

Promoting interprofessional education

Jane H. Barnsteiner, PhD, RN, FAAN

Joanne M. Disch, PhD, RN, FAAN

Leslie Hall, MD, FACP

David Mayer, MD

Shirley M. Moore, PhD, RN, FAAN

The work of the Institute of Medicine and others has clearly demonstrated that when healthcare professionals understand each others' roles and are able to communicate and work effectively together, patients are more likely to receive safe, quality care. Currently, there are few opportunities to bring faculty and students in pre-licensure programs from multiple disciplines together for the purpose of learning together about each others' roles, and practicing collaboration and teamwork. Designing and implementing interprofessional education offerings is challenging. Course scheduling, faculty interest and expertise in interprofessional education (IPE), a culture of IPE among faculty and students, and institutional policies for sharing course credit among schools are just a few of the challenges. This article explores the concept of IPE, and how faculty in schools of nursing might take the lead to work with colleagues in other health profession schools to prepare graduates to understand each others' roles, and the importance of teamwork, communication, and collaboration to the delivery of high quality, safe patient care.

Jane H. Barnsteiner is a Professor of Pediatric Nursing at University of Pennsylvania School of Nursing, and a Director of Nursing Translational Research at Hospital of the University of Pennsylvania, Philadelphia, PA.

Joanne M. Disch is a Professor and Director, Katharine J Densford International Center for Nursing Leadership and a Katherine R and C Walton Lillehei Chair in Nursing Leadership at University of Minnesota School of Nursing, Minneapolis, MN.

Leslie Hall is an Associate Professor of Clinical Internal Medicine at University of Missouri-Columbia.

David Mayer is an Associate Professor of Anesthesiology and Assistant Dean for Curriculum at University of Illinois at Chicago College of Medicine.

Shirley Moore is an Edward J and Louise Mellen Professor of Nursing, Frances Payne Bolton School of Nursing at Case Western Reserve University, Cleveland, OH.

Reprint requests: Jane H. Barnsteiner, RN, PhD, FAAN, Professor of Pediatric Nursing, University of Pennsylvania School of Nursing, 420 Guardian Drive, Philadelphia PA 19104.

E-mail: barnstnr@nursing.upenn.edu

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INTRODUCTION/OVERVIEW

Elsewhere in this issue of *Nursing Outlook*, the equality and safety competencies required by nurses to practice in the current healthcare environment are described.¹ One of the key competencies is teamwork and collaboration. The work of the Institute of Medicine (IOM) and others has clearly demonstrated that when healthcare professionals understand each others' roles and are able to communicate and work together effectively, patients are more likely to receive safe, quality care.²

Evidence indicates that teamwork and collaboration skills are not intuitive or always learned "on the job." In fact, a growing number of studies have demonstrated that physicians and nurses do not define teamwork and collaboration similarly.^{3,4} Recently, Makary and colleagues⁵ in a study of operating room physicians and nurses funded by the Agency for Healthcare Research and Quality (AHRQ), noted that nurses describe collaboration as having input into decision-making, while physicians describe it as having their needs anticipated and directions followed.

Most health professional education takes place in silos. Curricula differ across disciplinary education training programs and, even when students are learning common skills and content, they usually do so without interaction with their peers in the other health professions' programs. Furthermore, there are very few opportunities to bring faculty and students from multiple disciplines together for the purpose of learning and understanding each others' roles, and practicing collaboration and teamwork. Thus, this lack of interprofessional education (IPE) results in undervaluing or misunderstanding each others' contributions, as well as "tribalism," or professional protectionism.⁶

Designing and implementing IPE are demanding tasks. Challenges include course scheduling, matching course content, faculty interest and expertise in IPE, a culture of valuing shared learning among faculty and students, and institutional policies for sharing course credit among schools.⁷ Page and Meerabeau⁸ point out the paradox that, on the one hand, IPE is proposed as a solution to bridge the differences created by the sepa-

rate socialization of health professionals, resulting in inadequate skills in collaboration and teamwork. On the other hand, these same differences make it difficult to design effective IPE learning experiences.

Formal education that includes integrated, interprofessional learning about teamwork, collaboration, problem-solving, and decision-making beyond the confines of one's own discipline leads to an improved ability to better navigate the complexity of the current healthcare environment.⁹ The purpose of this article is to explore the concept of IPE, share some examples of its impact, and offer strategies for nursing educators to foster its growth. We advance the premise that IPE is an essential foundation for preparing health professions students for interprofessional practice upon graduation.

DEFINITION

According to the Cochrane Collaboration:

“An IPE intervention occurs when members of more than one health and/or social care profession learn interactively together, for the explicit purpose of improving interprofessional collaboration and/or the health/well-being of patients/clients. Interactive learning requires active learner participation and active exchange between learners from different professions.”¹⁰

Individuals and organizations may use different titles to describe IPE. The Centre for the Advancement of Interprofessional Education (CAIPE), a very active group promoting IPE in the United Kingdom (UK), describes the concept of “interprofessional learning” and defines it as “occasions when two or more professions learn from and about each other to improve collaboration and the quality of care.”¹¹ Other titles that have been used include common learning, shared learning, multiprofessional learning,¹¹ multiprofessional education,^{8,12} and collaborative education,¹³ among others. Multidisciplinary and interdisciplinary education have been used for many years in the United States as titles for the concept, but there is growing recognition that multidisciplinary or multiprofessional education refers to students learning in a parallel fashion, while interdisciplinary is often understood by physicians as collaboration among physician specialties.¹⁴ Internationally as well as in the United States, there is growing use of the term “interprofessional education.”

HISTORY OF INTERPROFESSIONAL EDUCATION INITIATIVES

Over the past 20 years, there has been growing interest in IPE in the United States. This interest parallels the emergence of research that has suggested that collaborative relationships among health care providers positively affect patient, family, and provider outcomes. Knaus and colleagues¹⁵ were among the first to find that the existence of collaborative relationships among

nurses and physicians was associated with a decrease in mortality in Intensive Care Unit (ICU) patients. Subsequently, a growing number of studies have supported a relationship between nurse/physician collaboration and improved patient outcomes.^{16–20} Interprofessional education (IPE) is hypothesized to improve collaboration and to indirectly yield better patient outcomes by having graduates enter the workplace with baseline skills and a set of professionalism competencies.

Many national and international organizations have actively supported efforts to advance IPE. In 1991, the Pew Health Professions Commission called for reform in health professions education. From this work, a core competency for working effectively in interdisciplinary teams was defined. Subsequently, this evolved into competencies of integrated, interdisciplinary teamwork and continuous improvement of professional work and the health care system.²¹ In 1994, the Institute for Healthcare Improvement (IHI), a not-for-profit organization created to improve the quality and safety of health care, launched the Interdisciplinary Professional Education Collaborative (IPEC). This collaborative of 4 organizations served as demonstration sites for integrating continuous improvement in health professions curricula. At about the same time, Paul Batalden and colleagues at Dartmouth initiated an annual retreat for faculty in nursing, medicine, and hospital administration programs to jointly examine issues of relevance in improving the safety and quality of health care through changes in health professions education (4 of the 5 authors routinely attend this summer symposium).

Building on the PEW initiative, the John A. Hartford Foundation funded 8 projects nationally in 1997 to create and implement models of Geriatric Interdisciplinary Team Training (GITT).²² Over 1300 health professional trainees from the fields of medicine, nursing, social work, and other disciplines comprised the teams. Evaluation data indicated significant positive changes in attitude toward working in teams and applying team skills.²³

In 1999, the Collaborative Interdisciplinary Team Education (CITE) and, in 2003, Achieving Competence Today (ACT) were funded by the Robert Wood Johnson Foundation as part of their initiative Partnership for Quality Education.^{24,25} The goals of CITE and ACT were to create, implement, and evaluate model educational experiences in which trainees (medical residents, nurse practitioners, social workers, and pharmacy students) learn the skills to work as part of an interprofessional team to provide care in managed care organizations or practices. The approaches were not standardized and results varied by project site, with some showing improved attitudes toward teams and improved patient outcomes.²⁵

In 2000, the Josiah Macy Jr. Foundation convened a summit of nurse and physician leaders to address the need for more effective educational programs to teach

physicians and nurses not only about each others' professional contributions, but also to facilitate better collegial relationships for the benefit of patients. Eighteen recommendations were targeted toward academic health centers and teaching institutions, the foundation community, and professional and accrediting organizations.²⁶ Eight recommendations relate to IPE including: rewarding and recognizing faculty who participate in IPE; identifying, developing, and evaluating models of care by IP teams; reducing professional barriers to IPE; developing competencies for interprofessional interaction and communication skills, including nursing and medical students in socializing and professionalization events such as the white coat and pinning ceremonies. Three recommendations call for the foundation community to support research funding for studies measuring the impact of IPE on collaborative practice and teamwork and patient outcomes. Five recommendations call for professional organizations and accrediting bodies to promote IPE, development of core competencies and a shared code of conduct.

The Institute for Healthcare Improvement Health Professions Education Collaborative (HPEC), organized in 2003, spreads the successes of clinical improvement work to health professions education. Although the original participants were medical schools, the collaborative soon expanded to include other professional schools. Now involving 19 schools of medicine, 14 schools of nursing, 8 schools of pharmacy, and 5 programs in health administration, the twice-yearly collaborative meetings serve as a forum to share methods of teaching clinical improvement, including experience with successful interprofessional educational initiatives.

Recently, the Institute of Medicine (IOM) targeted health professions education in one of its Quality Chasm series: *Health Professions Education: A Bridge to Quality*.² As described in the lead article in this issue of *Nursing Outlook*,¹ the IOM called for 5 competencies that graduates of *all* health professions schools must demonstrate, one being the ability to function effectively in interdisciplinary teams.

In a more recent initiative, health science educators gathered during the summer of 2005 for 4 days in Telluride, CO for a roundtable on *Designing a Patient Safety and Quality Outcomes Health Sciences Curriculum*. Through support from the Telluride Scientific Research Conference, the Smithsonian Institute, and educational grants from the University of Illinois at Chicago College of Medicine and Southern Illinois University School of Medicine, roundtable coordinators identified stakeholders for inclusion in the roundtable aimed at identifying important patient safety concepts and skills necessary for a health sciences curriculum. Participants included leaders in education, curriculum innovation, faculty development, error science, simulator science, quality care, informatics, risk management,

law, accreditation, as well as patients affected by medical errors. Representation included leaders from nursing, pharmacy, medicine, public health, legal, and patient advocacy groups. The objectives of the summer roundtable included: reviewing new research in interprofessional patient safety education; continued refinement of an educational needs assessment for health science students; newer applications of teamwork and communication skills training; discussion of appropriate educational methodologies; and identification of patient safety pilot projects that could advance multidisciplinary education at the student level. The Telluride interprofessional curricular roundtable has become an annual event, building on the work of past roundtables and others on IPE. Recommendations for IPE identified by Telluride roundtable participants included that patient safety IPE should be introduced at the pre-licensure student level; that patient safety IPE should be experiential, longitudinal, and skills-based; and that advanced elective IPE opportunities should be provided for students having a strong interest in patient safety to develop future patient safety leaders, educators, and researchers.

Internationally, a number of organizations foster interprofessional collaboration in education, practice, and research. The International Association for Interprofessional Education and Collaborative Practice is based out of the University of British Columbia in Vancouver, Canada. The purpose of this organization is to promote and advance scholarship and inform policy in interprofessional education and collaborative practice worldwide. The Center for the Advancement of Interprofessional Education, based in the United Kingdom, promotes and develops interprofessional education as a way to improve collaboration between practitioners and organizations engaged in public services. The purpose of the European Interprofessional Education Network, based in London, United Kingdom, is to establish a sustainable and inclusive network of people and organizations in partner countries to share and develop effective interprofessional training curricula, methods, and materials for improving collaborative practice in health and social care.

Students within health professions schools are among those most emphatically pressing for this kind of education. They see and experience the tension and lack of coordination among the active practitioners in their relative fields, and believe the educational experiences can—and should—be done better. At the University of Minnesota, a group of students from nursing, medicine, and health care administration came together several years ago and created Clarion, an organization targeted toward improving health care by collaboratively learning together. Their efforts have led to a national case study competition for students from the health care professions, among other interprofessional activities.

EVIDENCE OF IMPACT OF IPE

Collaboration among health care professionals has been associated with delivering high quality safe patient care.²⁷ It is reasonable to conclude that learning together may facilitate collaboration and professionals working together effectively. Carlisle and colleagues⁶ found that learning collaboration and teamwork as part of professional socialization in formal education programs was more effective than on-the-job skill acquisition.

Zwarenstein and colleagues¹⁰ published a Cochrane review “to assess the usefulness of IPE interventions compared to education in which the same professions were learning separately from one another.” They identified more more than 1000 studies. None met the Cochrane’s inclusion criteria of randomized trials, controlled before and after studies, and interrupted time series studies. They did analyze 89 studies to examine the state of the science and reported that studies on IPE often lacked control groups, and evaluation studies often lacked validated instruments. There was a lack of longitudinal studies related to patient outcomes. They did point out, however, that absence of evidence of effect should not be construed as absence of effect.

The results of the Cochrane review led the authors to initiate a series of reviews, using broadened criteria, to gain insight into IPE evaluation studies.⁹ Evaluation studies of IPE reported positive outcomes regarding changes of attitudes, and acquisition of knowledge and skills. Most studies focused on IPE involving nursing and medicine and have included courses of various length to enhance interprofessional collaboration^{28–31} and to reduce negative stereotypes.³² Among the positive outcomes noted were improved communication and cooperation, and increased collaboration behavior.

Although the trend in the published reports supports the assumption that IPE will lead to better understanding of roles and improved communication and collaboration, there is some evidence that students may enter pre-professional education with stereotypes about their own and other health professions. One study reported that negative stereotypes held by podiatry and physical therapy students were reinforced by IPE.³³

The timing of IPE may be important for reducing negative stereotypes. Rudland and Mires³⁴ found that students enter medical school with already-formed stereotypes about nurses and physicians. First year medical students were found to consider nurses to be more caring than physicians, but they also thought that nurses had lower academic ability and competence. They suggest that IPE begin early in the curriculum, and that acknowledging the existence of stereotypes may need to be part of the curriculum. A consistent characteristic of successful IPE models is the presence of experiential learning that promotes role understanding and the importance of working together for high quality, safe patient care.

INTERPROFESSIONAL EDUCATION STRATEGIES

Numerous approaches to IPE have been described in the literature. Strategies that have been found to be effective include students from ≥ 2 disciplines working together on problem-based learning; case studies that are patient-focused; and jointly learning clinical skills such as physical assessment and the use of electronic health documentation systems.³⁵ An effective approach that facilitates interprofessional learning is a common clinical experience—having common patients, projects, and learning objectives around collaboration and decision-making about patients.

D’Eon³⁵ suggested that students need to be challenged with increasingly complex, reality-based tasks using cooperative learning as part of the learning process. He recommends a framework to use for building content across courses starting with paper-based cases with students from 2 disciplines and moving over time to more complex cases with 4 or 5 disciplines. This is followed by cases using simulation or volunteer patients and, lastly, moving to real-life patients. One strategy that D’Eon³⁵ has found helpful in facilitating collaboration and teambuilding capabilities is using a small group format where students from various disciplines are able to mingle together and participate in experiential learning. Common approaches such as observational experiences, where students from one profession shadow one another or participate in isolated learning in lectures or readings, have *not* been found to be helpful in skill-development related to teamwork, collaboration, and joint problem-solving. As Deborah Powell, MD, Dean of Medicine at the University of Minnesota has noted: “Students do not learn interprofessional concepts by sitting side-by-side in lecture halls.”³⁶

The authors recommend a number of strategies to facilitate IPE that they have found helpful. Developing a culture for IPE requires faculty from multiple disciplines who value IPE and are willing to work together to co-create a shared vision, common goals, and a curriculum. Faculty need to engage in skill acquisition in quality improvement, patient safety, and interdisciplinary interactions within the healthcare system to teach content and to serve as role models and mentors to students. Administrative support needs to be garnered to adjust curriculum schedules to allow students to have joint learning experiences.

When designing the curriculum, agreement needs to be reached on one set of competencies/capabilities for collaboration and teamwork across disciplines. Shared learning occurs when there are alternating experiences and joint reflection by students and faculty involved in the IPE experience. Nontraditional teaching methods require new knowledge and skills, which take time to learn and successfully

implement. Nursing faculty are well-equipped to teach problem-based learning, critical appraisal, and reflective techniques that have shown promise as effective IPE strategies to colleagues in other disciplines. Mitchell and colleagues⁷ identify 8 components of successful interprofessional programs. These are institutional leadership, faculty champions, institutional policies, physical infrastructure, a culture of collaboration, personal relationships, financial support, time and flexibility.

Leslie Hall, an author of this article, describes a successful initiative at the University of Missouri in Columbia. Beginning in 2003, they began offering a patient safety curriculum to interprofessional groups of students. Second year medical students, senior undergraduate nursing students, and health management students complete an 8-hour curriculum that includes both small group interactive sessions and large group didactic presentations. Over the past 4 years, the focus has expanded to include quality improvement and teamwork skills in addition to patient safety. A consistent feature each year is a simulated root cause analysis, in which learners analyze an adverse event occurring within the health care system.

Learner perceptions of the training have been evaluated, and patient safety attitudes have been assessed before and after the training. All student groups have reported that the interprofessional nature of the training added value, and helped them to gain a better understanding of the other health professions. All learner types have found the root cause analysis exercise to be useful. Several attitudes pertaining to patient safety have moved significantly in the desired direction following the completion of the training; however, some of these have regressed in medical students following subsequent clinical experiences.³⁷ This lends support from other studies that one-time learning experiences are not sufficient to develop and sustain IPE learning objectives.

Challenges encountered during delivery of the interprofessional curriculum in quality and patient safety at the University of Missouri in Columbia have included many that have been described in the literature. These included: differing levels of clinical exposure among the learners, leading to differing comfort levels in assessing clinical information; differing experience levels with problem-based learning; differing attitudes about quality and safety, both within and among professional groups of students; pre-set “cultural” conceptions about other health professions; differing learning priorities based upon other educational expectations and priorities (e.g., upcoming medical board exams); and scheduling challenges associated with trying to find common time for students from multiple training programs.

Over the past 2 years, the Universities of Missouri, Minnesota, and 10 other schools have participated in

the Achieving Competence Today (ACT) program, sponsored by the Partnerships for Quality Education (with funding from the Robert Wood Johnson Foundation). This program partnered Family Nurse Practitioner students and resident physicians to address specific institutional challenges requiring clinical process improvement. Physician and nurse mentors skilled in Continuous Quality Improvement provide oversight. The program was designed to provide the learners with information about systematic methods of improvement science and allowed the learners to quantifiably improve quality and value within the health care system by working on real-time quality initiatives.

Many of the improvement projects undertaken by ACT teams focused on improving communication among members of the health care team. Learner feedback reflected that participants greatly valued the practical experiential learning as well as the interprofessional relationships that facilitated sustainable improvement work. The learners from medicine and nursing quickly discovered a synergy from discipline-specific knowledge and experiences in tackling the problem-solving process. Perhaps the greatest testament to the effectiveness of the ACT graduate level training is that several of the participants of the program are now leading interprofessional improvement teams within the clinical systems in which they work.

ESSENTIAL FEATURES OF FULL ENGAGEMENT IN INTERPROFESSIONAL EDUCATION

Although individuals and organizations are becoming increasingly involved in promoting or implementing IPE, it is important to recognize that there is a continuum of engagement in IPE which can range from asking students to read about the roles of other professionals, to a fully integrated, co-created curriculum that embeds and models the philosophy of IPE in everything it does. The authors of this article propose 6 criteria that reflect full engagement by an organization in IPE (Table 1).

NEXT STEPS

For nursing faculty interested in learning more about IPE or beginning active engagement, several strategies are suggested for getting started. First, explore if your organization has initiatives currently underway related to IPE, or whether the organization is part of a larger collaborative that promotes IPE. Second, connect with a colleague or colleagues in another health profession to identify exploratory steps that could be undertaken with a small group of committed individuals. One strategy might be to adopt a case study competition for students in which they propose safety/quality improvements that might be possible in real-life situations. An even simpler first step might be to work with a colleague from another profession and jointly develop content on

Table 1. Criteria for Full Engagement of Interprofessional Education

1. Explicit philosophy of IPE that permeates the organization. The philosophy will be well-known, observable, measurable.
2. Faculty from the different professions co-creating the learning experiences.
3. Students having integrated and experiential opportunities to learn collaboration, teamwork, and how it relates to the delivery of safe, quality care delivery.
4. IPE learning experiences embedded in the curricula and part of the required caseload for students.
5. Demonstrated competence by students with a single set of interprofessional competencies such as those promoted by the IOM.
6. Organizational infrastructure that fosters IPE, such as support for faculty time to develop IPE options, incentive systems for faculty to engage in IPE, and integrated activities across schools and professions for students and faculty.

health professionals' responsibilities in quality/safety that each professional could incorporate in his/her teaching. A third strategy is to attend one of the numerous regional or national meetings on quality/safety of patient care that welcomes an interprofessional audience, (e.g., IHI's Annual Scientific Symposium and National Forum, or the National Initiative for Children's Healthcare Quality). Fourth, read or subscribe to one of the many interprofessional journals addressing quality/safety issues from an IPE perspective, (e.g., the *Journal of Interprofessional Care* or *Joint Commission Journal of Quality and Safety*). Finally, get active at the policy level, working with the National Council of State Boards of Nursing and other health professions' licensing boards to request that there be questions on the exams related to understanding the impact of interprofessional collaboration on health care outcomes.

RESEARCH IMPERATIVES

As noted earlier, research demonstrating a positive association between IPE and teamwork and collaboration in the work environment is in its early stages. The impact of IPE is not yet fully understood and merits further study. We do know that lack of teamwork and collaboration in the practice setting leads to error and decreased quality of care.²⁷ It stands to reason that learning these skills in formal pre- and post-licensure programs will increase the possibility that graduates will be skilled at collaboration and teamwork, leading to improved patient outcomes. Randomized trials and

evaluation studies are needed to further clarify the effectiveness of IPE. For example, what dose of IPE is needed? What are the essential knowledge, skills, and attitudes that should be developed? When is the best time in the curriculum to introduce this content? How can we best prepare the current generation of faculty to address these educational needs, as we develop the next?

Longitudinal research in which cohorts are followed over time in the practice arena are needed to examine the relationships among curricular implementation, subsequent physician/nurse collaboration and teamwork, and patient outcomes. Valid and reliable tools to measure knowledge, attitude, and skill acquisition need to be developed and tested. It is imperative that interprofessional teams design and carry out the research.

SUMMARY

Teamwork and collaboration among professions are vital factors in safe and effective health care. The concept of IPE did not originate among faculty in the health professions. It was formulated by bedside clinicians facing complex patient care situations.³⁸ Despite the fact that patient safety outcomes are increasingly determined by how well teams function under pressure, few health science schools include teamwork training in their curricula.³⁹ To improve patient safety efforts at the bedside and to bridge the gap between the disciplines, IPE and training needs to be a core element of the next generation of patient safety curriculum for all health science schools.

Interprofessional learning takes place within a context where differences in culture, beliefs, and prior health care experiences among learners of various professions often exist. Exploring the differences and similarities among professional groups as a part of the interprofessional learning process helps learners to build a solid foundation of understanding upon which future health care partnerships can be built.

Experience gained in other safety critical industries has shown that, if healthcare is to change its culture to one of safety and quality, interprofessional education and experiential application need to be introduced early⁴⁰ and incorporated throughout professional training. Interprofessional education targeted at students and delivered by educators skilled in the philosophy and strategies of IPE can help to transform health care into another highly regarded, safety-critical industry.

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