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From There to Here: Evaluating the Transition of an International Advanced Pharmacy Practice Experience in London

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Evaluating the Transition of an International Advanced Pharmacy Practice Experience in London

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STUDENT AUTHOR BIO SKETCHES

Ishmun Hasan is a fourth-year professional pharmacy student in the College of Pharmacy, Purdue University. His previous research projects include anticancer drug development and intercultural learning experiences. Outside of research experiences, Ishmun has been involved in various organizations at Purdue University including Phi Delta Chi and American Pharmacists Association Academy of Student Pharmacists. After completing the pharmacy program at Purdue University, Ishmun will participate in a postgraduate residency program at Keck Hospital of the University of Southern California. In this article, Ishmun will describe his experience in the London rotation, which was modified to a virtual rotation due to the COVID-19 pandemic.

Stephanie Hendricks is a fourth-year professional student in the Purdue University College of Pharmacy. Before beginning her pharmacy career, she earned her bachelor's degree in Biology from Mansfield University of Pennsylvania (MU) in 2017. She has previous research experience in pancreatic cancer at MU in collaboration with the University of Pennsylvania, as well as intercultural learning (ICL) research at Purdue University. In addition to research, Stephanie is passionate about ambulatory care and public health. She has been active in several organizations and initiatives that promote wellness and health in the community: Purdue University College of Pharmacy Peer Mentoring Program, a tutor for Purdue Athletics, two mass flu clinics, a COVID-19 vaccine clinic, and starting her own community health initiative in Lafayette, Indiana. After pharmacy school, Stephanie will be pursuing a residency focused in ambulatory care. In this article, she describes her experience with her London cardiology rotation, which has been transmitted to a virtual setting due to the COVID-19 pandemic.

Michaela Todd is a fourth-year professional student in the Purdue College of Pharmacy. She has previous experience researching nanoparticle delivery of cryoprotective agents in the Department of Industrial and Physical Pharmacy. She has been involved in service activities in the community with Pediatric Pharmacy Education Done by Students for the past five years as well as with her sorority, Phi Mu, for the past four years. She is pursuing a residency program with Cox Health in Springfield, Missouri, post graduation to further her clinical pharmacy training. She is currently on her London oncology rotation, which has been modified to a virtual international experience due to the COVID-19 pandemic. In this article, she will describe her experience with this transition to the virtual setting.

Grace Yun is a fourth-year professional student in the Purdue University College of Pharmacy. She has been involved in the American Pharmacists Association Academy of Student Pharmacists for the past three years. She plans to pursue a postgraduate pharmacy residency with an interest in ambulatory care. In this article, she describes her experience with her London cardiology rotation, which has been transmitted to a virtual setting due to the COVID-19 pandemic.

INTRODUCTION

During the spring of 2020, the COVID-19 virus swept across the globe, resulting in many communities shutting their doors and de-densifying working and learning environments in an effort to slow the virus spread.¹ By the end of April 2020, 165 countries had closed their schools, impacting nearly 1.5 billion students.² As a result, K–12 and higher education institutions worldwide transitioned to remote and virtual learning in a matter of weeks. To facilitate continued learning, engagement, and social interactions, a variety of virtual interfaces were employed by schools, universities, and other business entities. Many educational institutions used videoconferencing interfaces in order to share lecture materials and facilitate discussions.

Like other education and training experiences, health care professional education also transitioned to remote and virtual learning. Some health care professional education programs have been able to create specific learning modules providing opportunities to work through complex patient cases.^{3–5} Other examples of learning shifts include the use of virtual slides to develop students' microscopy abilities without having access to an in-person lab.⁶ Despite the urgency of the switch to virtual learning, many programs have adapted and continued to achieve desired learning outcomes.⁷ With the positive results around didactic education shifts to virtual learning, it is hypothesized that some experiential learning opportunities could also be successfully transitioned. Purdue University College of Pharmacy presents an example of shifting an international experiential learning program to a virtual experience that could be used as a model for future programs.

Purdue University College of Pharmacy offers international advanced pharmacy practice experiences (APPEs) in Colombia, Kenya, and the United Kingdom.^{8–11} The

APPE in London started in 2007 with a partnership with Barts Health NHS Trust and St. Bartholomew's Hospital (St. Barts).¹² Initially this APPE focused on nuclear pharmacy practice only. In 2015, experiences in oncology and cardiology were added. During the eight-week APPE, students immerse themselves in British culture (in and out of the workplace), provide direct patient care, and complete clinical care focused research activities. In the last five years, 76 student pharmacists have completed this APPE (Table 1).

When the COVID-19 pandemic struck, international travel was severely limited with hopes of controlling the outbreak. Countries implemented travel restrictions, including closing borders, suspending international flights, and banning entry for travelers from certain countries.¹ Many study abroad programs that were in progress were abruptly halted and students returned home. As the virus continued to spread, Purdue University decided to suspend further study abroad programs, including international APPEs, for the entirety of 2020. Rather than completely cancel the experience, the faculty coordinators worked to develop and implement a virtual international APPE. In this new experience, students worked remotely with pharmacy specialists from St. Bart's, as well as engaged in intercultural learning activities and completed research projects. The objective of this research with reflection was to describe and assess the transition from an in-person APPE to a virtual APPE.

METHODOLOGY

A literature search was performed to analyze in-person to virtual transition strategies used in other health care professions' experiential training programs and to compare in-person and virtual clinical activities for assessment of the APPE transition. All students starting in 2019 were asked to complete two intercultural learning assessments, the Intercultural Development

Table 1. APPE Student Pharmacists by Specialty and Year (*n* = 72)

Year	Cardiology	Nuclear	Oncology	Virtual Cardiology	Virtual Oncology
2020–21*	—	—	—	2	2
2019–20	7	2	3	—	—
2018–19	5	2	0	—	—
2017–18	5	8	3	—	—
2016–17	6	9	4	—	—
2015–16	1	14	3	—	—
Total	24	35	13	2	2

*13 APPEs that were planned as in-person were rescheduled (6 oncology; 7 cardiology).

Inventory® (IDI) and the Cultural Intelligence Assessment® (CQ), at the beginning of the preparatory course and at least one month after their APPE.^{13,14} In conjunction with the IDI and CQ assessments, students were provided experiences to grow their intercultural intelligence during the virtual experience through specific changes made to the APPE. During all experiential courses, students and preceptors utilize a structured evaluation form that is housed within a learning management system (PharmAcademic™ or CORE ELMS™). Purdue switched platforms in 2020; data for this study was taken from both systems. To evaluate the changes made to the international APPE and assess their impact, student and preceptor evaluations from the experiential learning management systems were reviewed to assess the differences in research and clinical activities. Additionally, student pharmacists involved in the virtual APPE provided personal testimonies about intercultural growth and professional learning following the eight-week experience using a structured feedback survey. The Purdue University Investigational Review Board approved this research (IRB-2020-1656).

Program Description

Preparatory Course

Student pharmacists planning to participate in an international APPE complete a 1-credit elective focused on travel preparation, culture and local patient care practices, and intercultural learning. Intercultural learning activities focus on Hofstede's cultural continua, learning styles, conflict styles, emotional hot buttons, and communication styles. Many of the assignments utilized learning activities similar to those found at Intercultural Learning Hub (HubICL), hosted by Purdue University.¹⁵ During the 2020 spring semester before the virtual APPEs began, the international experience preparation course also transitioned to an online platform. New learning methods were adopted such as WebEx™ meetings, Blackboard™ discussion boards, Qualtrics™ surveys, and reflective writing assignments.¹⁶

Virtual APPE

The traditional international APPE with St. Bart's was focused on both direct patient care and research while the virtual international APPE was focused only on academic and clinic care research activities. Students also participated in professional activities, which included a medication prioritization tool, a drug use evaluation, medication education presentations, and intercultural learning research (including abstracts and manuscripts). Preceptors from St. Bart's included students in education sessions and lectures as schedules and time differences

allowed. Where possible, students participated in a vaccine administration clinic on campus and worked as a standardized patient in the pharmacy practice lab in order to gain some in-person clinical experience. Student pharmacists were also enrolled in the Study Abroad Intercultural Learning: Global Competence Certificate, which is an intercultural development course created for students to complete before embarking on an international experience or study abroad program.¹⁷

RESULTS

Assessment

IDI® and CQ® assessments were completed by in-person and virtual students. Table 2 provides information describing both of these assessment tools.

Table 3 outlines the pre-course and post-APPE IDI® results for both in-person and virtual students. In both student groups the overall Developmental Orientation (DO) demonstrated growth and the Orientation Gap (OG) decreased. Most students' DO was in minimization. Not all in-person students experienced growth in their DO but all virtual student did demonstrate DO growth. Research suggests that growth is meaningful if there is more than a 7-point change in the IDI®.¹⁸ The average DO growth for the virtual APPE students met this assessment metric.

Table 4 outlines the pre-course and post-APPE CQ® results across the four capabilities for students both in-person and virtual. Virtual APPE students demonstrated growth in all capabilities with the most growth in Strategy (+16.3) and Knowledge (+17). There was similar growth when comparing the in-person and virtual students with the exception of Knowledge where there was more growth reported by the virtual students. Overall, self-reported capabilities were considered moderate to high compared with worldwide norms.

COMMUNITY IMPACT OF VIRTUAL APPE ACTIVITIES

Through the transition of this APPE from in-person to virtual, both the students and the pharmacists at St. Barts continued to benefit from this long-standing partnership. Table 5 outlines the clinical activities and outputs for both the in-person and virtual experiences. Feedback was provided to both the St. Barts preceptors and the faculty coordinators to reflect on this experience and to improve virtual APPEs offered in the future. The cardiology pharmacist felt that students impacted the site through "outputs from the reviews and data analysis."

Table 2. Intercultural Assessment Tools^{13,14}

	Intercultural Development Inventory® (IDI)	Cultural Intelligence® Assessment (CQ®)
Description	The IDI® assesses intercultural competence, the ability to shift cultural perspective and adapt behaviors based on cultural differences (IDI).	The CQ® assesses and aids in developing effective strategies for engaging in culturally diverse situations (CQ®).
Constructs	Intercultural competence has been summarized into five orientations that lie along an Intercultural Development Continuum® (IDC). IDI® Scores: • Perceived Orientation (PO) • Developmental Orientation (DO) • The Orientation Gap (OG)	The CQ® provides self-ratings and norms for four capabilities and 13 subdimensions within these capabilities: • <i>Drive</i> • <i>Knowledge</i> • <i>Strategy</i> • <i>Action</i>
Administration	Online 50 questions	Online 54 questions
Reports	Intercultural Development Inventory® Intercultural Development Plan™	Cultural Intelligence Feedback Report™ (includes a Development and Action Plan)
Debrief	Yes Access to results requires facilitation by a Qualified Administrator	No Results immediately available in downloadable report
Cost	Total: \$24 per student (\$12 per assessment)	Total: \$36 per student (includes a pre & post assessment)

Table 3. Intercultural Development Inventory® Data

In-person (2019–2020) (n = 7)						Virtual (2020) (n = 4)					
Pre-Course IDI			Post APPE IDI			Pre-Course IDI			Post APPE IDI		
PO	DO	OG	PO	DO	OG	PO	DO	OG	PO	DO	OG
123.36	94.53	28.83	125.45	100.11	25.33	122.76	94.28	28.48	127.03	103.08	24.0

Table 4. Cultural Intelligence® (CQ) Data

	In-person (2019–2020) (n = 7)				Virtual (2020) (n = 4)			
CQ Construct	Drive	Knowledge	Strategy	Action	Drive	Knowledge	Strategy	Action
Pre-Course Average	80.7	60.7	73.7	67.3	86.5	53.5	68.0	65.3
Post-APPE* Average	80.0	64.7	83.0	78.3	87.8	70.5	84.3	72.5

*n = 3 for in-person APPE; only available for one cohort of students.

The oncology pharmacist believed the students contributed “excellent project work that is already providing support to the hospital.” Both pharmacists and departments were able to use the work completed by the virtual students in order to better serve their patients.

As this was a new endeavor, some challenges arose. Both the cardiology and the oncology pharmacists

expressed difficulty with coordinating meetings due to the time differences as well as some technology issues with video communications. In order to combat this challenge, communication and file sharing between students and preceptors was conducted through Microsoft Teams™ and WhatsApp™ messaging. Students were located in Eastern, Central, and Pacific time zones. We were able to work through these difficulties and

Table 5. APPE Activities and Outputs

	In-Person	Virtual
	Student participants = 7	Student participants = 4
Intercultural Learning	• IDI and CQ assessments • Individual intercultural learning plan • Weekly intercultural debriefs	• IDI and CQ assessments • Individual intercultural learning plan • Global Competence certificate
Direct Patient Care	• Medication recommendations • Patient counseling • Medication reconciliation	None
Research	<u>Cardiology</u> • Protocols developed: 0 • Professional meeting posters with abstracts: 1 • Manuscripts: 0 • Medication use reviews: 0	<u>Cardiology</u> • Protocols developed: 1 • Professional meeting posters with abstracts: 2 • Manuscripts: 2 • Medication use reviews: 0
	<u>Oncology</u> • Protocols developed: 0 • Professional meeting posters with abstracts: 1 • Manuscripts: 0 • Medication use reviews: 0	<u>Oncology</u> • Protocols developed: 2 • Professional meeting posters with abstracts: 2 • Manuscripts: 0 • Medication use reviews/drug monograph: 2
Miscellaneous Education/Engagement	• Disease topic discussions • Staff meetings • Outside of office activities • Team happy hours • Weekend international travel • London exploration • Living with roommates	• Disease state topic discussions • Staff meetings

coordinate meeting times through early and open communication and planning. Despite the challenges and virtual nature of the APPE, there was still a positive impact for both the students and the APPE site. In the future, there is potential for more frequent virtual meetings and improved organization as we continued to work toward maximizing the potential of the remote work setting.

STUDENT PHARMACIST IMPACT

During this experience, we (students) experienced both personal and intercultural growth. We were able to learn about British culture even though we weren't able to physically be there. Through interacting with the St. Bart's preceptors weekly and exploring British media and entertainment, we got a taste of what it might be like to live in this country. In addition, as shown in the IDI® and CQ® data, we experienced growth in different areas of intercultural competence.

We were also able to experience professional and academic growth through this APPE. The cardiology and oncology pharmacists assigned us projects that would be used to help both providers and patients at St. Bartholomew's Hospital, which added meaning to the work we completed. We also gained exposure to research and different professional writing opportunities (abstracts, protocols, and manuscripts). Some challenges we encountered included the time zone difference, which led to communication issues such as confusion regarding instructions or expectations, large time gaps between communications, and technical issues with the communication platforms. These were addressed through frequent communication, patience and understanding of the pharmacists' busy schedules and time differences, and patience and experimentation with the technology. We also set deadlines each week to keep ourselves on track and to provide enough time for feedback and revisions. This experience allowed each of us to grow as future pharmacists and has sparked an interest to continue

Table 6. APPE Feedback Examples from Student Pharmacists

	Specific activities that contributed to my learning and professional growth:	
Theme	In-Person APPE (feedback from PharmAcademic™)	Virtual APPE (feedback from CORE ELMS™)
Intercultural Learning	<i>"The rotation as a whole gave me great insight into the operations of health care in a different part of the world and how it contrasts with that of the United States."</i>	<i>"The global competency certificate, meeting with preceptors virtually, meeting with my fellow classmates for a Netflix watch party where we watched British shows (helped with learning terminology and mannerisms), as well as meeting with preceptors to reflect on this rotation."</i>
Patient Care	<i>"The patient case presentations and managing bays were helpful in challenging us to think deeper into the patients we are seeing on the floor. Additionally, the weekly teachings were also beneficial in keeping us up to date on various disease states."</i> <i>"Taking medication histories from all new patients. I trained to the point where I was able to do them independently."</i>	None
Research	<i>"I was given a project that involved a medication being used according to practice guidelines but not NICE guidelines and it was good to see the contrast of what is being used against what is funded."</i> <i>"Research involving data collection and the writing of an abstract for possible publication."</i>	<i>"Working on research papers and communicating with international preceptors."</i> <i>"Projects with cardiology team and Barts preceptors and academic papers that gave me my first experience with research/manuscripts."</i>

exploring the specialties we participated in during the virtual APPE.

Table 6 shows feedback from student pharmacists regarding their international APPE experiences. Since the virtual APPE students were not able to participate at the site in person, patient care activities were not feasible.

CONCLUSION

We believe that this research with reflection demonstrates that intercultural learning can take place in a virtual international APPE. Currently, there is a lack of literature demonstrating the use of the IDI® and CQ® in experiential learning, in particular within health care and pharmacy. This is also one of the first experiences that has used both of these tools together to assess students. Minimal research is available about the use of these tools to assess the virtual experiences that have been developed due to travel limitations during the COVID-19 pandemic. The results from this research demonstrate that intercultural growth can be achieved even without travel to an international practice site. As more students

participate in similar experiences, it may be possible to use assessment feedback from the one or both of the IDI® and CQ® to further tailor intercultural learning activities for improved development. Based on student and preceptor feedback, the virtual APPE provided mutual benefit to both parties. As we continue to improve the virtual APPE, it will be important to focus on activities that will be impactful at St. Bart's but are also achievable through virtual communication and file sharing. Through this experience, we identified a starting point regarding communication and scheduling meetings and deadlines through the various platforms, and we can continue refining the process as more virtual experiences take place. Exploring ways to incorporate more patient care activities (case conferences, journal clubs, topic discussions, protocol development) will also help enrich the experience. We hope this research will help other programs understand and address the challenges that arise during virtual experiential learning. Participation in the first international virtual APPE allowed student pharmacists to make a direct impact at St. Bart's and further professional and intercultural development even without being on site. This gives us confidence that great

Figure 1. Group Microsoft Teams™ meeting. From left to right and top to bottom: Grace Yun, PharmD candidate; Monica Miller, PharmD, MS; Ellen Schellhase, PharmD; Stephanie Hendricks, PharmD candidate; Ishmum Hasan, PharmD candidate; and Michaela Todd, PharmD candidate.

things can be achieved by continuing to advance virtual interactions with international partners and students.

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