

## CLINICAL PRACTICE

# Interprofessional education: it's happening!

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## ABSTRACT

**Introduction:** Integrating interprofessional education (IPE) into an academic medical sciences center is a strategy adopted by faculty, in six professional colleges charged with preparing students to become skilled healthcare professionals. Faculty recognize the importance of an interprofessional approach to education.

**Methods:** Three approaches are described: simulation and two student-led community based clinics. In the simulation center 10 nursing, 2 medical, and 2 pharmacy students participate during each simulation day. Nursing students visit a simulated home health patient (standardized patient-trained actor) with diabetes and present findings at a team conference where medicine, pharmacy, and nursing develop a plan of care. The patient is seen by students in a hospital setting and debriefing follows. Another IPE experience involves groups of 4 students, and preceptors (doctor, nurse, dietician, pharmacist) at the free community-based clinic providing care for an underserved population. Students see patients as teams, and present findings to faculty preceptors. Afterwards, reflective thoughts are collected from students.

**Results:** IPE experiences bridge education and practice eliminating existing educational silos. Students participate in core IPE competencies: communication, ethics, roles, and teamwork with the goals of improving quality patient outcomes and are prepared to embrace a new paradigm of healthcare delivery.

**Discussion:** The challenge for involving students across professions is the coordination of schedules. There must be shared conviction from each profession that developing a plan of care is important for better patient outcomes. Preceptors learn from other educators participating, contributing to a collegial atmosphere and role modeling for our future health care professionals.

**Key Words:** Simulation, Patient-centered care, Interprofessional education

## 1. INTRODUCTION

Based on the impetus and move toward health care reform,<sup>[1]</sup> the educational strategies of United States health care students require unprecedented changes. The education models

historically provided to students in silos by discipline are inadequate to support societal needs. The new trends focus on quality outcomes and health promotion.<sup>[2]</sup> Integrating interprofessional education (IPE) into an academic health

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sciences center is an innovative strategy implemented by faculty members teaching in an academic health science university located in the southern part of the United States. The purpose of this paper is to share faculty IPE experiences in an academic medical center.

Three approaches providing interprofessional education at a medical sciences university will be described. Each of the three methods can easily be replicated. One approach developed by faculty integrates interprofessional collaborative learning within a simulation experience for nursing, medicine and pharmacy students. This full day of educational activities incorporates the National League for Nursing (NLN) simulation case studies and includes students functioning together as a care team and designing a comprehensive plan of care. A second creative IPE approach is a student-led community ambulatory care clinic. In this clinic, students from health professions such as nursing, medicine, pharmacy, dietetics, dental hygiene, physician assistant, and audiology programs work in teams providing assessments for residents in an underserved population. Students present findings to the faculty preceptors, and together develop plans of care. The third IPE approach will describe interprofessional teams that provide care in community-dwelling low-income apartment housing.

A review of the historical and current literature specific to and in support of IPE will be included in this article. Methodology of the three approaches used at a medical sciences university will be detailed, and are replicable in other settings. The closing sections of the paper will be discussion about lessons learned and concluding remarks.

### 1.1 Review of literature

While interprofessional healthcare education was initiated by the World Health Organization (WHO) in the 1970's and roots began in the United Kingdom (UK),<sup>[1]</sup> Margaretha Wilhelmsson's of Sweden published "The Linköping Model" in 1986<sup>[2]</sup> which includes base elements of three current core competencies, teamwork, communication, and ethics. The premise of her work was to place The Centre for the Advancement of Interprofessional Education (CAIPE) was first chaired by Dr. John Horder in 1987 engaging universities across the UK in development of IPE.<sup>[3]</sup>

By 1999 the Institute of Medicine Committee on Quality of Health Care in America approximated that between 44,000-98,000 medical errors were occurring in hospitals across the United States annually.<sup>[4]</sup> One of the conclusions from the report was that mistakes are "caused by faulty systems, processes, and conditions that lead people to make mistakes or fail to prevent them".<sup>[4]</sup> As a result, establishing non-punitive environments for better reporting of incidents became dis-

cussion among quality initiatives nation-wide. The Agency for Healthcare Research and Quality (AHRQ) received millions of dollars in funding from Congress to create a Center for Patient Safety which coordinates activities that reduce deadly mistakes. Efforts to make corrections within systems of hospital care delivery became primary.<sup>[5]</sup>

Almost a decade later, the Institute for Healthcare Improvement (IHI) described the IHI Triple Aim Initiative, a framework focused on optimizing health system performance.<sup>[6]</sup> The three dimensions include improving the patient experience, health of populations, and reducing healthcare costs. The United States' healthcare expenditure is 17% of the gross domestic product and is expected to grow to 20% by 2022;<sup>[7]</sup> it is the costliest in the world. Pilot testing of the IHI Triple Aim initiatives began in 100 organizations worldwide. Such ventures in the United States followed including the development of Accountable Care Organizations (ACO) of 2010, patient-centered medical homes, and integration of technology, as well as avoidable hospital readmission programs.<sup>[8]</sup>

"Students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes".<sup>[9]</sup> The purpose was to reform the education silos long established in healthcare education and encourage communication across professions to provide better patient outcomes from team-provided care. There were four core competencies for interprofessional collaborative practice documented. These core competency domains include: communication, ethics and values, roles and responsibilities, and teamwork; each core competency domain has multiple components.<sup>[5]</sup>

Over the last few years, new training initiatives have been suggested to reduce the number of medical errors and provide quality healthcare in a world struggling to meet the needs of populations. A shrinking economy with decreasing numbers of healthcare providers, occurring simultaneously with growing numbers of elderly patients with complex chronic health conditions, have fueled the need for healthcare reform globally.<sup>[7]</sup>

In the United States "Medicare spending grew 4.8% to \$572.5 billion in 2012, or 21 percent of total [National Health Expenditures]".<sup>[10]</sup> More changes are anticipated by 2022 as the "provisions from the 2011 Budget Control Act expire".<sup>[10]</sup> The following citations offer innovative methods that support IPE strategies to better prepare students for collaborative practice with the goal stated in the paper by Margaretha Wilhelmsson being that the patient is the winner.<sup>[2]</sup> With the historical IPE foundation described, the next section of this paper will describe current literature.

## 1.2 Current literature

Teaching scenarios involving different combinations of health profession learners and intensity of integration at pre- and post-graduate levels span the spectrum of interprofessional training and practice in the U.S. and worldwide. The application of team-based learning and practice, interprofessionalism (IP), and efficiency in healthcare delivery is merely academic if the barriers to IPE are not addressed across the course of healthcare education. Merely congregating a variety of health care profession students in a simulation experience or a patient's room does not directly produce pluralistic thinking, healthy debate about assessment and team decision-making.<sup>[11]</sup> Gierman-Riblon and Salloway<sup>[11]</sup> developed a learning exercise based on Gordon Allport's Intergroup Contact Theory, which proposed a group activity to prepare nursing students for participation in an interprofessional healthcare team as team members with parity. Progressing from pairs into small groups, then into the whole class, nursing students with various experience levels in health care, differing personalities, and prejudice levels about collaboration share their attitudes and experiences about themselves and their path to becoming a nurse. Breaking down walls of individual prejudice about self-worth, *i.e.*, capacity for contribution, recognition, and professional goals among the smaller than larger groups encourages reappraisal of each other, investment in fellow students, and generates affective ties among students. This "Group Activity to Prepare Nursing Students for an Interprofessional Team Approach to the Delivery of Care"<sup>[11]</sup> could be adapted to use in other healthcare professional students' learning groups and ultimately into an aggregated interprofessional student IP team-building learning experience.

In the United States, integrating IPE into healthcare curricula is an innovative teaching and learning strategy with benefits for organizations, learners, patients, and ultimately all healthcare stakeholders. Accrediting agencies such as the American Association of Colleges of Nursing Collegiate Commission on Nursing Education<sup>[12]</sup> recognize the benefit of collaborative education. One of the Nine Essential Elements for Baccalaureate Nursing Program accreditation is "Interprofessional communication and collaboration for improving patient health outcomes".<sup>[12]</sup> Interprofessional education is also valued among other healthcare disciplines for its advancements in scholarship and practice compared to standardized educational practices.

A significant characteristic of integrating IPE learning early in healthcare education is the promotion of collegial role development. The approach proactively diminishes the discipline specific confines often accompanying standardized healthcare education and facilitates a seamless progression

into professional practice. Additionally, learners' ability to bridge abstract theories and models of care into practice with real-time interaction with integral partners of the interprofessional team is another key feature. From a patient care perspective, IPE emphasizes the application of concepts such as teamwork and collaboration, readying learners to increase quality outcomes and promote patient and family-centered care. Academic organizations benefit from the merging of programmatic resources to provide an IPE experience. Future employers will have access to novice providers who are better prepared to adapt to an interprofessional healthcare environment.

IPE has been added in community-based programs in the United States and is helping improve access to healthcare for impoverished individuals in effort to improve their quality of life. The poor and uninsured have received health care services, including patient education and multi-professional care, with IPE nested in community outreach settings. The University of Oklahoma College of Medicine's School of Community Medicine engaged community stakeholders to target local health system flaws to improve healthcare quality, access and benefit/cost for their underserved citizens. Healthcare systems, providers and payers in Tulsa, Oklahoma, provided its uninsured citizens with student-run patient-centered medical homes that also taught learners about systems-based practice and improvement and team-based learning across disciplines in healthcare. They also gathered professional healthcare students from across the university campus into an annual interdisciplinary summer institute.<sup>[13]</sup> East Carolina University has various IPE programs that use reality-based patient care simulation, "feet on the ground" county-based nutrition literacy and Virtual Technology to teach IP collaboration. Also associated with East Carolina University is a unique interprofessional chapter of the Institute for Healthcare Improvement's Open School, with a learning community of over 170,000 different health professions students worldwide meeting locally toward improving healthcare systems.<sup>[14]</sup>

A pilot study in the Netherlands found that IPE educational sessions among physicians and nurses demonstrated a shift from traditional responsibilities to a more collaborative practice promoting healthy aging for elderly patients. The attitudes of nurses and physicians towards the health promotion of elders in their primary care practices improved through team development of the patient care plan after participating in this IPE intervention. Thus, a shift to include more preventive care of the elderly occurred after the IPE intervention using a team approach to elder care.<sup>[15]</sup>

Citing teamwork skills as a foundational component of inter-

professional collaboration, Shrader, Kern, Zoller and Blue<sup>[16]</sup> tested whether interprofessional teamwork skills would predict clinical outcomes in a simulated health care situation. Students of medicine, nursing, pharmacy and physician assistant schools were combined in simulation teams. Their attitudes toward collaboration were measured by a teamwork evaluation tool based on the Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) model, and their simulated patient clinical outcomes. The simulation scenario involved a complex hospital rounding situation in which the “patient” became unstable due to acute, iatrogenic occult GI bleeding. The Interdisciplinary Education Perception Scale was nearly a significant predictor of clinical outpatient score with  $p = .054$ , but the teamwork score was strongly significant at  $p < .001$ .

Health professional students who learn together will more likely transition to interprofessional collaboration in practice.<sup>[14]</sup> Multiple methodologies to teach IPE, measure its efficacy, and practice Interprofessional Collaboration (IPC) have been used to teach undergraduate learners and those in healthcare practice. Team objective-structured clinical encounters,<sup>[17]</sup> a metacognitive model for IPE to assess professional competence on the levels of individual, team and organization,<sup>[18]</sup> and TeamSTEPPS in neonatal resuscitation simulations are some examples.<sup>[19]</sup> In a prospective discernment of applicant non-traditional aptitudes and skills, Arroliga, Huber, Myers, Dieckert and Wesson<sup>[20]</sup> proposed that admission criteria for health professional schools should include the ability to work sociably in groups and use of a metric for emotional intelligence.

## 2. INTERPROFESSIONAL SIMULATION EXPERIENCE IN UNDERGRADUATE EDUCATION

A health sciences center in the mid-south United States includes an interprofessional simulation experience for all nursing students in their senior-level Care of Older Adults Course. In this simulation, nursing students interact with students from the Colleges of Medicine and Pharmacy in developing team-based care plans for older adults. One of the most challenging issues of providing IPE was coordinating schedules of students across multiple colleges, *i.e.* Nursing, Medicine, and Pharmacy. The team received leadership support to bring students from three disciplines together for the simulation experience. The National League for Nursing developed the simulated case scenarios for Advancing Care Excellence for Seniors (ACES) Unfolding Cases.<sup>[21]</sup> The selected cases were Millie Larsen and Red Yoder, both community-dwelling older adults with chronic health problems typical of their age group. Nursing students are introduced to the basic concepts of interprofessional practice through expansion of the

NLN simulation cases to include IPE elements. They review a standardized communication tool known as SBAR that includes Situation, Background, Assessment, and Recommendation.<sup>[22]</sup>

Initially nursing students are divided into two groups. One group participates in the care of Millie Larson who arrives in the emergency department with delirium, while the second group makes a home visit to a diabetic patient named Red Yoder who has a diabetic foot ulcer. Prior to the visits both groups listen to a recorded monolog in which the patients tell their stories. Subsequently, student nurses are selected to visit the patients while the remaining become observers via audio-video feed. After the visit is completed, the team returns to the classroom for debriefing the case with the classmates who observed the encounter. Patient and family are included in the debriefing and provide feedback about how they felt during the interaction.

After lunch, medical and pharmacy students arrive to participate in a team conference, in which the nursing students give an SBAR report and together the team develops a care plan for Red Yoder. During this process, team members are informed that Red Yoder has arrived in the hospital emergency department with acute complications related to exacerbation of his diabetic foot ulcer. An interprofessional team of students assesses Red Yoder while the rest of the interprofessional team observes.

Afterwards the entire team convenes for a final debriefing of the case study. Faculty members facilitate, but the students are the primary participants in the debriefing. The students describe positive aspects of the simulation and identify modifications for improving future interactions. A valuable aspect at the end of the day of simulation is a reflection in which each student describes lessons learned for incorporation into future collaborative practice. Themes from the reflections included recognizing the valuable input from each profession and patient and family perceptions of care. This was the first experience for students to hear how they made patients and families feel when included directly.

## 3. STUDENT-LED AMBULATORY CLINIC

Beyond simulation, another method for incorporating IPE into an experiential setting is a student-led, interprofessional inner city ambulatory care clinic nested in an urban section of a city in southeastern state in the United States similar to the one in Oklahoma described in the current literature. This inner city clinic, which has been operating since January 2013, is located in the community next door to the university campus. The community clinic serves a predominately African-American and Hispanic population that is medically

underserved despite being next door to the state's premier teaching institution. The university's desire to reach out to the community closest to it and the donation of a building to the university in that same community converged and led to the creation of this clinic as an effort to improve access to healthcare and to improve quality of life for a lower socioeconomic individuals of the community who have available government subsidized programs, however, are not using them due to social determinants.

Since inception, the goal of the clinic has been to provide primary care and dental services to the community and to foster interprofessional education for students. To ensure the clinic would provide services the community wanted, a community health needs assessment was performed that confirmed the medical goals of the clinic. The clinic has students from eleven health profession programs and includes students in all years of study. The programs include: audiology, dental hygiene, dietetics, medical laboratory science, graduate school, medicine, nursing, pharmacy, physician assistant studies, public health and speech pathology. For students who do not have a clinical focus like public health or PhD students, they are given the opportunity to perform administrative duties or act as a patient liaison or connector to services in the community. The clinic has also partnered with students from the four-year undergraduate university to elicit help from students in the social work department and the Spanish department for interpretation purposes. Students perform all duties of the clinic from check-in to check-out and follow-up.

When patients present to the clinic, an interprofessional team of 3-4 students is assigned. The care team interviews the patient, determines what services are needed, completes a physical exam, labs if appropriate and formulates an assessment and plan. If the patient needs to be referred out, the team facilitates this process. Once the team has an assessment and plan, they present the patient to an interprofessional team of preceptors. This preceptor team consists of preceptors from the programs that participate in the clinic and always includes a nurse, pharmacist and a physician. The student team and the preceptor team discuss the patient and have an open dialogue among professions. This allows preceptors to model interprofessional collaboration. All students at the clinic are encouraged to listen in and contribute during the presentations if they do not have a patient. This interaction is a favorite part of clinic for many students and preceptors because the conversations are so rich and complete as students discuss patients with preceptors who have different perspectives. Sometimes the discussion surrounds cost-effective medications, dietary modifications, best evidence-based practice guidelines, and what services are available for persons

without access via insurance. A provider accompanies the students to see the patient before final treatment is prescribed to confirm physical findings and ensure that all patients are seen by a licensed provider.

Students also gain an appreciation for the amount and quality of education other health profession students. Evidence is found from review of the reflective notes written by each student following patient episodes. Cards to be used for reflective comments are handed out by the Director On Duty, DOD, which is a student leader assigned each clinical day. All students are asked to reflect on what they learned and write on a card before seeing the next patient. This appreciation is evidenced by them asking each other's' opinions and questions about topics such as disease states, medications, and diet modification recommendations. In this environment, they continually learn about, from and with each other.

Groups of students and faculty see about twenty patients a day using this process. The clinic expanded to include dental care. There are dental hygiene students and dentists taking care of oral health related issues. The clinic has appointments four months in advance now of individuals from the urban and surrounding community.

#### 4. COMMUNITY ELDERLY HOUSING

A third method of incorporating IPE into clinical learning and practice has been happening for a number of years in community-dwelling low income housing. The College of Nursing is partnered with a large housing authority in the capitol city that houses approximately 800 residents, elderly and disabled, in community dwelling, independent sites. The partnership necessitates providing multiple case management services for these residents. Many nursing students of all levels of education, from traditional undergraduate to advanced practice nurses, participate in the nurse-run clinics at four of these sites.

On a routine basis, other professions join the nursing students to conduct teaching and screening for the residents. Dental Hygiene students partner with the nursing students to perform oral health screenings and education and provide referral information. Audiology students have partnered with the nursing students to perform hearing screenings and referrals when deficits were identified. Pharmacy and nursing students collaborate to perform medication reconciliation, to provide education regarding medications, and also to assist in identifying the appropriate insurance supplements based on the individuals' prescribed medications and the resources available.

It is now recognized across healthcare settings that there are naturally occurring opportunities for IPE to be enriched with

intentional assignments that allow students to learn from, with, and about each other. Elderly community housing provides a great landscape for IPE among a population, many of whom live with chronic illness and sometimes require assistance getting to medical care because of physical or social determinants of health challenges. The incorporation of IPE equips residents to live independently in the community and provides primary, secondary, and tertiary approaches to health management.

## 5. DISCUSSION

### 5.1 Simulation

The major challenge for the first example of IPE involving nursing students and the ACES case scenarios is the coordination of course schedules among participating health profession students. The goal is to include a variety of students from the other health professions, yet the logistics of working with each college's schedule is fairly daunting. More intense determination and coordination by each college to facilitate this IPE experience is needed in the future.

One of the most interesting take-away lessons for the participating students is the feedback from the standardized patient and family during the debriefing sessions. The students often state this is the first time they have encountered such important information during their education. The students learn that both verbal and nonverbal communication during patient/family encounters can enhance or detract from a safe, positive healthcare outcome. This is often a true moment of discovery for the students.

There is also a shared conviction that the valuable input from each profession as they work together to develop a plan of care is important to creating better outcomes for the patient. One medical student frankly admitted his feelings of relief when he discovered he could depend on the nursing and pharmacy students to contribute important assessment data and sound ideas for treatment, which led to a team-based plan of care. As a group, students concluded they would be much more comfortable communicating with each other in the practice setting following this IPE experience. Another medical student stated that she felt responsible for her patients and was glad to share caring for them with nurses and pharmacists. She commented that she was previously unaware of the assessment skills that nurses are taught in their foundational classes and clinical experiences and felt supported by the additional knowledge and skill provided by nursing and pharmacy.

### 5.2 Student led community clinics

In the second IPE experience described earlier in this paper, the student-led community clinic, staffed almost completely

with volunteers, has its challenges as well. This twice-a-week evening clinic usually has many student volunteers, yet there are times the educational demands of exam preparation or school breaks can cause a shortage in student staffing. In an effort to provide continuity, some colleges schedule clinical rotation hours for students during the school year.

Another significant challenge to this IPE experience is teaching the definition of an interprofessional approach to patient care to students and preceptors. The approach conceptualized by the clinic's founding board members envisioned the assessment of patients by student interprofessional teams. The student team then presents the patient to an interprofessional team of preceptors. This team approach provides an opportunity for each student to be involved with the patient and his plan of care from beginning to end, from assessment to communicating the final plan of care to the patient. The goal is that a more complete plan of care can be formulated and improved patient outcomes will be accomplished. Students initially worried that patients might not enjoy this team approach. Anecdotally, the response by the community and individual patients has been overwhelmingly positive. Patients state that they are getting lots of attention and appreciate the different perspectives shared by varying health profession students. The patients are given ample time to voice and have answered any questions about their health and the plan of care. The students themselves appreciate the input from the other professions as they learn about resources and services available to the patient.

Team precepting is another potential challenge, since many educators have not experienced this type of precepting in the past. The discussions held by the interprofessional team of preceptors are quite unique in that there are doctors, nurses, pharmacist, dietitians, and dentists with various teaching styles and clinical backgrounds. Some faculty will quiz the students stimulating them to think critically. Others combine questions with brief lecture or with drawing on white board to better describe the possible pathology and develop pathways to rule out and narrow the diagnostic ideas before going to see the patient together. These conversations afford critical thinking opportunities for students, allowing them to draw from a wider knowledge base than that represented by their chosen health profession. It also provides consistent exposure to contributions from each health profession. To illustrate, one team precepting experience occurred while discussing an elderly patient in the community who presented to the clinic with a list of complex health issues. The team of preceptors (including a geriatrician, a nurse educator, two pharmacy educators, one nutritionist, one dental hygiene educator) worked together and with the team of students to problem solve in delineating an appropriate plan of care

for the patient. The back-and-forth discussion illustrated the complexity of needs for this population, and the challenges to provide services adequate to improve the patient's outcomes.

Preceptors also find themselves learning from the other educators participating in patient discussions with the students. Reflections are written by all who participate in this experience and a common theme has been "learning from each other and sharing resources", such as 5-Minute Consult and Epocrates which are downloadable apps, making the clinic a place for quality patient care and improved access to the complex American healthcare system as well as contributing to professional growth among licensed providers of care. There appears to be a collegial atmosphere seen within the clinic where interprofessional insight is expanding, and role modeling for our future health care professionals (students) is demonstrated. These are the criteria that make this IPE experience unique, but more importantly, this approach to the care of patients in the community will help improve access to care with improved patient outcomes.

## 6. CONCLUSION

IPE originated in Europe in the 1960s and was introduced in North America in the 1990s. It became a focus in the United States with heightened emphasis for improving access and quality with the passing of the Affordable Care Act in 2010. This article described three strategies of integrating IPE into curricula. The first incorporated IPE core competencies focused on communication, roles, and teamwork into an expanded simulation activity. The second method facilitated learner application of the four core IPE competencies in a student led ambulatory care clinic. The final strategy described an interprofessional team approach to providing health care to a community dwelling low-income housing population. The potential to incorporate the four-core IPE competencies is inherent in the innovative teaching-learning strategies described. Each method can be modified and replicated to meet program and course objectives, learners' needs, and organizational resources.

The greatest challenge for development of IPE experiences in these three strategies implemented in this academic medical

teaching community was coordination of schedules across multiple colleges, nursing, pharmacy, and medicine. The clinics have grown to include additional professions represented by dentists, dental hygienists, nutritionists, social workers, and audiologists. However, expanding services has been limited, due to scheduling issues among faculty and students with varying clinical and classroom responsibilities. Coordination of faculty, student and provider volunteers to meet the current demand in these clinics as patients return for care requires continual preparation and planning by coordinators from each discipline. As a result of overcoming the barrier of scheduling student and faculty time, patients from this inner city population are returning to these clinics for continuity of health care and assistance navigating the complexities of health care in the United States.

Through efficient planning and coordination of resources, valuable IPE exercises can be implemented in many settings and via each level of patient care. Healthcare educators should be encouraged to seek evidence-based resources to facilitate ease of integration of IPE into curricula such as the Unfolding Case Studies developed by National League for Nursing. The teaching-learning strategies described in this paper are congruent with the four core elements of IPE: communication, ethics, roles and team-work and is also available as a blueprint for future use. Learners report advantages of an IPE experience compared to traditional teaching and learning methods in terms of improved critical thinking, communication, and collaborative practice skills. In addition to learners' benefit and implications for their future practices, the generalizability of IPE to various healthcare academic settings is a significant motivation for educators to embrace this teaching method.

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## CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

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