SPECIAL ARTICLE

▲ The Art and Science of Interprofessional Education

Clay Graybeal, PhD
Richard Long, PhD
Dale Scalise-Smith, PhD
Elizabeth Zeibig, PhD

Interprofessional education (IPE) is increasingly accepted as a core element of health professions education. Its primary function is to prepare health professions students to engage in and deliver interprofessional, team-based healthcare, with the ultimate goal of improving the health and well-being of patients and clients. This paper summarizes findings from 10 interviews with institutional leaders in the field. The goal was to discover core themes than contribute to the art and science of IPE. Thematic challenges and successes are reviewed, and recommendations are provided for further research and for those interested in developing or improving IPE in their own institutions. J Allied Health 2010; 39(3 pt 2):232–237.

THE IMPORTANCE of collaboration is increasingly recognized as the foundation for creating the coordinated, compassionate, and effective care that is essential to good health. Developing a workforce prepared for this vision of integrated care depends on newly minted professionals who enter the system not only with basic technical skills, but also with the ability to advocate for and lead systemic change in the provision of healthcare. The Institute of Medicine[1] has identified a core set of competencies, including communication and team-building skills, that are shared by all the health professions. It is incumbent upon institutions of higher learning to move beyond the historically profession-based "silos" that characterize most health professions education, and create an environment where IPE can occur. IPE has thus become an essential element of every curriculum in health professions education.

The impetus for this paper came from a conversation among the authors about the importance of IPE to each of us in our own institutional settings. We quickly discovered that while our backgrounds vary substantially (special education, physical therapy, laboratory science, and social work) we share a common need to create a context in which interprofessional collaboration can occur. This insight was accompanied by the realization that there are many professions included under the umbrella of allied health, and nearly every institution of higher learning is made up of some unique combination of those professions. This makes it hard to establish any single model or method of IPE that works for all. There is a parallel in the world of healthcare, as well, in that settings where there is a defined team made up of a limited number of members that work together over time are relatively rare. In most settings, collaboration and teamwork occurs in groups that come together relatively quickly to focus on a shared patient or client, resulting in an ever-shifting combination of individual players as team members. Thus, we must identify the key knowledge, skills, and abilities critical to success and apply them quickly and effectively to enhance communication and facilitate teamwork, with the goal of improved outcomes.

Perhaps because there are so many variables involved, it has been challenging to develop evidence that IPE ultimately makes a difference. Zwarenstein et al.[2] concluded that there was no evidence that IPE promotes interprofessional collaboration, or that it improved client outcomes. However, they also indicated that this lack of evidence did not indicate that IPE was not important, but rather that efforts to evaluate it should be improved. IPE continued to gain in popularity, fueled no doubt by the apparent wisdom of its philosophy and the growing belief in its importance. A few years later, Barr et al.[3] reviewed 353 studies and found 107 that met their criteria for rigor. They concluded that there is increasing evidence of effectiveness of IPE, and that it should be integrated into the curricula of pre-professional programs, and then continue to be reinforced throughout one's career.

Despite the increasing body of evidence, the authors of the present study have discovered that it is quite challeng-

Dr. Graybeal is Associate Dean for Academic Affairs and Director of Integrated Health Sciences, Westbrook College of Health Professions, University of New England, Portland, Maine; **Dr. Long** is Associate Dean, College of Health and Human Services, Western Michigan University, Kalamazoo, Michigan; **Dr. Scalise-Smith** is Dean, School of Health Professions, Utica College, Utica, New York; and **Dr. Zeibig** is Vice Chair and Associate Professor, Department of Clinical Laboratory Science, Doisy College of Health Sciences, Saint Louis University, St. Louis, Missouri.

Portions of this paper were presented at the ASAHP Annual Meeting in San Antonio, October 21, 2009.

Address correspondence to: Dr. Clay Graybeal, Westbrook College of Health Professions, University of New England, 716 Stevens Ave., Portland, ME 04103, USA. Tel 207-221-4509, fax 207-221-4716. cgraybeal@une.edu.

ing to bring together students from diverse disciplines at the same time and place, and at similar moments in their professional development, and to expect consistent, appropriate, and meaningful learning to occur. It was this realization that led us to want to explore the question of how institutions had gone about creating change, and who was instrumental in making it happen. Institutions, like individuals, are unique, and thus it is likely that change comes about through a combination of factors. In evidence-based medicine, there are three critical forms of evidence: the findings of traditional research, practitioner wisdom and experience, and patient values and preferences.[4] It occurred to us that we needed to tap into the latter two forms of evidence, the wisdom and experience of leaders, and the particular vision and needs of each institution.

We decided to initiate a series of conversations with some of those individuals who have been on the forefront of the issue. Thus, we extended our conversation to a larger arena, with the intent of identifying core themes or elements of IPE programs that are successful, how these institutions created that success, and whether this knowledge might lead us to insights and to recommendations for further research and investigation.

Methods

This study was exploratory in nature, and used a sample of convenience. Hence, the findings may not be generalizable to the greater population. Ten institutions of higher learning, identified as known or emerging leaders in interprofessional education (6 in the U.S., and 4 in Canada) were recruited for participation. Administrators, knowledgeable and involved with interprofessional education at their respective institutions, agreed to participate in the study. We were particularly interested in speaking with these leaders, as each of the authors is in a leadership role in their respective institutions. All participants were assured that the identity of the institution, as well as the representative interviewed, would remain confidential.

Data was collected through phone interviews using standardized open-ended questions (Appendix 1). Each participant received an electronic copy of the questions prior to the phone interview. In the phone call, researchers explained the purpose of the interview using a scripted introduction (Appendix 2). The format and expected length of the interview was explained, and contact information shared. Prior to the start of the interview, participants were given the opportunity to ask questions and clarify any concerns. During the interviews, responses were recorded through note taking.

The interviews were rich in serendipitous findings, and resulted in both qualitative and quantitative data, with an emphasis on the former. Following the completion of our interviews, we held several phone conferences to discuss and organize the information collected. Through a process of constant comparative analysis,[5] we endeavored to identify the core themes that emerged from the responses, while also allowing space for unique elements of programs that merited attention.

TABLE 1. Frequency of Professions in the Ten Institutions Surveyed

Profession	No. of Programs in Sample
Nursing	10
Pharmacy	10
Social work	9
Medicine	9
Occupational therapy	7
Physical therapy	7
Public health	6
Dentistry	4
Lab sciences	4
Communication disorders	4
Physician assistant	3
Athletic training	3
Physical education and health	3
Psychology/counseling	3
Dental hygiene, nutrition and dietetics, nuclear medicine technology,	2
Audiology, clinical vision science, (cytology, sonography, radiation technology, respiratory, medical lab technician), health administration, health informatics, kinesiology & recreation, medical radiation, midwifery, physiotherapy, radiation therapy, reproductive sciences, speech & language pathology, veterinary	1

Results

Table 1 provides the number of educational programs by profession in our overall sample of 10 universities. Nursing and pharmacy were each represented in all 10, social work and medicine in 9, occupational and physical therapy in 7 each, public health in 6. Our largest category consisted of professions found in only one of the institutions surveyed. The fact that this group is comprised of such a wide range and scope of health professions illustrates the challenge of identifying a single, consistent mix of professions that constitute a model or ideal makeup for incorporating interprofessional education.

As a consequence, the current state of interprofessional education is replete with experimentation and creative solutions to complex problems. While science relies on the scientific method to discover and codify meaning, art emerges from the relationship between structure and improvisation.[6] As we discovered, there is a lot of improvisation going on—hence the title of this article. We found the conversations to be rich and full of unexpected insights. As a result, we believe that our findings are meaningful and relevant, and hope they will serve to further the interest in this subject and generate ideas for additional research on the best practices in IPE.

Factors That Contribute to Success

The most consistent and pervasive theme that emerged from our interviews was that success in IPE depended on the level of investment from two key partners: administration and faculty. From faculty, a critical mass of key leaders is required to develop curricula and to reach out to colleagues with creative and innovative ideas. At the same time, there must be at least one administrator who can champion the cause at the organizational level, including a willingness to invest specific resources in support of the effort. Absent the support of administration, individual faculty members find it difficult to implement specific changes. At the same time, even a great idea at the institutional level has little chance of success without faculty buy-in.

The implementation of IPE often results in a paradigm shift in institutional culture. In some instances, institutional philosophy, mission statements, and strategic planning processes were heavily influenced, and new values were embraced. In some instances, administrators used the weight of their offices to influence the vision and mission, and in others the vision emanated from broader socio-political factors. The latter was most evident in the Canadian schools, where a distinctly different philosophy undergirds the national health care system. All of the Canadian institutions interviewed for this article were influenced and supported by national health policy directives and specific external funding allocated to develop and implement IPE at the pre-professional and professional levels.

In the U.S., since little or no external funding is available, or at best is sought through competitive national and foundation grantors, the implementation of IPE must be preceded by a meaningful internal institutional culture change. This requires substantial buy-in from professions that may or may not have pre-existing collegiate relationships. While representatives of each of the respective institutions report that they have attempted to engage all members of their respective health professions programs in IPE, not every program at every institution participates. The more disciplines that do engage, the greater the chance for success, but there also appear to be some professions that are especially critical, whether for curricular development or clinical and systemic integration. It is hard to create a new culture of health care education, in particular, without the participation of nursing or medicine.

Over-riding all other factors, it is clear that for IPE to succeed on any level, it must be embraced rather than imposed. When faculty members have ownership of the curriculum, for example, they begin to integrate IPE goals and principles into course syllabi, and in turn students readily engage in IPE courses and activities when their own professors promote the opportunities and benefits of this approach.

Curricular successes described by respondents range from development of elective coursework taken by students across departments/schools to full implementation of a series of IPE courses taken by all students in participating health disciplines. The implementation of required elements is more successful when programs and colleges identify and reserve common times for shared activities and courses, incorporate IPE throughout curricula as opposed to making it an "add-on," and when student organizations arrange for activities directly related to IPE.

Other factors that positively influenced institutional successes include:

- Curriculum designed to engage students pre-professionally
- Case studies integrated with theoretical and applied concepts from IPE
- Partnerships developed with health care practitioners and institutions for interprofessional clinical placements
- Community partners, whether health care professionals or clients/patients who guided or mentored students and/or the team in the care management process
- Faculty developed and led international experiences for interprofessional students
- Faculty development activities in IPE principles and practices

Supports for Interprofessional Education

Respondents were emphatic regarding the need for support for IPE from various constituent groups. Support from faculty, for example, was mentioned several times, and one respondent indicated that the earlier effort at his institution to foster IPE failed due to a "top-down" approach and the lack of faculty support and contribution. Not all faculty will be equally invested, however, and key champions in selected departments can be encouraged to advocate for IPE programs and culture.

Adopting IPE as a fundamental aspect of a college's mission and vision is a major undertaking. IPE champions must recognize that progress towards a fully integrated IPE philosophy, and the related curriculum development and implementation work, will be an incremental process that will span a number of years. Faculty with experience in clinical roles where team function was a critical component may be especially useful as advocates of IPE and can be urged to serve on planning groups.

The role of students in IPE development was also suggested by a number of respondents as a key ingredient to success. Student organizations and their leadership council can be one tool for garnering student support. Interestingly, accreditation agencies and the accreditation process sometimes provide an impetus, as more professions are requiring an interprofessional dimension in their educational guidelines. It is worth noting that none of the respondents experienced accreditation as a barrier to IPE implementation, and in fact several noted the benefit of using accreditation requirements as a means of bringing along faculty who may be somewhat resistant to the concept.

It is essential that college leadership, especially the dean, be fully committed to implementation of IPE educational approaches. Respondents noted the importance of the

dean's role in identifying funding support for IPE initiatives, ensuring that steps are taken to align IPE development efforts to the college mission and values, and ensuring accountability in design, implementation, and evaluation. Also, the office of the dean can, as one respondent pointed out, serve as a "bully pulpit" to advance IPE thinking and action within the college. In regard to the dean's role in the higher-level administration, he or she plays a critical role in ensuring that there is some understanding on the part of the president and the provost for the importance of IPE. Advocacy at senior leadership levels will aid the dean when the time comes to request additional funding to support IPE initiatives. In successful institutions, that funding is often directed at reductions in teaching load for faculty willing to pursue IPE projects, including developing curriculum, conducting research, partnering with clinical sites, or leading interprofessional international initiatives. Several US and Canadian institutions have established offices dedicated to IPE, and have hired administrators and support staff in an effort to build IPE capacity quickly.

Challenges in Interprofessional Education

Respondents were asked what they felt the greatest challenges were in developing and implementing IPE, and how these challenges were handled. One of the most common challenges stems from the demands of creating a fundamental cultural shift and dealing with "naysayers," faculty who see IPE as either irrelevant or threatening in some way. As might be expected, there is always a range of interest in and commitment to this philosophy, and many programs find it more effective to provide incentives for individuals who support the shared work of the college than to overly focus on those who are less interested.

Another major challenge centered on logistics. Allied health and human services curricula are packed, particularly at the graduate level where there may not even be room to offer electives, and much of the curricular content is prescribed by the various accreditation agencies. The limited flexibility in curriculum design often means that there is little room for innovation or expansion, and the arrangement of classes across programs can make it difficult for program directors to identify common blocks of time, even when they are motivated to create IPE opportunities. Also, requiring participation in IPE has its challenges, including such mundane issues as transportation when outlying clinical sites or multiple campuses are involved. Another frequent comment was that activities that are not required as part of course syllabi will likely have less impact than those that are required.

Finally, there are important differences in implementing IPE in clinical courses and in non-clinical courses, such as ethics or research methodology. To implement IPE in clinical settings, students must be far enough along in their coursework to have at least some clinical skill they can contribute to the team. Equally challenging, they must have faculty and clinical supervisors who value IPE teamwork and have the ability and commitment to foster it. Training of clinical staff is needed to insure effective IPE in clinical settings. One respondent noted that he is challenged to build IPE into clinical activities because the healthcare settings where his students work do not themselves use a team-based model of service.

Another significant challenge is determining ways to develop the evidence base for interprofessional education and its desired outcome, enhanced collaboration in health care teams leading to improved patient outcomes. Respondents mentioned the need for consistent measurement within and across institutions to measure the impact of IPE on patient/client care and the subsequent paradigm shift in the healthcare environment. Only through repeated and consistent measurement will the evidence be developed to support or refute the value of IPE for healthcare professionals. Everyone acknowledges and values the importance of this endeavor. Some institutions report that outcome measures have been implemented and others note that they have just begun to investigate how to best acquire outcomes data. All of these efforts point to the ultimate research question for IPE: can we establish a link from educational outcomes to eventual patient and client outcomes, and if so, what is the strength of that relationship?

Next Planned Steps in Relation to IPE

Four themes emerged from our interviews regarding the next planned steps in relation to IPE: program refinement and expansion; encouragement of IPE-focused scholarly activities; expansion of IPE collaboration; and the development of IPE funding and sustainability. The majority of respondents reported that their institutions plan to refine and expand their IPE programs. One noted the development of a one-credit IPE course, while another described a complete undergraduate degree program in IPE currently in the works.

Other specific plans included the following:

- Developing or strengthening doctoral programs in IPE
- Requiring all students to take IPE courses
- Incorporation of IPE coursework and related activities on transcripts
- Creating an institutional center for IPE
- Promotion and expansion of current and ongoing IPE activities
- Supporting unique interprofessional collaborations as they emerge

IPE-focused scholarly activities were mentioned during several of the interviews conducted. The importance of interprofessional research and scholarship was noted by several respondents. One institution plans to assess patient outcomes as they relate to the IPE curriculum, and another plans to assess the long-term impact on practice outcomes and practice choices by students.

The concept of collaborating with others was commonly mentioned by the interview respondents. For example, one institution identified teaming as one of the foci of the IPE program. Another institution indicated that some of their programs were seeking advice from outsiders to help them determine the next best IPE steps. Some emphasized collaborators from the community. Others seek more involvement from students in the IPE planning process. Nearly all endeavor to engage all the health care professions on campus. Several individuals conveyed the general observation that, "if we can't do it ourselves, how can we expect our students to?"

Developing adequate funding and sustainability is a major identified next step at several of the institutions. Two specific strategies to address this issue were mentioned during the interviews. One strategy is cost recovery of IPE courses and activities. However, the more common emphasis is on grant funding and reaching beyond college boundaries to partner with others, including medical schools, other colleges, and other healthcare institutions.

Long-range Vision for IPE

We were also interested in the long-range vision of each institution for IPE, and what these leaders envisioned their efforts would look like in 5 to 10 years. The responses revealed three themes: expansion; collaboration, and basic recognition of the importance of IPE.

A number of respondents identified expansion for the future as a goal. This was based on their successes to date and their commitment to the value of IPE. One respondent stated that "all health care professions will be involved in IPE and that IPE will become part of the institutional culture." Another said that "IPE will be the norm in education and in practice." Another respondent stated that IPE activities across the colleges would be developed and implemented but that participants would recognize that not all programs can be at the same IPE participation level and would be sensitive to that fact. This theme was shared by several respondents, who noted variables such as program size as influencing the ability and opportunity to participate in IPE development.

Commitment was deemed to be very important. As one respondent put it, their vision was centered on the "continued commitment to integrating IPE into teaching, research, and learning." This vision, though broadly defined, seemed to permeate the responses of our participating institutions.

Collaboration, quite naturally, emerged as a theme throughout our interviews. It is a foundation stone of IPE and responses suggested a number of creative and exciting visions for the future. One respondent shared a vision that curricula would be developed to achieve the same competencies in IPE for undergraduate and graduate programs, and there would be opportunities for the two groups to periodically work together. Some emphasized the development of partnerships with other institutions, while others were more focused on the development of strong relationships with the community.

The development of theoretical models for collaboration was envisioned by some, while others felt the practical need to engage and involve more professions in their efforts. The fact that interprofessional collaboration is now a frequent dimension and requirement of funding sources bodes well for the future, and the development of strong partnerships for funding was a key element of the vision for many of the institutions. Several respondents reminded us of the original purpose of IPE, which is to get to the point where team-based care is the norm, and that improved and enhanced outcomes for patients and clients and their families are achieved.

Finally, one theme reverberated throughout the interviews and in particular in reference to the respondents' vision: that the importance of IPE will be recognized. By virtue of their involvement to date and the reputation that led us to call them, all the respondents recognize and appreciate the importance of IPE. But they all struggle with the fact that this is not a universal understanding. One respondent envisioned that IPE will someday be incorporated in all health profession accreditation standards. Another imagined a time when "the university and hospital will serve as a model for IPE and practice." Another stated that "the students at this institution will model IP, patient-centered care in their practices." Finally, one individual offered the following vision statement:

> *Five years from now the students and faculty will have multiple opportunities to interact socially and professionally and will come away from their experiences committed to working with others, understanding how to do this effectively, and understanding how teamwork in health care enhances patient outcomes and patient-centered care.*

Conclusions

We set out to discover some of the current best practices in IPE, and to see what we could learn from the collective wisdom of some of the leaders in the field. From our vantage point as administrators in our respective institutions, it was clear that developing a comprehensive and coherent plan for IPE is really no longer optional. IPE has become a mainstay of health professions education and is here to stay. At the same time, it is obvious that what IPE is and how we choose to create and maintain it is an evolving ideal.

We leave this process somewhat reluctantly, as the conversations that occurred with our survey participants have greatly enriched our own group dialogue about IPE and its impact on our home institutions. While there have been a number of calls in the literature for systematic evaluative research, we strongly recommend that others build on our work here by creating opportunities for extended dialogue with multiple parties across institutions that are working to develop their IPE programming. The essence of IPE is

clearly based in communication, connection, and collaboration, and in some ways it must be felt to be fully understood. A logical next step is to extend these interviews to other organizational constituents, including faculty, staff, students, and clinical and community partners.

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Appendix 1. Interview Questions

1) What health disciplines are represented in your college and university?

Discipline:	Yes	No
Degree of involvement in IPE (1–4) 1 = none, 2 = low, 3 = med, 4 = high		
Physical therapy		
Occupational therapy		
Physician assistant		
Nursing		
Social work		
Pharmacy		
Medicine		
Dental hygiene		
Lab sciences		
Other:		
Other:		
Other:		

Please explain your assessment of each, perhaps using examples:

2) What have been your successes in IPE?
   - 1.1. Education logistics
   - 1.2. Integrating in clinical education
   - 1.3. Translating into practice

3) What factors have contributed to those successes?

4) Who has supported IPE in your institution? (philosophical, financial, practical)
   - 1.1. Top-down administration?
   - 1.2. Bottom-up (faculty)?
   - 1.3. Bidirectional?
   - 1.4. Out of the box thinking?
   - 1.5. Is the rest of the administration embracing this model?

5) What have been your challenges and greatest obstacles in implementing IPE and how have you dealt with them?

6) Have there been specific cost issues and concerns? What are the key players—administration, program directors, and faculty—willing to invest?

7) What are your next planned steps in relation to IPE?

8) What is your long-range vision for IPE?

Appendix 2. Introduction and Overview Script

We are a group of administrators involved in the leadership development intensive through ASAHP. The purpose of our project is to assess the current state of interprofessional education in the health professions. To this end, we are interviewing administrators from 10 colleges/universities with health professions programs, 6 in the U.S., and 4 in Canada The intent of the interview is to collect qualitative data about successes and challenges related to inter-professional education. The findings from this survey will be presented at the ASAHP Conference scheduled for October 2009 in San Antonio, Texas. Additionally, the investigators will contemplate dissemination of this data through a journal publication. Upon request, we will provide you with a written summary. As you respond to the following questions, we ask that you consider each one in the overall context of how Interprofessional Education (IPE) addresses the following three areas: teaching, internships, and the translation of learning to practice.