

## BRIEF

### Interprofessional Education Within a Pilot HIV-Care Elective Course

Amy L. Pittenger, PhD,<sup>a</sup> Brian Goodroad, DNP,<sup>b,c</sup> Melanie Nicol, PhD,<sup>a</sup> Elise N. Durgin, PharmD,<sup>d</sup> Lindsay Eveland, PharmD,<sup>a</sup> Robyn Kaiser, MD,<sup>c</sup> Mary Benbenek PhD,<sup>f</sup> Nicole Benson, BA,<sup>c</sup> Sarah Rybicki, MSW, MPH<sup>b,g</sup>

<sup>a</sup> University of Minnesota, College of Pharmacy, Minneapolis, Minnesota

<sup>b</sup> Midwest AIDS Training and Education Center, Chicago, Illinois

<sup>c</sup> University of Minnesota, School of Public Health, Minneapolis, Minnesota

<sup>d</sup> Goodrich Pharmacy, Anoka, Minnesota

<sup>e</sup> Healthpartners, St. Paul, Minnesota

<sup>f</sup> University of Minnesota, School of Nursing, Minneapolis, Minnesota

<sup>g</sup> University of Minnesota, School of Public Health, Minneapolis, Minnesota

Submitted October 2, 2018; accepted March 27, 2019; published December 2019.

**Objective.** To create an IPE course that improved knowledge related to HIV history, prevention, and therapy, in health professions students and improved their interest and confidence in becoming interprofessional collaborative clinicians, specifically involved in the care of people living with HIV.

**Methods.** A motivational design framework was used to create an interprofessional course that incorporated whole-task complex scenarios, team-based application, and experiential components. Multiple sources of quantitative and qualitative data, including the AIDS Education and Training Center evaluation tool and Interprofessional Collaborative Competency Attainment Scale instrument, as well as assignments and course evaluations, were collected and analyzed.

**Results.** Fifteen students from medicine, nursing, and pharmacy participated in 2017, and 21 students from medicine, nursing, pharmacy, and social work participated in 2018. In both offerings, students rated the course experience positively and self-reported increases in confidence related to interprofessional competencies. Ninety-three percent and 68% of the students in 2017 and 2018, respectively, stated they planned to be involved in HIV care to some degree in the future. Students demonstrated high levels of knowledge of the AIDS Training & Education Center National HIV Curriculum at the end of the 2018 course offering.

**Conclusion.** This educational course design provided an effective interprofessional learning experience and establishes a sustainable interprofessional format for teaching health professions students about HIV.

**Keywords:** HIV/AIDS, Interprofessional, motivational design

## INTRODUCTION

The nature of the HIV epidemic and our understanding of the disease has continuously evolved since the virus was identified in 1983. As a result, the model of care delivery and approach to the management of people living with HIV has also changed.<sup>1</sup> Early in the epidemic, HIV management was primarily palliative and focused on acute care and opportunistic infections.<sup>2</sup> The emergence of highly effective HIV treatment regimens and the ability to achieve a sustained viral response ushered in a new

paradigm of HIV management. Therapeutic advances have transformed HIV into a manageable, lifelong condition, much like hyperlipidemia or diabetes mellitus. As a result, the need to manage other comorbid chronic conditions, such as hypertension or diabetes, as well as the need for screenings and preventive care, such as mammograms and colonoscopies, has increased within the HIV community. The shift from acute to chronic management of HIV and the prevalence concurrent age-related comorbidities has also increased the need for interprofessional primary care. But there is a shortage of providers to care for patients living with HIV. At the 2019 IDWeek meeting in Washington, DC, there was a focus on the HIV workforce shortage and a special call to expand the care team beyond infectious disease specialists

---

**Corresponding Author:** Amy L. Pittenger, University of Minnesota, College of Pharmacy, 308 Harvard St., SE, Minneapolis, MN 55455. Tel: 612-625-7629. Email: alp@umn.edu.

to include primary care health professionals (<https://www.thebodypro.com/article/solutions-to-address-the-hiv-workforce-shortage>). Approximately 1.1 million people in the United States are living with HIV today and an estimated 38,700 Americans became newly infected with HIV in 2016 (<https://www.hiv.gov/hiv-basics/overview/data-and-trends/statistics>).

In 1990, the Ryan White Care Act led to the creation of several patient-centered medical homes.<sup>3</sup> These medical homes house a variety of HIV-focused services including medical, dental, nursing, and pharmacy care, as well as social work services. They may also provide mental health/substance use treatment, nutrition education, and referrals to local case management and service organizations.<sup>4</sup> Providing care for people living with HIV is a natural interprofessional practice and education context. Prior to the interprofessional education elective described within this manuscript, health professional students at the University of Minnesota did not have an opportunity to practice working together as a team specifically within this patient care context.<sup>5-7</sup> It is with this background and established need that we created an interprofessional education elective for health professions students.<sup>6,7</sup>

## METHODS

Creation of the Interprofessional Collaborative Practice in HIV Care course at the University of Minnesota was the result of collaboration with the Minnesota site of the Midwest AIDS Training & Education Center (MATEC), its regional HIV Interprofessional Education Project (HIPEP), and the Academic Health Center at the University of Minnesota. The MATEC is a federally funded training center that provides HIV clinical training and support to health care professionals. The MATEC is part of a national network of AIDS Training and Education Centers, serving all states and territories and including two supporting national centers. The MATEC's mission is to enhance the capacity of HIV clinical services and improve the quality of those services for people living with HIV in the Midwest. A goal of the project is to address anticipated workforce shortages among HIV providers by increasing the number of clinicians providing services through training and education.

The project was deemed exempt by the University of Minnesota Institutional Review Board. The MATEC provided a list of learning objectives (the abbreviated 2018 course syllabus is available at <https://z.umn.edu/ajpe>), then each site determined the best way to meet the specified learning goals. The University of Minnesota chose to design a course for more advanced learners, building on core infectious disease and interprofessional

experiences within each of the participating programs. Because the learner target audience was more advanced, an experiential component was also included in the educational experience. The instructional team included an infectious disease physician, two nurse practitioners (one HIV clinician and one family practice clinician), a social worker, and two pharmacists (one who had a combination of expertise within the HIV practice and research setting and one in interprofessional education). The elective course was first offered in the spring semester of 2017. The instructional team was less intentionally formed for the first offering in 2017, and the AETC reports commented that some instructors felt unsure about their role. During the 2018 offering, the roles and expectations of instructional team members were made clearer. For both offerings, all instructors were present as an interprofessional teaching team at the first and final in-person sessions with students, highlighting the interprofessional design and modeling teamwork. In the first and fourth in-person sessions, all faculty members were present and facilitation of the session was shared. However, the first session was primarily led by the pharmacy faculty member with IPE expertise and the fourth by the nurse practitioner with clinical expertise in HIV. The second in-person session was primarily facilitated by the pharmacy faculty member whose clinical expertise was in HIV, and the faculty member who was an infectious disease physician. The third in-person session was primarily facilitated by the nursing and social work faculty members. Dividing up the other aspects of the course (both in-person and online teaching) helped to minimize instructor workload. Also, the addition of a course coordinator position funded through MATEC was extremely valuable.

For both the 2017 and 2018 offerings, the course had an abbreviated, semester-long hybrid design consisting of weekly online assignments that included lectures, reading materials, online discussion assignments, quizzes, and four in-person sessions. To accommodate student schedules, these three sessions were held on a weekday from 5:45 to 8 p.m. (dinner, paid for with MATEC funding, was served prior to these evening sessions) and one Saturday session from 9 a.m. to 1 p.m. (breakfast and lunch paid for with MATEC funding was provided for this last in-person session). Additionally, all students were required to complete one community/practice-based day-long session in a clinic practice that specialized in HIV care. Though not ideal, holding the in-person sessions in the evening and on Saturday was the only option that worked for the participating programs and instructional team.

To participate, nursing and pharmacy students enrolled in the elective through their respective programs. The education policy committees of the participating

programs reviewed and determined this course to be a one credit hour offering. Medical students voluntarily participated without receiving academic credit; instead medical students received a certificate of participation. In 2018, social work students joined the course and enrolled in a one-credit elective through their own program. A pass/fail grading scale (70% and above constituted a passing grade) was used for the 2017 offering and a merit-based letter grade (A-F scale) for the 2018 offering. No specific criteria to define completion of the course were used for the medical students. The change in grading scale was made by the instructional team based on student input that receiving only a passing grade did not represent the effort they put into the course.

The goals of this IPE course included improved knowledge related to HIV history, prevention, and therapy, and improved interest in becoming an interprofessional collaborative clinician, specifically around the care of people living with HIV. To meet these learning outcomes, the course employed a variety of strategies. The instructional team used the ARCS (Attention, Relevance, Confidence, Satisfaction) motivation design approach, which guides educators to intentionally incorporate experiences, assignments, and materials that gain and maintain learner attention, establish relevance, gain confidence, and result in overall satisfaction with the experience.<sup>8</sup> The course intentionally challenged learners with a complex patient case scenario (case available upon request) during the first in-person session to establish interest (the attention component of the motivational design model) and relevance of the HIV and interprofessional collaboration. The case of “Fernando” was used to illustrate the interprofessional collaboration process of the instructional team. Using the whole-task approach that was incorporated into the motivational design framework, the instructional team contributed different details in the creation of the case that commonly present in this clinical context. “Fernando” did not represent a real individual who was cared for by any member of the instructional team, but rather a fictional patient case that was a compilation of the social and clinical circumstances of several patients. The first in-person session also intentionally linked four activities within the initial encounter with the case that were mapped to the four Interprofessional Education Collaborative (IPEC) core competency domains. During the first class, students were placed into interprofessional teams, which they worked in for the entire semester. Each team of students virtually cared for Fernando throughout the semester, receiving updates on his life and medical status that were intended to influence their decision-making and help to determine which member of the team would take the lead. This

educational approach was an example of active learning, which argues that meaningful learning is defined by student engagement with complex, authentic problems as well as social interaction with peers and others. In this course design, whole-task, competency-based, collaborative learning that integrated first principles of instructional strategies was used.<sup>9-13</sup>

The course progressed with a mixture of didactic content related to caring for people living with HIV, including history, prevention, diagnosis, treatment, and policy, as well as the complex psychosocial aspects of living with HIV. Students worked within their interprofessional teams during the in-person sessions, which were a combination of active application of online learning materials, lecture, and panel discussions aligning with the relevance, confidence, and satisfaction components of the motivational design model. Panels of interprofessional clinicians who practiced within the HIV specialty area, in addition to a panel of people living with HIV, were incorporated into the course experience to provide context (intentional effort to establish and maintain relevance) to the learning materials and emphasize the importance of the educational goals. The final in-person session included a capstone event that tested students’ ability to apply what they had learned during the semester. The examination was conducted in a large group format, with students making their selections using an audience response tool. Students could consult students from other professions for input before making their selection, further emphasizing the team-based approach to the care model practiced during the semester and testing whether students knew when and who to ask if unsure of a clinical decision. This final learning experience mapped to the satisfaction component of the ARCS model, creating “natural consequences” that allowed the learner to use newly acquired skills in an authentic way, boosting their intrinsic motivation.<sup>8</sup>

A variety of assessment and evaluation strategies were used to measure improvements in knowledge and attitude. Students were required to complete AIDS Education and Training Center (AETC) evaluation tools, submit a reflection assignment for both the community clinical experience and team-based component, and complete the Interprofessional Collaborative Competency Attainment Scale (ICCAS), a retrospective pre/post measurement of students’ perspectives on the development of their interprofessional competencies.<sup>14</sup>

Qualitative methodology was used for the open response items in student course evaluations and reflection papers. Thematic analysis using an inductive approach was employed to identify prominent themes. Quantitative data were aggregated and summarized.

**RESULTS**

Fifteen students from medicine, nursing, and pharmacy participated in 2017, and 21 students from medicine, nursing, pharmacy, and social work participated in 2018. Descriptive statistics are provided in Table 1. The goals of this IPE course included increasing students’ knowledge related to HIV history, prevention, and therapy, and improving their interest in becoming interprofessional collaborative clinicians, specifically ones involved in the care of people living with HIV.

In the 2018 offering, students completed objective HIV knowledge questions from the question bank of the National HIV Curriculum designed by the University of Washington and AETC National Coordinating Resource Center. Twenty questions were carefully selected to match the course’s learning objectives. The students’ average score on the HIV knowledge questions was 19.1 out of 20, providing some evidence of HIV therapy knowledge proficiency related to the course’s learning objectives.

The second goal, to stimulate interest in pursuing interprofessional careers, specifically related to caring for people living with HIV, was measured through end of course surveys. In 2017, 93% of the students stated they planned to be involved in HIV care to some degree in their future, with 53% stating their intention to be involved “to a great extent”; in 2018, 86% of students stated plans to be involved to some degree, while 34% stated “to a great extent.”

In both the 2017 and 2018, students rated the course positively and self-reported increases in confidence related to interprofessional competencies. When asked to rate their ability to develop an interprofessional patient/client care

plan at the beginning and end of the course using a five-point scale on which 1=poor and 5=excellent, students in 2017 and 2018 had baseline scores of 3.0 and 3.5, respectively, and end of course averages of 3.9 and 4.5, with all students responding. Students were also asked to rate how important involvement in interprofessional collaborative practice would be when choosing their first position. At baseline in 2017, 53% of students said somewhat important and 47% said very important. By the end of the course, percentages shifted, with 27% reporting somewhat important and 73% stating very important, with all students responding. In 2018, only the end of course rating was obtained, with 43% of students indicating somewhat important and 57% reporting very important, with all students responding. No students in either 2017 or 2018, at baseline or end of class, selected one of the other possible responses to this question (ie, not at all important or I don’t know).

The dataset used for the qualitative analysis was not extensive or varied enough to warrant an inductive coding process; therefore, the results are presented as a narrative summary. In alignment with the survey results, students found great value in the course, and the experience resulted in either new or reinforced interest in pursuing clinical careers that involve or focus on HIV care. Consistently, the two most positive course activities were the final team-based session (both the large group quiz and collaborative team case work-up) and the community clinical experience. The final in-person session included a final capstone quiz that allowed for interprofessional consultation before individual responses were entered using an audience response tool. Students stated that they liked being able to use each other’s expertise and that they learned a lot from both the consultation and the large group discussion after the correct answer to each quiz question was revealed.

The other course design aspect that students found valuable was the community clinical experience. Students were assigned to a clinician within a specialty HIV clinical setting and participated in interprofessional case conferences, patient encounters, and other aspects of the clinic day. Students universally noted the power of having interprofessional collaboration and whole-person care modeled for them. Students also expressed surprise at the amount of primary care provided within the special HIV setting, highlighting that it is not possible to “just” treat someone’s HIV. The significant and often unmet mental health needs among people living with HIV was also a common observation.

**DISCUSSION**

The goals of this course were to improve knowledge related to HIV history, prevention, and therapy, and

Table 1. Descriptive Statistics of Students Who Enrolled in an Elective Course of Interprofessional HIV Care

Variable	Year	
	2017	2018
Ethnicity		
White	13	14
Black or African American	2	2
American Indian/Alaska Native	1 <sup>a</sup>	0
Asian	0	5
Gender <sup>b</sup>		
Male	11	16
Female	3	5
Educational program and year		
Medicine (2 <sup>nd</sup> year)	6	6
Pharmacy (3 <sup>rd</sup> year)	5	11
Nurse Practitioner (2 <sup>nd</sup> year)	4	1
Social Work (2 <sup>nd</sup> year)		3

<sup>a</sup> One student identified as both White and American Indian/Alaska Native

<sup>b</sup> One student declined to indicate a gender



improved interest in becoming an interprofessional collaborative clinician, specifically one involved in the care of people living with HIV. Overall, this pilot effort of creating and implementing an interprofessional elective course focused on the care of people living with HIV has been a success; there is evidence of knowledge attainment, as well as skills in and attitudes toward interprofessional collaboration. Overall, students enjoyed the course and the design is a sustainable model for a large interprofessional instructional team. The third iteration of this course will be offered in spring 2019.

Interprofessional challenges are present in both the practice setting and the academic setting, as the same conflicts over roles, responsibilities, and perspective can emerge. The motivational design framework was a helpful guide when designing an interprofessional course as an interprofessional team. The MATEC had provided an extensive list of learning objectives to achieve within a one-credit elective course, but grouping learning materials, assignments, and experiences into the ARCS categories created a manageable process for determining content, perspective, and format decisions.

Another challenge common among academic interprofessional experiences is navigating the differences across programs with regard to elective courses, credit determinations, and student tuition allocations. The inconsistent ways credit is assigned or not assigned to students who participate in interprofessional courses at our institution emerged as a major challenge. One lesson learned from this interprofessional effort is that it is important for all students to have similar accountability for participation and completion. As described in the methods section, only the nursing, pharmacy, and social work students received academic credit for participating in this elective course. The medical students participated in the course on a voluntary, extracurricular basis because the medical school tuition structure did not allow students to take electives outside of the medical program. The potential problems associated with this inconsistent enrollment were apparent to the instructional team in 2017, but there was not sufficient time or an available mechanism to work out another option because of the structure of the medical program. To have medical student involvement in the course, voluntary participation was allowed. However, it created problems. For example, the majority of medical students were not able to attend an in-person session because they had an examination the next day. Unfortunately, having almost all students representing a profession miss one of only four in-person sessions negatively impacted the interprofessional aspects of the course because the in-person session was specifically designed for all professions to contribute. It also created

some interprofessional angst, because the pharmacy students also had a major examination the next day, however, because they were taking the course for academic credit, they were required to be present to earn a passing grade. The problem with this inconsistency was further revealed later in the course when two pharmacy students also missed the last in-person session but experienced repercussions for doing so.

In 2018, the instructional team decided to require medical students to enroll for the course to avoid this inconsistency across the learners, and also because of a university determination that it was a Family Educational Rights and Privacy Act (FERPA) violation to include non-enrolled students into a course learning management system site. There is a mechanism within our institution's medical school for students to receive a "scholarship" to take one elective course each year. However, during the 2017-2018 year, the medical school had placed an elective course moratorium on the second-year class. At this point, some members of the instructional team felt it would be best to move forward without medical students for the 2018 offering, only to learn that the MATEC funding required medical student participation. After several hours with university attorneys, MATEC staff, and School of Medicine personnel to determine a way to allow for non-enrolled medical students to be entered into the learning management system course site in a way that would not violate FERPA, it was decided that all of the other students were required to sign a permission waiver giving their permission to allow the non-enrolled medical students in the site. Whether evident to the non-medical students or not, the reality is that if even one non-medical student chose not to sign the waiver, the course would not have been offered. While overall the course was a success in 2018, student feelings around the waiver signing and the emphasis that medical students must be involved in the course reinforced a hierarchical message that physicians are the most important part of the health care system; indeed, perhaps the only important member of the team, as this offering would not go forward without their participation.

The Dear Dean Letter sent from Accreditation Council for Pharmacy Education (ACPE) on June 11, 2018, stating that pharmacy programs will be out of compliance with Standard 11 if physicians and medical students are not included in interprofessional experiences (<https://www.acpe-accredit.org/pdf/DeanLetterJune2018.pdf>) further emphasizes this challenge. While future pharmacists must learn how to work with physicians, the current challenges in obtaining medical school participation requires pharmacy programs to go to extensive lengths or risk being out of compliance with ACPE accreditation.

The academic leaders within our institution's medical school are interested and motivated to involve medical students in interprofessional experiences, but the tuition structure of the medical school makes academic course participation almost impossible. Unfortunately, this project does not provide any strategies to overcome this ongoing challenge, but it hopefully highlights the medicine-centric circumstance this creates and stimulates conversation and problem-solving to address it.

Future changes to the course will include moving to a pass/fail grading scale. This was decided as all students enrolled in in the credit-bearing version of the course in 2018 earned A's and because student performance in the activities and assessments for the course are more appropriately scored as "meets expectations" or "does not meet expectations." The instructional team is also exploring ways to expand on the community clinical experience and increase the mental health care portion of the course. In addition, formal evaluation of the motivational effectiveness using the validated Instructional Materials Motivation Survey (IMMS) is being considered for future offerings.<sup>8</sup>

Limitations of this project include the small number of participants, single institution, lack of a baseline assessment of HIV knowledge, lack of data that students who listed intention to pursue an HIV focused practice setting did so, and self-selection of students into an elective course. Despite likely attracting students with an interest in either or both HIV and interprofessional collaboration, this project provides strategies that the University of Minnesota has found to be successful and sustainable and may offer new approaches that other programs may wish to try within their own institutions.

## CONCLUSION

People living with HIV need and deserve comprehensive care that requires an interprofessional approach. The primary goals of this project were to design an educational experience that contributed to the creation of a pipeline of future clinicians who are knowledgeable and skilled in both the diagnostic and treatment aspects of this specialty area and interprofessional collaboration. Just as importantly, though, the learners in this experience discovered that people living with HIV mostly require comprehensive primary care, not specialty care. Given the transformation in HIV care over the years, health professional programs need to find ways to expand this clinical topic within interprofessional curricula. While caring for people with HIV inherently has to be an interprofessional endeavor, the educational design used in

this project provides a transferable strategy for fostering interest and ability in becoming an interprofessional collaborative clinician that is independent of the HIV clinical setting.

## ACKNOWLEDGMENTS

This project was supported by the Health Resources and Services Administration (HRSA) of the US Department of Health and Human Services (HHS) under grant number U1OHA29293, AIDS Education and Training Centers. The authors thank Sophia Gleason for her assistance in the preparation of this manuscript.

## REFERENCES

1. Chu C, Selwyn PA. An epidemic in evolution: the need for new models of HIV care in the chronic disease era. *J Urban Health*. 2011;88(3):556-566.
2. Northfelt DW, Hayward RA, Shapiro MF. The acquired immunodeficiency syndrome is a primary care disease. *Ann Intern Med*. 1988;109:773-775.
3. Saag MS, White R. An unintentional home builder. *AIDS Read*. 2009;19:166-168.
4. Sweeney S, Obure CD, Maier CB, Greener R, Dehne K, Vassall A. Costs and efficiency of integrating HIV/AIDS services with other health services: a systematic review of evidence and experience. *Sex Transm Infect*. 2012;88(2):85-99.
5. Sherer R, Stieglitz K, Narra J, et al. HIV multidisciplinary teams work: support services improve access to and retention in HIV primary care. *AIDS Care*. 2002;14 Suppl 1:S31-44.
6. Institute of Medicine. *Measuring the Impact of Interprofessional Education on Collaborative Practice and Patient Outcomes*. Washington, DC: The National Academies Press; 2015.
7. Schottenfeld L, Petersen D, Peikes D, et al. *Creating Patient-Centered Team-Based Primary Care*. Rockville, MD: Agency for Healthcare Research and Quality; 2016.
8. Keller JM. Development and use of the ARCS model of instructional design. *J Instruct Dev* 1987;10(3):2-10.
9. Merrill MD. First principles of instruction. *Ed Tech Res Dev*. 2002;50(3):43-59.
10. Billett S. Learning through practice. In Billett S, ed. *Learning Through Practice: Models, Traditions, Orientations and Approaches*. Dordrecht, Netherlands: Springer; 2010:1-20.
11. Brookfield SD, Preskill S. *Discussion as a Way of Teaching*. San Francisco, CA: Jossey-Bass Publishers; 1999.
12. van Merriënboer, JGG. Alternate models of instructional design: holistic design approaches and complex learning. In Reiser RA, Dempsey JV, eds. *Trends and Issues in Instructional Design and Technology*. Upper Saddle River, NJ: Pearson Education, Inc; 2007:72-81.
13. van Merriënboer, JGG, Kester L. Whole-task models in education. In Spector JM, Merrill, MD, van Merriënboer, JGG, Driscoll MP, eds. *Handbook of Research on Educational Communications and Technology*. 3<sup>rd</sup> ed. Cambridge, UK: Cambridge University Press; 2008:441-456.
14. Archibald D, Trumpower D, MacDonald CJ. Validation of the interprofessional collaborative competency attainment survey (ICCAS). *J Interprof Care*. 2014;28(6):553-558.