The Ochsner Journal 12:389–393, 2012

Crossing the Quality Chasm: It Takes a Team to Build the Bridge

Fiona Winterbottom, RN, MSN, APRN, ACNS-BC, CCRN,* Leonardo Seoane MD, FACP*†

**Department of Pulmonary/Critical Care, Ochsner Clinic Foundation, and*
†The University of Queensland School of Medicine, Ochsner Clinical School, New Orleans, LA

ABSTRACT

The paradigm shifts in healthcare delivery now more than ever call for interdisciplinary teamwork to deliver the best patient care. The lessons from the Institute of Medicine's *To Err Is Human: Building a Safer Health System* report are painful but elucidate the problems with training and working in silos and the consequent inconsistent communication between healthcare providers. We review the literature regarding interprofessional training and describe some strategies and innovations. This article proposes that healthcare professional schools embed interprofessional education into the curriculum to meet the challenges of providing high-quality, efficient, and safe patient care.

INTRODUCTION

The landmark report by the Institute of Medicine (IOM) entitled *To Err Is Human: Building a Safer Health System* initiated a quality and safety movement in American healthcare.[1] The report publicized medical errors and initiated more than a decade of discussion on patient safety. A second IOM publication, *Crossing the Quality Chasm: A New Health System for the 21st Century*, concluded that failure of system processes, poor communication, and unhealthy work environments contribute to medical errors, ineffective delivery of care, and stress among health professionals.[2] The report recommended safe, effective, patient-centered, timely, efficient, and equitable care for all patients. Other researchers have demonstrated that 70% of all medical errors can be attributed to poor healthcare team interactions.[3]

Team-based service delivery centering on interprofessional models of education and practice began in the early 1970s. The quality and safety movement of the past decade has emphasized the role of teamwork in cultivating defect-free care.[2] The current healthcare workforce needs team-based education, both pre- and postlicensure, to better prepare health professionals for a dynamic, complex, and patient-centered healthcare environment. The educational experience and practice setting must shift from one of professional silos to one that fosters collaboration, communication, and team approaches to learning and care delivery.[4] Evidence suggests that interprofessional teams achieve better outcomes and that team-based care should become the normative clinical practice.[5] However, an integrated and embedded curriculum in team training is not common in nursing or medical schools.

REDESIGNING EDUCATION IN THE HEALTH PROFESSIONS

The IOM report *Health Professions Education: A Bridge to Quality* called for a major overhaul in education for healthcare professionals in 2003.[6] The report maintained that clinical education was not consistent with shifting patient demographics, changing health system expectations, evolving practice requirements, staffing arrangements, quality improvement science, or new technologies. Report recommendations included the reformation of education in the health professions to enhance quality and meet the evolving needs of patients through strong oversight processes, responsive practice environments, research, public reporting, and leadership.[6]

In 2010, the IOM report *Redesigning Continuing Education in the Health Professions* suggested that

Address correspondence to
Leonardo Seoane, MD, FACP
Section of Palliative Care
Department of Pulmonary/Critical Care
Ochsner Clinic Foundation
1514 Jefferson Hwy.
New Orleans, LA 70121
Tel: (504) 842-3925
Fax: (504) 837-0191
Email: lseoane@ochsner.org

Keywords: Interprofessional training, professional development, quality improvement teamwork

The authors have no financial or proprietary interest in the subject matter of this article.

education should bring together various health professionals in carefully engineered learning environments.[7] The report also recommended the creation of a national institute for continuing professional development to support, strengthen, and retool health professional education in achieving the goal of high-quality and safe healthcare and to change the way continuing education is conducted, financed, regulated, and evaluated. Efforts are in place to create a Coordinating Center for Interprofessional Education and Collaborative Practice (CC-IPECP) that will provide an infrastructure for leadership, expertise, and support for interprofessional education. One initiative has created core competencies for health profession educators to prepare practitioners for interprofessional collaborative practice.[5] The role of the CC-IPECP is to facilitate the development of a workforce that is fully prepared, through structured training and exposure to evidence-based practice models, to work in team-based care delivery systems that improve health.[7]

The Future of Nursing: Leading Change, Advancing Health report describes vital roles for nurses in designing and implementing a more effective and efficient healthcare system and emphasizes collaboration between health professionals as a critical element in improving quality and safety.[8] A Carnegie Foundation report also calls for a radical transformation of nursing education.[9] Furthermore, the American Association of Critical-Care Nurses produced a framework to support healthy work environments that includes 6 standards: authentic leadership, skilled communication, true collaboration, effective decision-making, appropriate staffing, and meaningful recognition.[10] These standards can be used to structure micro and macro systems to create and sustain healthy work environments for all healthcare professionals. Kramer et al[11] describe how the components of a healthy work environment influence employee engagement, care delivery, and quality outcomes.

STRATEGIES TO ENHANCE INTERPROFESSIONAL EDUCATION

In 2011, the Robert Wood Johnson Foundation, Josiah Macy Jr. Foundation, and ABIM Foundation issued *Team-Based Competencies: Building a Shared Foundation for Education and Clinical Practice*[12] that describes action strategies designed to transform health professional education and healthcare delivery. The action strategies address communication and dissemination of the new core competencies, development of interprofessional faculty and resources, strengthening of metrics and research, development of new collaborative academic practices, formation of new collaborations with community learning sites, and advancement of policy changes.

Organizational readiness assessments and identification of key stakeholders influence the implementation and sustainability of interprofessional education initiatives. Administrative support, faculty champions, and adequate resources and infrastructure are vital factors in engaging and supporting interprofessional education. Barriers to successful interprofessional education implementation in the academic setting may relate to program funding based on student enrollment and healthcare institutions' decreased allocation of financial and human resources.[4]

Strategies for enhancing interprofessional education include program standardization, timing of the interprofessional education introduction, appropriate learning environments, advanced scheduling, maximum limits on participant numbers, and assessment of learning styles. Simulation laboratories carry great potential for interprofessional education learning exercises. Obstacles to the introduction of interprofessional education include professional boundaries, hierarchical structures, and institutional processes and dynamics.[4]

Faculty must understand social learning, social identity, and professionalism theories to effectively facilitate interprofessional team learning.[13] For example, socialization—a process through which healthcare students learn a discipline-specific culture—is based on core professional values, beliefs, and practices. The development of professional identity and reinforcement of cultural norms occur through discipline-specific education and social interaction with discipline-specific peers. These discipline-specific knowledge, language, and skills contribute to postlicensure attitudes and behaviors.[14] Students learn their roles within the team through socialization that can lead to poor communication within the team. For instance, a nurse may not question the improper technique of a physician performing a bedside procedure because the nurse feels that is not his or her role. Constructive interprofessional socialization through curricula, clinical placements, care pathways, and work processes establishes methods of communication for collaborative patient-centered care.[14]

Interprofessional education is constructivist in nature and requires instructors to have specific facilitation skills in shared learning to engage participants in a unique body of content, interpersonal interaction, and learning from each other to enhance collaborative practice.[13] Skills for interprofessional education facilitators include creating supportive learning environments, explicitly valuing interprofessional education, appreciating the diverse roles of health professionals, and promoting team formation

and conflict resolution. Nine competencies identified for interprofessional teaching include commitment to interprofessional education and practice, credibility in relation to the particular focus of interprofessional education, positive role modeling, in-depth understanding and application of interactive learning methods, knowledge of group dynamics, confidence and flexibility for using professional differences creatively within groups, appreciation of diversity and unique contributions, ability to balance the needs of individuals and groups, and inner conviction and good humor in the face of difficulties.[15]

Measurements of educators' skills in facilitating interprofessional education have been tested using a validated Interprofessional Facilitation Scale.[13] Faculty members play a critical role in the design, development, implementation, and delivery of interprofessional education. Wide-ranging faculty improvement initiatives include developing role models, supporting role integration for health professionals involved in collaborative practice, and addressing barriers to teaching and learning at both individual and organizational levels. Collaborative management structures should exist to promote interprofessional curricular development and resource management for adoption, advancement, and sustainability of educational modifications and practice implementation.[13]

INTERPROFESSIONAL EDUCATION AND INNOVATION

Students in health profession programs are traditionally educated in silos throughout their program of study but in daily practice are expected to function as part of the healthcare team, collaborating with others to care for patients.[4] Additionally, patients are cared for in episodic periods of time rather than from the initial point of contact through discharge. Innovative strategies for education are needed to engage pre- and postlicensure learners. One Pennsylvania university built a 5,800-square-foot patient simulation center containing several clinical areas, learning laboratories, and debriefing rooms to provide a learning environment for simulated interprofessional educational experiences. A structured program using the Agency for Healthcare Research and Quality TeamSTEPPS program and best practice guidelines was created for students to collaboratively care for a patient in the simulated learning environment.[16] The synchronized staged curriculum involved 5 learning phases:

- Phase I: Professional Socialization
- Phase II: Learning Together
- Phase III: Basic Discipline-Specific Roles
- Phase IV: Complex Discipline-Specific Roles
- Phase V: The Culmination

This approach allowed students from multiple disciplines to collaborate to provide comprehensive, continuous care for patients in a safe learning environment and to practice effectively in a real-world setting as highly functional members of the healthcare team.[17]

Postlicensure education is also needed to close gaps in continuing interdisciplinary education (CIDE) between medical specialties. Care gaps could be reduced through enhanced knowledge exchange and practice collaboration between specialist services. One strategy for achieving these outcomes is to use the speed dating structure. Speed dating is a formalized matchmaking process that encourages people to meet a large number of new people in a short time.[18] Speed dating sessions (SDSs) have traits similar to those of small group learning that involve active participation, focus on specific tasks, and reflection. In an academic setting, the primary goal of SDSs is networking and knowledge exchange. SDS outcomes are related to exploring and fulfilling learners' own specific needs, providing opportunities to meet new colleagues, encouraging interactions, and learning about other specialty issues through quick focus exchanges and stimulation of new ideas about shared topics.

The concept of SDSs has been used to stimulate the development of CIDE activities and has been used in healthcare to enhance networking between researchers and facilitate mentorship. SDSs may also be useful in healthcare settings where discipline-specific knowledge is exchanged continuously between teams in the clinical setting. The formal opportunity to quickly share clinical issues and goals could foster CIDE collaborations between interprofessional services. SDSs have been used in gerontology at Johns Hopkins University, where longitudinal data on mentoring relationships are being collected.[19] SDSs could enhance networking, knowledge exchange, and collaboration in continuing education and structured professional development activities.[18]

INTERPROFESSIONAL COLLABORATION FOR IMPROVED OUTCOMES AT OCHSNER

At our institution, an interprofessional project to improve outcomes related to sepsis exemplifies the effectiveness of interprofessional collaboration. Expert interprofessional internal consultants collaborated across clinical and nonclinical departments to implement a standardized process of care, minimize variation, analyze data, and implement rapid cycle change.[20] The initiative was a prototypical quality improvement project using a plan-do-study-act tool. Representative of the complex management of illness today, the success of the project was contingent on interprofessional teams working as tight cohesive

units to diagnosis severe sepsis and septic shock early, implement time-sensitive protocols, and transfer care in a timely and effective way between the emergency room and the intensive care unit (ICU). Since the project began in 2008, approximately 1,200 patients with severe sepsis and septic shock have been enrolled.

The sepsis project involved team development of emergency department (ED) and critical care (CC) bundled order sets, hospital-wide education, and rapid cycle review of sepsis cases. The ED was responsible for identifying severe sepsis and septic shock patients, starting the protocol, and placing the mixed-venous oxygen saturation ($ScVO_2$) monitoring catheter. CC was responsible for responding to the ED within 1 hour of consult, continuing the protocol, and expediting patient transfer to the ICU. The care process was measured and labeled as Perfect Care if patients met all of the specific points of the protocol: antibiotics prior to culture, antibiotics within 2 hours of diagnosis, use of the ED bundled order set, placement of the $ScVO_2$ monitoring catheter, use of the CC bundled order set, and achievement of resuscitation within 6 hours: central venous pressure $\geq$8 cm H_2O, mean arterial blood pressure $\geq$65 mmHg, and $ScVO_2$ $\geq$70%.

Notable outcomes included overall decreased raw mortality in patients admitted to the medical ICU with severe sepsis and septic shock, from 25% in 2008 to 18% in 2012, and decreased average hospital length of stay of 2.35 days over the same time period. In addition, this improved process of care led to patients who received Perfect Care having a significant improvement in hospital mortality compared to those patients who did not have Perfect Care—15% vs 25%, respectively (P=0.009)—and better average hospital length of stay—7 days (range 2-65) vs 9 days (range 1-49) (P=0.004).[21]

INTERPROFESSIONAL EDUCATION OUTCOMES AND HEALTHCARE REFORM

Learning outcomes for interprofessional education must be established to validate expenditures and effort. Learning outcomes can be categorized as profession specific or generic.[22] Profession-specific outcomes refer to learning knowledge, skills, and attitudes that relate to a particular profession, and generic outcomes are those that should be met by all professions. A 1999 Cochrane review did not find literature on interprofessional education. However, a more recent review found 6 studies that assessed the effectiveness of interprofessional education interventions.[23] Outcome measures in the 2008 Cochrane review encompassed learning objectives, competencies capabilities, outcome-based education, and competency-based education. Other common outcome themes include teamwork, roles/responsibilities, communication, learning/reflections, a patient/family role in care, ethics/attitudes, respect, and acknowledgment of others' views.[22] Several systematic reviews of interprofessional education research have been conducted during the past decade with differing methodologies. However, rigorous studies of interprofessional education are needed to understand its effect on professional practice, healthcare processes, and patient outcomes.[24]

A recent study using a time series study design evaluated the longitudinal effect of an interprofessional education curriculum on undergraduate health and human service professional students' attitudes toward interprofessional education and teamwork.[25] Overall, student satisfaction with interprofessional education participation was relatively positive. Educational methods included case-based asynchronous e-learning, face-to-face small group learning, and an interprofessional panel discussion. Students' satisfaction arose from active interprofessional team learning through dialogue and collaboration and experiential learning through the study of real-life clinical problems.[25]

The Patient Protection and Affordable Care Act is estimated to offer insurance coverage to 32 million currently uninsured individuals by 2014, resulting in Medicare and Medicaid becoming the major payers of hospital services. This influx creates new business and management challenges for healthcare organizations. Accountable care organizations, patient-centered medical homes, transitional care models, telemedicine, and electronic medical records offer opportunities for improved coordination of care. The success of these models depends on health professionals who can function within the construct of a multidisciplinary team.

CONCLUSIONS

Many facilities have established structural components that can support an infrastructure for interprofessional education and training. Established committees, education sessions, and clinical rotations could all be adapted to include interprofessional members. Using existing groups in an efficient way allows for interprofessional training, promotion of teamwork, discussion of traditional professional stereotypes, enhanced communication, and improved coordination of patient care. Although some medical schools may have students prepare projects requiring teamwork skills or allow students to observe and participate in highly functioning multidisciplinary teams, most medical schools have not done enough to embed interprofessional education into the core curriculum.

Therapeutic interprofessional relationships promote communication and collaboration, the corner-

stones of patient-centered care. Enhancing interprofessional skills in education and clinical practice allows diverse professionals to work together to deliver high-quality, efficient, team-based care and to improve health outcomes.

REFERENCES

1. Institute of Medicine. *To Err Is Human: Building a Safer Health System*. Washington, DC: The National Academies Press; 1999.
2. Institute of Medicine. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: The National Academies Press; 2001.
3. Studdert DM, Brennan TA, Thomas EJ. What have we learned from the Harvard Medical Practice Study? In: Rosenthal MM, Sutcliffe KM, eds. *Medical Error: What Do We Know? What Do We Do?* San Francisco, CA: Jossey-Bass; 2002:3-33.
4. Ho K, Jarvis-Selinger S, Borduas F, et al. Making interprofessional education work: the strategic roles of the academy. *Acad Med*. 2008 Oct;83(10):934-940.
5. Interprofessional Education Collaborative Expert Panel. *Core Competencies for Interprofessional Collaborative Practice: Report of an Expert Panel*. Washington, DC: Interprofessional Education Collaborative; 2011. http://www.aacn.nche.edu/education-resources/ipecreport.pdf. Accessed September 25, 2012.
6. Institute of Medicine. *Health Professions Education: A Bridge to Quality*. Washington, DC: The National Academies Press; 2003.
7. Institute of Medicine. *Redesigning Continuing Education in the Health Professions*. Washington, DC: The National Academies Press; 2010.
8. Institute of Medicine. *The Future of Nursing; Leading Change, Advancing Health*. Washington DC: The National Academies Press; 2011.
9. Benner P, Sutphen M, Leonard V, Day L. *Educating Nurses: A Call for Radical Transformation*. Stanford, CA: The Carnegie Foundation for the Advancement of Teaching; 2010.
10. American Association of Critical-Care Nurses. *AACN Standards for Establishing and Sustaining Healthy Work Environments: A Journey to Excellence*. Aliso Viejo, CA: American Association of Critical-Care Nurses; 2005. http://www.aacn.org/WD/HWE/Docs/HWEStandards.pdf. Accessed September 25, 2012.
11. Kramer M, Schmalenberg C, Maguire P. Nine structures and leadership practices essential for a magnetic (healthy) work environment. *Nurs Adm Q*. 2010 Jan-Mar;34(1):4-17.
12. *Team-Based Competencies: Building a Shared Foundation for Education and Clinical Practice*. Macy Foundation. Conference Proceedings. Washington, DC: February 16-17, 2011. http://macyfoundation.org/docs/macy_pubs/Team-Based_Competencies.pdf. Accessed September 25, 2012.
13. Sargeant J, Hill T, Breau L. Development and testing of a scale to assess interprofessional education (IPE) facilitation skills. *J Contin Educ Health Prof*. 2010 Spring;30(2):126-131.
14. Arndt J, King S, Suter E, Mazonde J, Taylor E, Arthur N. Socialization in health education: encouraging an integrated interprofessional socialization process. *J Allied Health*. 2009 Spring;38(1):18-23.
15. Freeth D, Hammick M, Reeves S, Koppel I, Barr H. *Effective Interprofessional Education: Development, Delivery, and Evaluation*. Oxford, England: Blackwell Publishing; 2005.
16. Agency for Healthcare Research and Quality. TeamSTEPPS. A Complete Evidence-Based Teamwork System Focused on Teams Emphasizing Strategies and Tools to Enhance Performance and Patient Safety. 2006. http://teamstepps.ahrq.gov. Accessed September 25, 2012.
17. Masters C, O'Toole Baker V, Jodon H. Multidisciplinary, team-based learning: the Simulated Interdisciplinary to Multidisciplinary Progressive-Level Education (SIMPLE) approach. *Clinical Simulation in Nursing*. 2012 Feb:el-e8.
18. Laprise R, Thivierge RL. Using speed dating sessions to foster collaboration in continuing interdisciplinary education. *J Contin Educ Health Prof*. 2012 Winter;32(1):24-30.
19. McNabney MK, Fedarko NS, Durso SC. "Speed dating" as a technique to efficiently align mentees and mentors in a geriatrics training program. *J Am Geriatr Soc*. 2010 Nov;58(11):2245-2246.
20. Winterbottom F, Seoane L, Sundell E, Niazi J, Nash T. Improving sepsis outcomes for acutely ill adults using interdisciplinary order sets. *Clin Nurse Spec*. 2011 Jul-Aug;25(4):180-185.
21. Seoane L, Winterbottom F, Nash T, Niazi J, Behrhorst J, Thibeau S, Sundell E. Reaching improved outcomes through the innovations of a multi-disciplinary team: changing process of care for patients with severe sepsis and septic shock. *Crit Care Med*. 2011 Dec;39(12):100.
22. Thistlethwaite J, Moran M; World Health Organization Study Group on Interprofessional Education and Collaborative Practice. Learning outcomes for interprofessional education (IPE): literature review and synthesis. *J Interprof Care*. 2010 Sep;24(5):503-513.
23. Reeves S, Zwarenstein M, Goldman J, Barr H, Freeth D, Hammick M, Koppel I. Interprofessional education: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev*. 2008 Jan 23;(1):CD002213.
24. Reeves S, Zwarenstein M, Goldman J, Barr H, Freeth D, Koppel I, Hammick M. The effectiveness of interprofessional education: key findings from a new systematic review. *J Interprof Care*. 2010 May;24(3):230-241.
25. Curran VR, Sharpe D, Flynn K, Button P. A longitudinal study of the effect of an interprofessional education curriculum on student satisfaction and attitudes towards interprofessional teamwork and education. *J Interprof Care*. 2010 Jan;24(1):41-52.

This article meets the Accreditation Council for Graduate Medical Education and the American Board of Medical Specialties Maintenance of Certification competencies for Patient Care, Practice-Based Learning and Improvement, and Interpersonal and Communication Skills.