

INTERPROFESSIONAL EDUCATION SUPPLEMENT

Interprofessional Initiatives at the University of Washington

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Pharmacists must collaborate with other health professionals to promote the optimal use of medications, relying on coordinated, interprofessional communication and care to do so. In 2003, the Institute of Medicine (IOM) recommended “all health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics.”² At the University of Washington, the Center for Health Sciences Interprofessional Education (CHSIE) was established in 1997 to promote interprofessional curricular and clinical innovation in education, faculty development, and student activities, and to conduct evaluative research regarding the impact of interprofessional innovations. In this manuscript, we will describe the Center for Health Sciences Interprofessional Education, and highlight key projects that serve as examples of pharmacy involvement in interprofessional education, research, and service.

INTRODUCTION

Pharmacists collaborate with other health professionals to promote the optimal use of medications and they rely on coordinated, interprofessional communication and care to do so. To function effectively as an interprofessional team, team members must demonstrate competence in their own specific discipline, display a respect for and appreciation of others’ roles and perspectives, and possess skills that facilitate effective group dynamics and communication, shared decision-making, and team performance.¹

In 2003, the Institute of Medicine (IOM) recommended “all health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics.”² A subsequent IOM publication, “Preventing Medication Errors,” highlighted the need for improved communications that were “interdisciplinary, structured and included the patient.”³ Several major pharmacy organizations, including the

American Association of Colleges of Pharmacy (AACP), the American Society of Health-System Pharmacists (ASHP) and the Accreditation Council on Pharmacy Education (ACPE) have strongly endorsed the implementation of the IOM recommendations.⁴⁻⁶ In 2006, AACP President, Dean Marilyn Speedie asked the 2006-2007 Professional Affairs Committee to provide strategies to help pharmacy schools strengthen their interprofessional education and patient care programs. One of the Committee’s recommendations was to “Design experiential learning in a stepwise progression from simulation to observation of functioning teams to participation as a contributing member of an interprofessional team.”⁷ In this manuscript, we will describe the Center for Health Sciences Interprofessional Education (CHSIE) at the University of Washington, and highlight key projects that serve as examples of pharmacy involvement in interprofessional education, research, and service.

DESIGN

Center for Health Sciences Interprofessional Education

The University of Washington (UW) is a state-funded academic institution with over 47,000 undergraduate,

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graduate, and professional students enrolled at its campuses in Seattle, Tacoma, and Bothell. The University ranks first among public universities and second among all universities in the United States for federal research funding received. The UW School of Pharmacy, as part of an academic health center, is located in the Warren G. Magnuson Health Sciences Building on the Seattle campus and adjacent to the University of Washington Medical Center (UWMC). The School of Pharmacy enrolls 86 doctor of pharmacy (PharmD) students annually, offers certificate programs in geriatrics, pharmacy management, biomedical and regulatory affairs, clinical trials, and pharmacy education, and has graduate (master's and PhD degree) programs in pharmaceutical outcomes research and policy, biomedical affairs, medicinal chemistry, and pharmaceuticals. Other health sciences schools at the UW include medicine, nursing, dentistry, public health and community medicine, and social work. Over 3500 students are enrolled in the 6 schools. The health sciences center is affiliated with the UW academic medical center including UWMC, Harborview Medical Center, and the UW Medicine Neighborhood Clinics.

In an effort to better integrate the teaching, research, and activities of the health sciences programs, the Center for Health Sciences Interprofessional Education (CHSIE) was established in 1997, at the University of Washington (UW) through grant support from the University Initiatives Fund.^{3,8-11} The mission of the CHSIE is to:

- Promote curriculum and clinical innovations in interprofessional education across the health sciences and information schools.
- Provide the infrastructure for catalyzing interprofessional health training initiatives and faculty development.
- Conduct evaluative research regarding the impact of interprofessional innovations on students, faculty, providers, and the health of the public.

The CHSIE has served as a nexus for many of the collaborative educational initiatives conducted by its member schools and programs. Center participants include the schools of dentistry, medicine, nursing, pharmacy, public health and community medicine, and social work; the Information School; and the Health Sciences Libraries.

The CHSIE was established to integrate meaningful interprofessional learning activities into the core curriculum to strengthen student commitment and effectiveness in collaborative practice. As a result, an interprofessional team of faculty members from the schools of medicine, nursing, pharmacy, social work, dentistry, and public health, and the health sciences libraries, developed com-

petencies (Table 1) to support the primary aims of the CHSIE. These competencies and corresponding learning objectives (Table 2) guide the development of interprofessional courses taught in the classroom and in the clinical setting at the UW. To date, over 2,300 health sciences students, including 850 pharmacy students, have participated in interprofessional learning opportunities, which are available throughout the educational continuum (Table 3).

Interprofessional Objective Structured Clinical Examination

The health sciences interprofessional objective structured clinical examination (OSCE) was a small pilot project funded by the University of Washington Initiative Fund in 2002 to assess health professional students' interprofessional skills in working within a health care team. A secondary aim of the project was to facilitate curricular development and interprofessional collaboration at the health sciences college and school level.

The primary aim of this pilot project was to develop a University of Washington Health Sciences OSCE to assess the competence of students graduating from medicine, dentistry, pharmacy, social work, and nursing in shared core skills and in skills that facilitate interprofessional collaboration. In 2002, Nelson and colleagues identified leadership, culture, organizational support, patient focus, staff focus, interdependence of the care team, information and information technology, process improvement, and performance patterns as shared characteristics of highly functioning clinical units.¹² For the OSCE project, an interprofessional team of health sciences faculty members created standardized team member (STM) OSCE stations and trigger videotapes to assess students' competence in related areas including:

Table 1. University of Washington Center for Health Sciences Interprofessional Education Competencies

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- Competence in one's own clinical practice discipline
 - Respect and appreciation of roles and approaches to clinical and social problems of one's own and other disciplines.
 - Understanding of the population context for care of a population and/or patient.
 - Understanding the complexity of population health that requires interdisciplinary strategies for cost savings and cost-effectiveness
 - Basic group process skills including communications, negotiation, time management, assessment of group dynamics
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Table 2. University of Washington Center for Health Sciences Interprofessional Learning Objectives

Combine the evidence-base, knowledge about patient outcomes, and patient preferences to tailor care for an individual
Communicate with patients in a shared and fully open manner to support their decision-making and self-management
Use decision support systems and other tools to aid clinical decision-making
Identify errors and hazards in care; understand and implement basic safety design principles
Understand the course of illness and a patient's experience outside hospitals
Continually measure the quality of care in terms of both process and outcome
Work collaboratively in teams with shared responsibility
Design processes of care and measure their effectiveness
Understand how to find new knowledge as it continually expands
Understand determinants of health, the link between medical care and healthy populations, and professional responsibilities

(1) providing safe care: practicing collaborative patient-centered care and creating a plan for analyzing and disclosing error; (2) collaborating in teams: putting aside barriers and distrust and partnering to deliver high quality, safe, patient care; and (3) providing culturally competent care: incorporating patients' concerns and perspectives into structuring and delivering health care; modifying personal thinking and behaviors to facilitate mutual respect, partnership, and rapport; and negotiating mutually acceptable treatment and prevention plans. The STM approach was used to simulate an interprofessional team, allowing for standardization of the non-student team members' participation and evaluation of the non-standardized team member, the student. Assessment of participant's performance in the OSCE targeted team-oriented behaviors including the participant's ability to manage conflict, advocate for the patient, and speak up against a power gradient in which one team member was perceived as more powerful than the others.

Pharmacy students were scheduled to participate in the OSCE pilot by invitation. Students were prepared for the pilot with a written description of the purpose of the OSCE and schedule for participation and they were allowed to clarify their questions about the OSCE experience prior to participation. Two of the 4 OSCE cases (Table 4) involved pharmacists on the health care team with participants from nursing, medicine, or dentistry. An overdose of insulin was the subject of the primary case for

Table 3. Examples of Interprofessional Learning Opportunities at the University of Washington Center for Health Sciences

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- Freshman seminar introducing students to interprofessional health practice
 - Convocation event for all entering health sciences students (called Chautauqua)
 - Interprofessional certificates in specific focus areas such as in Emergency Preparedness and Response
 - Didactic and practical courses involving medically-underserved populations
 - Co-curricular program involving students and faculty providing education at the Salvation Army Adult Rehabilitation Center
 - Student-operated primary care assessment clinics for the underserved
 - Research training program (Institute of Translational Sciences NIH Roadmap Multidisciplinary Predoctoral Research Clinical Training program)
 - An interprofessional Objective Structured Clinical Examination (OSCE)
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the OSCE pilot involving pharmacy students. The case was piloted with volunteer fourth-year medical students ($n = 5$), graduate nursing students ($n = 5$), advanced social work students ($n = 5$), and volunteer third-year PharmD students ($n = 4$). The OSCE was designed to evaluate 1 student at a time as he/she performed his/her professional role in the case. In the OSCE scenarios, trial teams of 3 clinicians were established using faculty fulfilling their usual professional roles on the team (eg, pharmacist acting as the standardized pharmacist team member) to enable the development of authentic scripts. For the piloted assessments, professional actors were hired and trained to play the roles of standardized team members using the authentic scripts and with coaching from the faculty clinicians on profession-specific details. All interactions were videotaped to enable team review and discussion of learner performance. An evaluation instrument was developed for the project (available from authors upon request) to facilitate assessment of students' teamwork and communication skills and overall team functioning. Participants were also debriefed after each OSCE experience in order to gather subjective feedback and improve case authenticity.

Interprofessional Student Leadership Conference

A committee composed of students from pharmacy, medicine, nursing, and social work planned and delivered the Interprofessional Student Conference on Leadership in Health Care to help students from different health

Table 4. Objective Structured Clinical Examination Case Descriptions and Goals

Case Description	Goals	Case Method	Participants
<p>Error Disclosure Case: An insulin overdose is administered to a hospitalized patient with diabetes; patient ends up in the intensive care unit (ICU). Members of the interprofessional care team must discuss the error and agree on how to disclose the error.</p>	<p>(1) Practice a standardized error disclosure discussion, (2) Demonstrate effective interprofessional communication skills regarding an insulin overdose</p>	<p>Standardized Team Members</p>	<p>PharmD, MD, Nurse, MSW</p>
<p>Community Pharmacy Case: Patient with history of frequent emergency department visits for severe, non-specific back pain arrives at pharmacy to pick up pain medication prescribed by local dentist.</p>	<p>(1) Practice an interprofessional consultation surrounding an ethical dilemma = should prescription be filled? (2) Demonstrate effective interprofessional communication skills regarding an ethically-charged situation</p>	<p>Computer- or laboratory-based simulation using telecommunications to simulate a community pharmacy practice consultation</p>	<p>PharmD, DDS, MD</p>

professions learn how to create collaborative patient care programs in the community. During the 2-day conference, invited speakers gave presentations on topics such as developing community partnerships, grant writing and finance assessment, communications and conflict resolution, improving healthcare through collaboration, and methods for implementing and evaluating a project. In addition, attendees participated in team-building exercises to help them learn the unique aspects of other health professions and to practice their newly acquired skills in project development and management.

ASSESSMENT OF INTERPROFESSIONAL ACTIVITIES

There is limited data on the impact of interprofessional education on patient outcomes and health care delivery. Freeth and colleagues adapted Kirkpatrick's Model of Educational Outcomes to suggest several areas to be considered in measuring the impact of interprofessional education.¹³ They are: "(1) learners' views on the learning experience and its interprofessional nature, (2) changes in reciprocal attitudes or perceptions between participant groups and changes in perception or attitude toward the value and/or use of team approaches to caring for a specific client group, (3) the acquisition of knowledge and skills, (4) individuals' transfer of interprofessional learning to their practice setting and changed professional practice, (5) wider changes in organization

and delivery of care, and (6) improvement in health or well-being of patients/clients." These recommendations provide a foundation for the assessment of various interprofessional activities at the UW.

University of Washington CHSIE Assessment

Assessment of CHSIE courses and programs has been based primarily on postprogram assessment of knowledge, skills, and student ratings of program benefit to interprofessional growth. Interprofessional activities that appear to generate the highest amount of student interest are those that also align with the students' practice interest. For example, students expressing an interest in helping medically underserved populations as practitioners, have enrolled in the interprofessional course Healthcare in Medically-Underserved Communities and participated in health promotion and the coordination of care for residents at a transitional housing facility in Seattle. Those who wish to pursue clinical research, have enrolled in the Multidisciplinary Predoctoral Clinical Research Training Program (TL1) and earned the Graduate Certificate in Basic Clinical Research Methods offered by the School of Public Health and Community Medicine. Although there are only 12 health sciences students accepted in the TL1 year-long program and summer programs, 5 pharmacy students have participated in these programs in the past 3 years; 3 of these students are now enrolled in PharmD/PhD programs

University of Washington OSCE Assessment

Qualitative observation of the pharmacy student OSCE participation (N = 4) revealed a strong team orientation, assumption of responsibility, leadership, patient advocacy or representation, and willingness to speak up against a power gradient (dominant physician in the scenario). Of interest, the trained observers (2 medical education specialists, 1 pharmacist, 1 nurse, 1 dentist, and 1 physician) specifically noted and acknowledged in their evaluations the comfort and leadership the pharmacy students demonstrated in the interaction. Finalizing an assessment instrument that would have enabled quantification of the variability in performance was not possible within the timeframe of the grant and the small sample size of participants. This is an area that continues to present opportunity for further research.

Interprofessional Student Leadership Conference Assessment

Assessment has been conducted primarily using satisfaction surveys and self-assessment of changes in knowledge, skills, and attitudes. For the Interprofessional Student Leadership Conference on Community Health, 24 participating students, representing medicine, pharmacy, social work, nutrition, nursing, and public health, reported enhanced skill in interprofessional collaboration and understanding across the health disciplines (33% rated skill as good to excellent preconference and 92% postconference), improved student commitment to end health disparities (25% rated skill as good to excellent preconference and 92% postconference), and improved leadership skill at enhancing community health (skill was rated good to excellent by 33% preconference and 100% postconference).

DISCUSSION

School of Pharmacy faculty involvement in the CHSIE has been extensive, with initial involvement supported by federal grant funding divided among 5 pharmacy faculty members (averaging 0.05 - 0.1 FTE each). As the funding for the Center has shifted, faculty involvement has evolved to those active on grants stemming from the Center or for whom centralized support for CHSIE activities is provided through their own School. Pharmacy faculty members have been involved in the new Gerontology Consortium through the UW Institute on Aging,¹⁴ an NIH-funded Center for Interdisciplinary Gerontologic Research,¹⁵ an AHRQ grant to study the use of interprofessional simulations in error disclosure,¹⁶ the UW OSCE project,¹⁷ the freshman convocation, several other collaborative projects on campus, and recently, a grant by the

Macy Foundation to study and integrate interprofessional simulations into training for medicine, nursing, and pharmacy students.

The CHSIE projects have provided a platform for leadership by health science students in several venues. Involvement of pharmacy students has included helping plan an interprofessional student leadership conference, volunteering at health fairs, providing health education at the Salvation Army's Seattle Adult Rehabilitation Center, and participating in student-led clinics for medically underserved populations. Interprofessional student teams have successfully published in the *Journal of Interprofessional Care* and presented posters at national and international meetings.

In the OSCE projects, learners demonstrated a wide range of skills and abilities which were evident on review of the videotaped OSCE pilots. Such performance-based assessments appear promising both as a means of evaluating students' abilities to collaborate across disciplines and highlighting curricular deficits and opportunities for instructional enhancement in interprofessional skills development. For example, PharmD students reported feeling well prepared to address a variety of communication situations including an angry patient, medication counseling, and intraprofessional presentations and case discussions, but reported little education and training regarding error disclosure or interprofessional communication in the PharmD curriculum prior to the activity.

The use of actors as standardized team members (STMs) required the development of scripted trigger statements to ensure that case learning objectives were met. Unlike volunteer faculty members, the actors could not draw on professional background and knowledge to respond to learner questions. However, the actors had greater scheduling flexibility, were relatively less expensive, and were easier to standardize than volunteer faculty STMs.

The scenarios proved to be an effective teaching/learning tool when used in the context of a broader curriculum. The most successful pilot we ran was one that an OSCE advisory board member integrated into her course curriculum on working in interprofessional teams. In the week before their participation in the error disclosure simulation, students attended an introductory lecture on error disclosure. Each student received a video recording of their performance at the end of their simulation experience for review prior to the subsequent class session. In the third session, the faculty member led a class video review and debriefing session. As evidenced in students' performance, the lecture on error disclosure provided students the skills to reframe error as a team responsibility. Further, in-class review of videos promoted self-reflection on and peer evaluation of effective and ineffective team

communication strategies. This implementation strategy may be the best direction to take in the future.

OSCE case development was much slower than anticipated due to the different perspectives of team members as to what was most important to test and how to test it. Scripting also turned out to be extremely time consuming. Finally, even limited implementation was problematic. Scheduling this type of activity was nearly impossible without the volunteerism of motivated students or the insertion of the activity as a requirement in a course or the curriculum. A concerted effort at the School of Pharmacy curriculum level and adequate programmatic infrastructure would be needed to assure assessment of each student and integration of the learning with other skill-building activities. Any large-scale implementation efforts would need the full support of key stakeholders in positions of leadership and authority.

The UW OSCE project provided a critical intellectual foundation for securing a 2-year \$600,000 grant from the AHRQ to study the use of simulations in interprofessional training on team communication and disclosing errors to patients.¹⁶ The specific aims of this randomized, controlled trial (N=80 teams) are to determine (1) whether team-based simulation training enhances healthcare workers' knowledge, attitudes, and skills in disclosing harmful errors to patients, and (2) whether team-based simulation training improves healthcare workers' knowledge, attitudes, and skills about team-communication. These outcomes will be measured primarily by a pre/post Web-based assessment. This Web-based assessment is a 20-25 minute self-directed questionnaire of health care workers' skills, attitudes, and knowledge of team communication and medical error disclosure. The Web-based assessment will be completed by intervention participants prior to and 2 weeks after a live simulation involving a team responding to 2 cases of harmful errors by: (1) discussing the event, responsibility, and blame; why the error happened; and how recurrences will be prevented; (2) planning whether and how to disclose the event to the patient; and (3) disclosing the error to a standardized patient. A disclosure coach (generally risk management personnel) will provide feedback to the teams after each case. A facilitator (trained actor) is a part of the team to ensure team members confront key challenges and articulate their reasoning for their actions. Control participants will complete only the pre- and post-intervention Web-assessment without the live simulations.

Following the Student Leadership Conference, a shared interest in helping medically-underserved populations led to the planning of joint community outreach projects. One recent health fair, attended by more than 700 people, was staffed by students from the Schools of

Pharmacy, Medicine, including MEDEX and Physical Therapy, Public Health, Nursing and Social Work. Additionally, the Bridges to Health Patient Advocacy Center was established at the UW and contributes educational resources and funding for several of these interprofessional community outreach events.

In the future, the CHSIE plans to facilitate a more rigorous evaluation of interprofessional education initiatives to both inform curricular efforts and to demonstrate the long-term impact on patient outcomes and health care delivery. The interprofessional OSCE represents an early effort to evaluate student and team competency in a challenging situation related to medical error.

The UW School of Pharmacy has been a long-standing member of the CHSIE with a substantial core of faculty participating in CHSIE interprofessional education efforts. This has facilitated pharmacy student participation in interprofessional courses and activities; however, systematic inclusion of interprofessional education in the pharmacy curriculum is an ongoing goal to assure integration as a standard for faculty and student involvement in the future.

SUMMARY

The University of Washington has implemented interprofessional initiatives through the collaborative efforts of the Center for Health Sciences Interprofessional Education (CHSIE). Although evaluative data are limited, student postprogram assessments have indicated increased leadership skill, enhanced appreciation for interprofessional collaboration, and increased commitment to end health disparities as a result of the CHSIE programs. Challenges faced in implementing and sustaining interprofessional education include limited centralized support, variable curricular commitment, inadequate physical space, and scheduling conflicts when gathering students from multiple programs.

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