Multidisciplinary fragmentation contributes to myriad medical errors and as many as 98,000 patient deaths per year. The Institute of Medicine has proposed steps to improve healthcare delivery, including providing more opportunities for interdisciplinary training. The authors describe the interprofessional education (IPE) program at Western University of Health Sciences (WesternU) in Pomona, California. In 2007, 9 colleges at WesternU—including the College of Osteopathic Medicine of the Pacific—undertook an IPE initiative that resulted in creation of a 3-phase program. Part of the IPE development process involved identifying core competencies that were nontechnical and nonclinical and common to all healthcare professions. The IPE development and implementation process and the identified competencies were analyzed for their relationship to the tenets of osteopathic medicine and the core competencies of osteopathic medical education. Although these tenets and core competencies were not intentionally used in the development process of the WesternU IPE program, the analysis revealed that the major components of the program are congruent with the framework of osteopathic principles and practice. The osteopathic medical profession’s founding principles, broad-based perspective, and health-promoting tenets put the profession in a position to emerge as one of the leading forces in IPE.


As identified by an Institute of Medicine (IOM) report in 2000, errors in the healthcare system account for a substantial number of poor outcomes, including an estimated 44,000 to 98,000 patient deaths annually.1 The majority of these medical errors are the result of faulty systems, processes, and conditions that are not causally related to any particular individual or profession.1 In addition to the pain, suffering, and loss of life of patients and the decreased morale among healthcare providers, medical errors and multidisciplinary fragmentation contribute to economic costs of $17 billion to $29 billion annually.1

Analysis of this problem resulted in the 2001 IOM report Crossing the Quality Chasm: A New Health System for the 21st Century. The IOM concluded that to improve healthcare delivery, changes should include stressing evidence-based practice, modifying ways in which healthcare professionals are regulated and accredited, and providing more opportunities for interdisciplinary (ie, interprofessional) training.2

The origin and development of the interprofessional education (IPE) movement is beyond the scope of the present discussion. However, it is important to note that this movement’s inception occurred before the reports released by the IOM.1,2 Many of the healthcare providers who first adapted IPE were in countries other than the United States, including Canada and the United Kingdom. For example, the Department of Health of the United Kingdom published a document in 2000 asserting the following3:

It (modernization) is about looking at the workforce in a different way, as teams of people rather than as different professional tribes. For too long we have planned and trained staff in a uni-professional/uni-disciplinary way without a clear and comprehensive look at the future.

As this new paradigm in healthcare training and practice has evolved, the definition of IPE has also evolved. According to the Centre for the Advancement of Interprofessional Education,4 “Interprofessional Education occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care.”

In 2007, Western University of Health Sciences (WesternU) in Pomona, California, began implementing a full-scale IPE program with participation from 9 of its colleges, including the College of Osteopathic Medicine of the Pacific (West-
ernU/COMP). Although the university offers a total of 22 academic programs that culminate in a healthcare degree, only 9 of these programs participate in the IPE program. In addition to osteopathic medicine, participating programs include dental medicine, graduate nursing, optometry, pharmacy, physical therapy, physician assistant, pediatric medicine, and veterinary medicine.

Because IPE is rapidly becoming a cornerstone of the educational philosophy at WesternU, it seems prudent to discuss the process of IPE development at this university, including the natural “fit” of IPE with osteopathic medicine. In the present article, we describe the 3 phases of the IPE program at WesternU, and we discuss results of a retrospective analysis of the ways in which osteopathic medicine provides a natural and effective foundational framework for the implementation of IPE and the ways in which the IPE program has contributed to the evolution of the university. We plan to publish 2 follow-up reports that will describe (1) the future phases of the IPE program and (2) a retrospective examination of lessons learned.

**WesternU IPE Program Development**

The planning process for the IPE program at WesternU took place over 2 years. Faculty, students, administrators, staff, and community representatives all participated in the planning process, which led to the emergence of a 3-phase IPE model. The planning process included discussions of course logistics, course delivery, course competencies, and desired course outcomes for all 3 phases. Faculty issues, such as training, workload, and identification of IPE as a scholarly activity for promotion and tenure, were also important topics considered during the planning process.

Another crucial aspect of the IPE program discussed in the planning process was the need for ongoing assessment of program success in each of the 3 phases. Examples of evaluation methods used, planned, or under consideration are Team Objective Structured Clinical Examinations (TOSCEs), surveys of attitudes and behaviors relevant to IPE (eg, communication, collaboration, cultural awareness), and the use of patient outcome data.

Following are descriptions of each of the 3 phases of WesternU’s IPE model. These phases are also depicted in the Figure.

**Phase I**

Phase I of the IPE program is a case-based small group course—the only required course for all 9 of the identified academic programs. The 2009-2010 academic year was the first year for course implementation. The course was originally designed to be divided into 2 semesters. However, because of a delay in construction of a building needed for group classes, the course was limited to a single semester in the first year, which started in January 2010. The full, 2-semester version of the course was launched in the 2010-2011 academic year.

In the course’s full version, students are exposed to a series of foundation lectures focusing on the identified non-technical competencies. They then apply knowledge of those competencies to 5 clinical cases over the course of the academic year. (In the first year, students were exposed to 3 clinical cases.) The cases for the complete course cover a variety of medical conditions that are common in clinical scenarios, as identified by the US Department of Health and Human Services’ Healthy People 2010 project and by WesternU’s survey of common conditions encountered in the 9 participating professions. The cases also cover the patient’s entire lifespan, from pediatrics to geriatrics.

Logistically, students are divided into small interprofessionally diverse groups of approximately 9 students each, with 1 trained faculty facilitator in each group. The majority of the faculty representatives represent faculty from the 9 programs. However, some external facilitators from area colleges and healthcare facilities are also used. Each faculty facilitator participates in a 2-part facilitator training process before they are assigned to a student group.

Because the 9 academic programs each have different class sizes, every group cannot include 1 student from each profession. Thus, the groups are organized to provide the maximal exposure to the largest number of professions in each group. By the end of the course, each first-year health professions student will be exposed at least once to every profession represented in the IPE program.

Using a facilitated small group discussion format, students are expected to discuss the nonclinical aspects of each case. These aspects include psychosocial issues concerning the case and applied knowledge of competencies, such as communication and collaboration, interprofessional knowledge and awareness, ethical and cultural awareness, and quality-of-life issues (eg, a culture of patient safety).

Because of the large number of course participants in the first year (850 students and a pool of about 150 faculty facilitators), the course director worked with a team to plan, coordinate, implement, and assess course design and case content, course logistics (eg, student and faculty correspondence and grade reporting), and student counseling and performance issues. This team was comprised of 1 faculty member from each of the 9 colleges. In addition, the curriculum chair from each college or program sat on the Implementation Committee, which was tasked with larger academic management issues, such as determining course policies and procedures.

**Phase II**

Phase II of the IPE program was launched in the 2010-2011 academic year. Student participation in this phase is not a university requirement for graduation. However, the majority of the involved academic programs have elected to make participation in this phase a requirement for each of the respective college curricula. The exact number of programs that will participate in phase II is still in discussion. However, of the 9 participating programs, those that have a 3-year or 4-year cur-
Curriculum are the most likely candidates to participate. These programs are dental medicine, optometry, osteopathic medicine, pharmacy, physical therapy, podiatric medicine, and veterinary medicine.

The phase II course requires students to move beyond the awareness level of the core competencies and to apply critical thinking and analytical skills toward situations that address patient and community safety. The foundation of this course focuses on the TeamSTEPPS curriculum, a teamwork system for healthcare professionals that is designed to improve patient safety. Future phase II activities under consideration include Team Objective Structured Clinical Examinations (TOSCEs) and service learning. In phase III, most students will be required to engage in interprofessional team-based rotation experiences in clinical, public health, or community settings. Ongoing evaluation of these phases will include various methods, such as attitudinal surveys and behavior measurements. The authors report that the IPE program has led to a culture of interprofessionalism and a collaborative patient-centered focus on the WesternU campus. Full implementation of the program is anticipated in 2012.

Phase III
Phase III of the IPE program will focus on clinical skills. This phase currently remains in the planning stages, but it is expected that the majority of participating students will be required to engage in some type of interprofessional team-based rotation experience in either a clinical setting or a public health or community setting. Completion of phase III planning will require continued support from the college deans. The deans’ support of team building as an essential, natural, and inherent aspect of leadership has permitted the IPE teams to set the expectation that consensus and collaboration is the foundation for better medicine.

Part of this administrative support has been reflected in the appointment of a faculty team (with 1 clinical faculty member from each of the 9 participating academic programs) charged with the tremendous task of phase III development. It is anticipated that students’ phase III experience will begin with small pilot rotations using WesternU/COMP’s ambulatory patient care center, which is equipped with an interprofessional diagnostic suite. Phase III is also anticipated to include a collaborative IPE rotation with 1 of the local Osteopathic Postdoctoral Training Institution sites that provide training to multiple professions. In addition to students’ clinical experience, participation in interprofessional grand rounds and
journal clubs will be encouraged as part of the IPE clinical experience.

Pilot programs for phase III are expected to be implemented in the 2011-2012 academic year.

**Culture of Interprofessionalism**

Although the initial implementation of the IPE program at WesternU was an abbreviated version, it encouraged the emergence of a culture of interprofessionalism on the WesternU campus. Community service clubs and organizations began intensive planning for interprofessional venues and activities, and faculty began engaging in interprofessional grassroots activities and research projects. Examples of this emerging IPE culture have included a multicollege project in support of World Rabies Day; the organization of Faculty Learning Communities designed to promote interprofessional topics; the development and implementation of interprofessional, community-wide health and screening fairs; and the development of a Center for Global and Community Health (an interprofessional collaboration among all the colleges). An additional contributor to WesternU’s culture of interprofessionalism was the launching of 3 new colleges—the colleges of dentistry, optometry, and podiatry—each of which participates in a shared curriculum with WesternU/COMP.

In general, an overall awareness of “each other” has pervaded all levels of university life. This process was enhanced by the shared vision of the college deans. Led by the dean of WesternU/COMP, the deans wholeheartedly embraced the new educational model of IPE, seeing the potential to usher in a more evolved, patient-centered paradigm of healthcare. As further evidence of the deans’ commitment to IPE, they worked together to provide the personnel and resources for the faculty design teams, faculty training, and faculty release time for case facilitation. Their decision to allow IPE activities to count toward scholarly activity, promotion, and tenure further promoted the acceptance of IPE into the mainstream university culture.

Yet another factor to emerge as a manifestation of the IPE program was an expanded mission of WesternU/COMP “to prepare students to become technically competent, culturally sensitive, professional and compassionate physicians who are lifelong learners and will serve society by providing comprehensive, patient-centered healthcare with the distinctive osteopathic philosophy.” As part of an exploration of that observation, an analysis of how the tenets of osteopathic medicine and the core competencies of osteopathic medical education merged with the IPE program ensued. An obvious fit became evident, and a synergistic evolutionary process began to emerge—with WesternU/COMP contributing to the development of IPE, and IPE, in turn, contributing to the evolution of both WesternU/COMP and WesternU.

The vision established through IPE permeated the mission statement of WesternU’s Interprofessional Faculty Practice Plan. The university established a coordinated effort to deliver healthcare services under the vice president of clinical services. The colleges participate in this effort through joint meetings and sharing of resources in support of expanding and coordinating all the individual practices. This plan’s mission statement is as follows:

To provide, in a humanistic tradition, the interprofessional delivery of high quality patient-centered health care in a learning environment with incentives that motivate patients and care givers, committed to integrated services and supported by a culture that is involved, inspired and invested in the well being of patients, their families and communities.

The first step of our retrospective analysis was to review the tenets of osteopathic medicine and the core competencies of osteopathic medical education as a process parallel to IPE program development and implementation. As most osteopathic physicians know, the 4 tenets of the osteopathic medical profession are as follows:

- The body is a unit; the person is a unit of body, mind, and spirit.
- The body is capable of self-regulation, self-healing, and health maintenance.
- Structure and function are reciprocally interrelated.
- Rational treatment is based upon an understanding of the basic principles of body unity, self-regulation, and the interrelationship of structure and function.

As most osteopathic medical educators know, the 7 core competencies of the osteopathic medical profession are the following:

- medical knowledge
- osteopathic philosophy and osteopathic manipulative medicine
- interpersonal and communication skills
- professionalism (leadership)
- patient-centered care
- evidence-based medicine
- systems-based practice
Each tenet and each competency was reviewed and compared against different aspects of the WesternU IPE program. The analysis took note of natural fits and tendencies within IPE, as well as of lessons learned regarding problems that could have been avoided had more attention been paid to osteopathic principles.

**Congruence of IPE Program With Osteopathic Tenets and Core Competencies**

The tenets of osteopathic medicine and the core competencies of osteopathic medical education were not intentionally used in the development and implementation process of the WesternU IPE program. Nevertheless, the analysis revealed that the major components of the IPE program are congruent with the framework of osteopathic principles and practice.

**Osteopathic Tenets**

The body is a unit; the person is a unit of body, mind, and spirit.—The IPE program at WesternU is a unit comprised of 9 distinct professions. Although the overarching goal of the program has been to promote IPE and awareness, it has been crucial to remain cognizant of the fact that the program is comprised of different professions with different missions. Just as each organ of the body must function in a unique and specific way to promote the health of the entire organism, so each college needs to provide a curriculum specific to the program. The IPE curriculum cannot supplant, conflict with, or impose itself on any individual college curriculum.

If any single organ or system does not function properly, the malfunction could eventually destroy or disable the whole organism. Life is promoted by the unique function of each cell, organ, or system integrating into the whole body. In keeping with that analogy, it is crucial that each profession contributes its own professional identity, knowledge, skill base, and pride to assure comprehensive and integrative care of the patient. Each member of the healthcare team in the IPE program must understand his or her specific role and function before he or she can effectively engage as a team member.

The body is capable of self-regulation, self-healing, and health maintenance.—WesternU’s IPE program is capable of self-regulation, self-healing, and health maintenance—just as osteopathic manipulative medicine (OMM) can restore the body’s innate capacity for self-healing and provide the catalyst necessary to help restore well-being.

Likewise, the support of the university’s administration has been a crucial factor in the IPE program’s early success. The cohesive and collegial approach of all the deans was the catalyst that ignited the IPE culture, allowing both the formal and informal curricula to thrive. Early on, the deans came together in a focus group to discuss their shared vision. Their commitment to, and passion for, creating this integrated model of healthcare, with its tremendous potential to revolutionize the care of patients, was evident.

Structure and function are reciprocally interrelated.—In his book, *Leading Change*, John P. Kotter of Harvard Business School speaks to the importance of creating a “burning platform” for change. The WesternU IPE program was strategically placed on that platform. The program’s structure was influenced by the simultaneous launching of 3 new professional colleges during the same year. Simultaneous development and implementation of all 3 new processes (ie, structure) affected the implementation and perception of each of the new components (ie, function).

Although the addition of these new colleges helped foster the spirit of interprofessionalism, obstacles and challenges arose as a result of this synchronized addition to the university community. Logistic and curricular issues, such as competition for physical space and identification of differences between the IPE and college curricula, were continual and ongoing challenges. Such logistic factors as physical space and faculty time (ie, structure) affected course design (ie, function).

These barriers were not insurmountable, but they contributed to some of the more challenging aspects of course development and implementation. Fortunately, WesternU was already in a high state of preparedness because of the extensive planning that went into the IPE program, the simultaneous development of the 3 new colleges, and the tremendous amount of top-down support that merged with efforts from faculty and staff. Thus, the additional challenges were just added to the list of solvable issues.

Rational treatment is based upon an understanding of the basic principles of body unity, self-regulation, and the interrelationship of structure and function.—The association between this particular tenet and IPE is that IPE must not be forced. It is crucial to take advantage of natural opportunities and natural congruencies between the different professions. Moreover, the cases and scenarios must not be contrived. Rather, they must be believable and realistic.

It was also imperative to address the fears of faculty and students during IPE development. Because the IPE program was added to an already demanding faculty workload and student curricular load, the impact (ie, stress on the body) of the IPE course had to be weighed and evaluated. Rational treatment demanded that for students, the course be meaningful but not excessively time consuming, and that for faculty, IPE work be considered in academic achievement reviews. In addition, it was vital to identify clear-cut lines of responsibility and communication among the various colleges.

Ironically, early anecdotal reports suggest that faculty reassurance and stress reduction resulted from IPE program implementation. The program provided multiple new faculty members from multiple colleges with natural opportunities to meet, work, and socialize together. The respect and insight gained by these interprofessional interactions may have advanced the university faculty several years ahead in such matters—possibly helping WesternU avoid the classic “stove-
Core Competencies

Although IPE will not manifest all measurable outcomes of the osteopathic medical education core competencies, many of the philosophies and principles of osteopathic medicine are captured in the identified IPE competencies, and parallels can easily be drawn.

An interesting discussion point is the lack of standardization of IPE competencies. Because this is a new and emerging field with no formal accreditation process yet, there are no formally identified IPE competencies. Nevertheless, it was noted that many of the competencies identified as part of the WesternU IPE program development process were common threads among all professions. A brief review of IPE programs at other universities indicated a similar tendency toward developing common interprofessional competencies as part of the programs. It is possible that as IPE evolves, common, shared competencies will increasingly develop among the different healthcare professions.

Standardization of IPE competencies could easily be the subject of an entire exegesis. However, the following discussion focuses on the congruence between the WesternU IPE program and the guiding core competencies of osteopathic medicine.

Medical knowledge—in the IPE program, the osteopathic medical student (OMS) must have command of medical knowledge to lead, facilitate, and integrate application of knowledge within the healthcare team. Although enhancing clinical knowledge is not the primary goal of IPE, it was noted that students obtained an expanded view of clinical care as a collaborative learning opportunity. This particular aspect of IPE could be further expanded to explore common scientific components of the curriculum, such as pathophysiology, pharmacology, and comparative anatomy, as minor learning objectives.

Despite the fact that clinical knowledge is not one of the main focuses of IPE, it is imperative that the OMS exhibit a command of the clinical components of the case to help coordinate the care of the theoretical patient—and, ultimately, the actual patient.

Osteopathic philosophy and OMM—in IPE, the OMS must understand and apply principles of structure and function of the body as well as understand the importance of a “whole-person approach” to maximize the structure and function of the team. Again, this is not one of the competencies stressed in IPE. Nevertheless, the core of osteopathic philosophy focuses on the patient-centered, whole-person approach, and this approach is likewise a central premise of IPE.

By embracing osteopathic philosophy, the OMS will naturally arise as a team leader as he or she intuitively considers all aspects of the patient’s life in developing and implementing a care plan.

Interpersonal and communication skills—The OMS participating in the IPE program must develop and apply communication skills to function as both a leader and member of the healthcare team and to facilitate effective teamwork. In March 2007, the Canadian Interprofessional Health Collaborative (CIHC) performed a literature review to assess the status of IPE competencies. In the majority of reviewed institutions that implemented some form of IPE curricula or training, interpersonal skills focusing on communication and collaboration emerged as a common competency.

Communication skills implemented in the osteopathic medical education curriculum provide the OMS with an opportunity to demonstrate mastery of these skills not only with the patient but also with other healthcare team members.

Professionalism—in IPE, the OMS must learn to exhibit all components of professionalism with a focus on becoming the healthcare team leader. It is crucial that osteopathic physicians of the 21st century understand their responsibility to pull the team together and to offer the power of their license in getting proper care to the patient in the correct place, time and degree. Leadership was recognized as a central component of IPE competencies in the CIHC literature review.

In this new archetypal healthcare model, it is important to understand that each member of the healthcare team may periodically need to assume leadership duties, depending on the circumstances. In addition to functioning as a team leader, the OMS must learn to recognize and develop leadership capacity among all members of the healthcare team. The OMS must be able to promote and work within a flexible interprofessional structure.

As a part of the IPE process, the OMS must embrace other aspects of professionalism in addition to leadership. For example, teamwork, accountability and responsibility, mutual respect, and humanism are all deeply embedded in all phases of the IPE experience.

Patient-centered care—the OMS participating in IPE focuses on broad aspects of the patient, including psychosocial factors and economic status, allowing the healthcare team to develop a comprehensive plan to address the patient’s needs. Patient-centered care is at the heart of IPE. This aspect of training in IPE recognizes that the patient must be seen and treated as an individual within a complex and multifaceted social structure. All factors of the patient’s life must be considered as the healthcare team develops a comprehensive care plan. Because of the patient-centered focus in osteopathic medical training, the OMS will rapidly, efficiently, and effectively embrace and implement this facet of IPE.

Evidence-based medicine—in IPE, the OMS is expected to expand his or her overall knowledge base by using up-to-date, evidence-based sources. In addition, the OMS is exposed to a quality-assurance process geared toward improved patient
outcomes. Such knowledge and experience will become exceedingly important as the philosophy and practice of evidence-based medicine continues to develop. The OMS needs to continually understand and apply the principles of evidence-based medicine as he or she considers the care of the patient in the context of a complex and dynamic healthcare team.

**Systems-based practice**—Although the major focus of IPE is the development of collaborative teamwork, IPE also allows OMSs to broaden their exposure to systems-based practice. The OMS is expected to obtain an awareness of different methods of communication protocols in a variety of healthcare settings and with a multitude of healthcare professionals. For example, incorporation of electronic medical records in IPE will be important to promote the concept of patient-centered care in phase III of the WesternU IPE program.

As an extension of the systems-based analogy, the OMS in the IPE program has the opportunity to understand the entire system of variables that can affect the health of the individual patient as well as of the community at large. The OMS also has the opportunity to promote the health of this system for the greater good.

As indicated throughout the present discussion, IPE is evolving. In the practice of IPE, the healthcare practitioner must think beyond his or her own profession and seek out and embrace other members of the healthcare team. Furthermore, the healthcare practitioner must consider the intricate systems that will affect the health and well-being of the patient and the community. Because this concept is firmly ingrained in osteopathic medical education, the OMS is in a position to naturally embrace this paradigm.

**Comment**

As clearly argued in the IOM’s *Crossing the Quality Chasm* report, the current medical system is fractured and in desperate need of healing. The recent, historic passage of the Patient Protection and Affordable Care Act (ie, the Patient Protection and Affordable Care Act) is further evidence of a system and society begging for an answer. We believe that IPE will be an integral portion of any future fix.

It is also obvious that interdisciplinary communication and collaboration, merged with a healthy dose of patience and understanding, are crucial to develop and implement an IPE program. Because there are times when a true interprofessional approach may not be necessary, it is important to understand that the IPE philosophy can also be applied to circumstances and situations in which interdisciplinary practice is more appropriate than interprofessional practice.

To address the issue of multiple disciplines within the osteopathic medical profession, several measures have been implemented at WesternU/COMP to ensure that OMSs gain an integrated, team-based perspective. For example, a new position was created to oversee “interdisciplinary professional education.” This individual works with faculty and students on a variety of issues, including social medicine, emotional intelligence, and generational differences. Regular meetings have been instituted at WesternU for basic science chairs and clinical chairs from various disciplines to discuss relevant issues and systematic curriculum delivery. Furthermore, clinical chairs are increasing their on-campus presence, thereby representing their various disciplines in a more consistent capacity.

It is imperative that any team in IPE have a designated leader. Although the paradigm for defining the role of the team leader may change somewhat depending on the specific needs of the patient, the osteopathic physician will, more likely than not, be poised to assume that role. It is crucial that osteopathic physicians provide the necessary leadership to maximize the potential of this new medical model.

**Conclusion**

Because the osteopathic philosophy and perspective provides a natural, broad-based framework from which to promote the new healthcare paradigm of IPE, the osteopathic physician is perfectly poised to facilitate the interaction of the healthcare team with a distinctive hands-on approach.

**Acknowledgments**

We acknowledge and thank Provost Ben Cohen, DO, and Vice Provost Sheree Aston, OD, MA, PhD, for their vision and leadership, which were central to the development and implementation of the IPE program at WesternU.

**References**