology resources for students to be able to complete the core requirements of programs virtually.

The second key component, and possibly the most important, is leadership. Leadership is responsible for ensuring programs can maintain core values during the COVID-19 pandemic and for making pivotal decisions during times of crisis. Leaders should consider maintaining high levels of transparency as it is important for learners to understand why decisions are made. Students and trainees appreciate transparency and can learn from watching us make decisions thoughtfully. Additionally, when feasible, trainees should be incorporated into the decision-making process. Postgraduate programs do not need to "appear organized" for trainees as they often learn the most when they see us functioning in the gray or out of our own comfort zones.

The final, maybe unrealized key component is the mental well-being of all trainees involved in postgraduate programs. This pandemic is and will continue to be traumatic to many. Therefore, it may be of value for preceptors, instructors, and trainees to become familiar with trauma-informed practice (organizational structure and treatment framework that involves understanding, recognizing, and responding to the effects of all types of trauma).[22-24] This knowledge may help identify students who are struggling with well-being and help guide those as they move forward. Program formatting can be modified, adjusted, or improved to ensure core values are being achieved during this crisis, but if trainees are mentally incapable of growing or learning during this period of time, the accomplishment is null and void.

While programs can adjust priorities to maintain the core values of postgraduate education and aim to focus on the safety of trainees, they will struggle to succeed if not reinforcing the key components necessary for the maintenance of these values; successful technology practices, transparent/thoughtful leadership and support of trainee well-being. The opportunity to take lessons learned from this crisis and create best practices and an even better future is truly a once in a lifetime circumstance. While, in the interim, graduate programs are challenged and potentially discouraged, these programs now have an avenue to promote greater advocacy for success and innovation in the pharmacy profession moving forward.

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