Working Across the Boundaries of Health Professions Disciplines in Education, Research, and Service: The University of Washington Experience

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Abstract

The Institute of Medicine’s vision for health professions education specifies working together across professions and schools to provide patient-centered care. Improvement in collaborative preparation of health professionals is seen as central to achieving substantial improvement in the quality of health care.2–4 We report the experience of one academic health sciences center in promoting interprofessional collaboration in education, service, and research; analyze the key strategic, structural, cultural and technical elements that have promoted success or served as barriers in the development of the UW Center for Health Sciences Interprofessional Education and Research; and suggest strategies that may be transferable to other institutions seeking to implement an interprofessional health sciences program. These include both top-down and bottom-up authority and function in key working groups, institutional policies such as interprofessional course numbers and shared indirect costs, and development of a culture of interprofessionalism among faculty and students across program boundaries.


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.

― A Bridge to Quality, 2003

The Institute of Medicine (IOM) put forth this vision statement for health professions education in 2003.1 The vision is one of working together across professions and schools to educate health professionals in providing patient-centered care. The IOM’s series of reports on improving health care quality has made it clear that improving preparation of health professionals for practice is the key to achieving substantial improvement in the quality of health care.2–4 We report the experience of one academic health science center in creating and fulfilling the vision set forth by the IOM. We address one central question: How can medical schools work with other health-sciences schools to promote their educational, research, and service missions? The authors summarize the history of the University of Washington (UW) Health Sciences Center in promoting interprofessional collaboration in education, service, and research; analyze the key strategic, structural, cultural, and technical elements that have promoted success or served as barriers; and suggest strategies that may be transferable to other institutions.

Historical Interprofessional Educational Initiatives

Interprofessional educational endeavors have been present in the UW Academic Health Center since the early 1950s when the schools of medicine, nursing, and dentistry were clustered in a newly built Health Sciences Building.

Deisher5 described a “child health conference” that began in 1947 for practicing physicians and nurses, and graduate students from nursing, social work, and home economics at UW. Medical students were added around 1950. These students were linked with interprofessional staff of the Child Health Center, jointly funded by the State Department of Health and UW. Staff from medicine, nursing, psychiatry, social work, nutrition, psychology, dentistry, dental hygiene, and medical technology provided family health care while simultaneously educating students from these professions together in a clinical setting. Baldwin noted, “This may have been one of the first experiments with true interdisciplinary faculty interaction and role-modeling of health-team care together with concurrent interdisciplinary student experience.”6 Many elements of this combined service, education and research initiative remain today in the federally funded Center on Human Development and Disability at UW.

The second national wave of interprofessional education occurred from 1975 to 1978, with funding from the Comprehensive Health Manpower Training Act of 1971. This funding was provided to six medical schools and universities to develop model interdisciplinary health-team training programs; UW was one of the programs selected.6 Unfortunately funding for these programs ceased by 1980 and the programs did not persist beyond the external funding.
The new programmatic activities we report in this article arose with the health care reform initiatives of the 1990s, with renewed emphasis on primary care, population health, and interprofessional collaboration. The impact of managed care and other cost containment strategies on health care providers and the institutions in which they practice created a far different environment for interdisciplinary education than existed in the 1970s. Leaders in the UW health sciences recognized the importance of working across educational boundaries to train future practitioners for the clinical world of the immediate future. The creation of the UW Initiatives Fund for new programs provided dedicated internal funding to create the infrastructure and a supportive culture to overcome barriers to sustaining collaborative interprofessional education. The Health Sciences Primary Care Work Group had been established in the mid-1990s to coordinate responses to health care reform initiatives aimed at increasing the number of primary care providers across professions. Thus, colleagues in the schools of medicine, nursing, pharmacy, public health and community medicine, and social work, as well as MEDEX Northwest (UW’s physician assistant program) and the Health Sciences Library and Information Center (HSLIC) came together to identify feasible models of interdisciplinary education and practice to prepare practitioners for the rapidly changing health care of the 21st century. These ongoing working relationships positioned this group to compete successfully in 1997 for university funding that catalyzed the program of interprofessional clinical education we discuss in this article. This initiative, in turn, provided the basis upon which sustained collaborations in service learning and research education have developed. At its inception, this program was called Health Sciences Partnerships in Interprofessional Clinical Education (HSPICE).

The goal of the initial HSPICE program was to develop, implement, and sustain an interprofessional educational model for clinical preparation of population-oriented, collaborating practitioners across the six health-sciences schools, the health-sciences libraries, and the information school. In early 2000, the health-sciences deans endorsed the establishment of a Center for Health Sciences Interprofessional Education and Research in which to house HSPICE and other, externally funded projects.

Today the center serves as an umbrella for many interprofessional courses, programs, and activities at the university. Further, it has served as both an umbrella and a catalyst for a group of related, externally funded initiatives, such as development of a national patient-safety curriculum, implementation of a toolkit for improving venous thromboembolism care, standardized assessment of interprofessional competencies, and pre- and postdoctoral clinical research training.

Facilitators and Barriers to Working Together Across Professional Boundaries

Shortell and colleagues have identified a framework that we have found useful in evaluating our progress in the most recent UW effort in interprofessional innovation.7–9 They identified four elements that must be balanced in order for an innovation to succeed and persist: strategy, structure, technical expertise, and culture. Without a strategic perspective that is important to the institution, nothing significant happens. Organizational structure is important to support the initiative and to spread it throughout the academic health center (AHC). Without appropriate structure, important changes do not remain in place. Technical expertise refers to the training and skills essential to catalyze important changes. Cultural elements are the underlying beliefs, norms, and behaviors that support or inhibit change. Both structural support and cultural support are necessary if changes are to be other than small, local, or temporary.

Within each of these four elements, we have embedded the eight components of successful interprofessional programs identified by Dr. Denise Holmes, who conducted an external evaluation of our center and six other AHCs with interprofessional initiatives.10 These components are institutional leadership, faculty champions, institutional policies, physical infrastructure, a culture of collaboration, personal relationships, financial support, time, and flexibility.

Strategic components

Institutional leadership and faculty champions were identified as key components to achieving strategic goals. The center’s leadership includes faculty with both administrative and “rank and file” faculty appointments, thus creating a healthy mix of top-down and bottom-up function within the center’s three branches: the center executive-steering committee, the advisory group, and the faculty, staff, and students. Each central executive and steering group faculty member is considered a faculty champion of the center’s work. The advisory group consists of both internal and external experts in professional and interprofessional education and student representatives, and is chaired by a member of the Health Science Board of Deans. In this way, we remain connected to top leadership in each of the schools whose interprofessional strategies we support. With the largest student and postgraduate group in health science being medical students and residents, the support of the dean of medicine is critical to the functioning of this center. The center’s objectives are consistent with UW’s objectives in interdisciplinary education and research, as well as with the national vision outlined earlier in this article. These objectives are to:  

• Encourage curriculum innovation in health professions interprofessional education across health sciences and information science students;  

• Provide the infrastructure for accountability in health science interprofessional professions certificates, new training initiatives, and faculty development; and  

• Foster evaluative research regarding the impact of health professions interdisciplinary educational innovations on students, providers, faculty, and health of the public.

Structural components

The center reports to the Health Science Board of Deans, and is housed in the School of Nursing. The structural organizational chart shown in Figure 1 depicts the dual top-down and bottom-up relationships of center activities and related faculty and student champions. The executive committee is comprised of one representative from each partner school, but the majority of work is accomplished from a wider steering group made up of the working subgroups, affiliated faculty, and our partners, who include students,
extracurricular student groups, and community stakeholders. The working subgroups form and reform as projects and initiatives are designated from the steering committee, with dual reporting accountability to the overall executive-steering committee, coordinated by the co-directors.

As external funding for specific projects has been added, additional project-specific leadership groups have formed. All are organized around three working subgroup themes: curricular integration, clinical integration, and evaluation and faculty development. Each of these themes has task- and project-specific subgroups, with rotating leadership. These working subgroups have the power to make decisions and carry initiatives forward on a day-to-day basis. Monthly steering meetings and periodic retreats keep communication flowing and allow leaders to evaluate ongoing decisions. Specific projects or grant-funded initiatives may require additional working meetings of subgroups. Thus, key faculty have formed interprofessional teams that collaborate around specific projects and then reform as appropriate around new initiatives. The flexible and floating leadership around these tasks and subgroups has enabled us to capitalize on the leadership styles and strengths of the varied group of faculty, while maintaining a structure for ultimate accountability through the executive-steering committee and co-directors.

Institutional policies that facilitate (or constrain) interprofessional work are a critical component across education, service, and research. Policies that provide an interdisciplinary course designation have been vital in identifying the courses developed as part of the center. The designation UCONJ (an abbreviation for University of Washington Conjoint Course) denotes courses offered collaboratively from two or more units throughout the university. Examples of courses developed and promoted through the center are UCONJ 444 (Collaborative Teams in Health Care) and UCONJ 501 (International Health). Lack of adequate policies for sharing credit for teaching in team-taught courses has been a barrier to equitably incorporating interprofessional courses into faculty teaching loads across schools. University policies that allow sharing of indirect cost recovery for externally funded projects have also facilitated working together across the professional schools to secure funding, support operations of the center, and provide a central and highly visible space for the center itself.

Finally, shared geography is a powerful structural feature that promotes our ability to work together on multiple educational and research projects. All health-science schools except the School of Social Work have their administrative centers, a large portion of faculty offices, and teaching classrooms co-located in the Magnuson Health Sciences Center on the main UW campus. Although clinical sites and many research groups are dispersed widely throughout the region, the majority of students and faculty are together in the Health Science Center for some portion of their work. This provides the opportunity to gather all incoming students for a welcoming activity early in their professional education and bring them together for case-based coursework prior to dispersing for clinical rotations. We are also able to use distance technology to create some sense of geographic proximity for many of the interprofessional courses.

Technical components

At the heart of our interprofessional efforts are the knowledge and skills necessary to function collaboratively. These are exemplified in the core competencies that we believe every health science student should achieve by graduation:

- 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 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; and
- Basic group process skills, including communications, negotiation, time management, and assessment of group dynamics.

A sample of major activities that support these competencies is shown in Table 1. Students may choose from a broad menu of courses and extracurricular activities designed to provide relevant knowledge and skills. Currently, we are developing standardized, simulation-based assessments of student achievement of
### Table 1

#### A Sample of Major Activities and Outcomes of the Center for Health Science Interprofessional Education at the University of Washington, Seattle, Washington

<table>
<thead>
<tr>
<th>Type of activity</th>
<th>Title</th>
<th>Description</th>
<th>Sampling of outcomes</th>
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<tbody>
<tr>
<td><strong>Courses</strong></td>
<td>UCONJ 444 - Collaborative Teams in Health Care</td>
<td>Variable credit problem-based course. Students function as an interprofessional learning group, developing interdisciplinary practice in the care of urban and rural underserved patient populations.</td>
<td>Significant change in student attitudes after course (n = 111): More likely to envision working in interprofessional team (62% vs 47% prior to course); believe opportunity to work in teams essential to education; believe significant portion of clinical education should occur in community-based primary care.</td>
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<td>GENST 197 - Issues in Interdisciplinary Health Care</td>
<td>Small-group discussion with faculty representing a wide spectrum of academic disciplines. Used to introduce freshmen to health sciences disciplines and interprofessional health care.</td>
<td>8% entered a UW health profession school (3 nursing, 1 dental, 1 social work, 1 medicine, 1 pre-health science). An additional 17% graduated with degrees compatible with entering graduate study in health elsewhere.</td>
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<tr>
<td><strong>Funded Projects</strong></td>
<td>Development and Evaluation of an Interprofessional Health Sciences Certification Examination (UW innovation funds)</td>
<td>Develop a UW Health Sciences Objective Structured Clinical Examination (OSCE) to assess the competence of students graduating from Medicine, Dentistry, Pharmacy, Social Work, and Nursing in core skills common to these professionals and in skills specifically required to collaborate in interprofessional teams.</td>
<td>Pilot testing of standardized team-based scenarios related to error disclosure, patient safety, interprofessional teamwork, and cultural competency. Development of evaluation instrument.</td>
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<td></td>
<td>Faculty Leadership in Interprofessional Education to Promote Patient Safety (HRSA D50 HP 10006)</td>
<td>Develop, pilot test, evaluate, and disseminate a curriculum for the collaborative education of health professionals in leadership and interprofessional teaching and learning to promote patient safety.</td>
<td>Directly trained 184 educators; each had average outreach of 60 or more; disseminated curriculum via web-based handbook and interactive curriculum (<a href="http://interprofessional.washington.edu/ptsafety/default.asp">http://interprofessional.washington.edu/ptsafety/default.asp</a>).</td>
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<td></td>
<td>The Macy Interprofessional Bridges Program: Classroom and Clinical Linkages in the Health Sciences Curricula (Josiah Macy Jr. Foundation)</td>
<td>Goal: to sustain and extend classroom and clinical interprofessional education into the required curricula of the six UW Health Science Schools (Dentistry, Medicine, Nursing, Pharmacy, Public Health &amp; Community Medicine, and Social Work) and the Information School.</td>
<td>Sustained classroom and clinical experiences, for the 2411 students in the six health science schools who participated 2000–2005. Medical students who have participated in any part of HSPICE match for family medicine residencies at a somewhat higher rate than those who did not participate (16% versus 13%). Conversely those who did not have HSPICE experience matched for specialty residencies at a higher rate (9.5% versus 6.5% in anesthesiology, for example).</td>
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<td><strong>Community Clinical Practicum</strong></td>
<td>Salvation Army Adult Recovery Center (ARC)</td>
<td>Faculty and students from the center collaborate with representatives from the Salvation Army ARC to improve health literacy and health outcomes of men and women residents of the ARC. Students gain knowledge of the special health care needs of men and women in addiction recovery and provide health education in a community setting.</td>
<td>The students and faculty learn to work with and value client input as part of the process of developing health literacy along with addiction and general health recovery plans. Following the practicum, students were more likely to consider providing care in underserved communities, to believe learning with other professions would improve post-graduation working relationships and communication with patients, to consider practicing with an interprofessional team, and to believe there is much the professions can learn from one another (n = 14).</td>
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<td>Students in the Community, a student-run health promotion clinic, Aloha Inn</td>
<td>Students in the Community is an interprofessional group made up of students from the Schools of Information, Medicine, Nursing, Pharmacy, Public Health, and Social Work. Dedicated to health promotion and assistance at the Aloha Inn, a transitional housing facility for the homeless in King County.</td>
<td>Third place in the 2003 Secretary of Health &amp; Human Services interdisciplinary student innovation competition. Course covers needs of the urban underserved jointly developed by students and faculty.</td>
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* See (http://interprofessional.edu/courses.asp) for other course offerings.
the cross-disciplinary competencies for use with students as they near graduation. Evaluation of attitudes and understanding of professional roles within selected clinical practica and courses generally has encouraged students to become more positive about what they can learn from other professions and toward primary care orientation. However, the students who choose these largely elective offerings tend already to be positively disposed to interprofessional education.

The student-led group, Students in the Community (SITC), is an example of the merging of education and service. Initially formed by three UW medical students, this group has expanded to include students from all of the health-science professional schools. The group has partnered with a homeless shelter in downtown Seattle to create a health promotion and wellness clinic that is student-run and faculty-supported. Center faculty act as advisors to the students. Faculty sponsors from the schools of medicine, nursing, pharmacy, and social work provide supervision so that students can use this clinic as a volunteer activity, service learning, or clinical rotation for selected practicum courses. In addition, the students have collaborated with faculty from the MEDEX physician assistant program and Department of Family Medicine programs to create a university conjoint course in health care for the medically underserved (UCONJ 450). This course is filled to capacity each term that it is offered. The students won the third-place award in the Secretary of the Department of Human and Health Services competition for interdisciplinary health promotion projects for 2003.

Faculty from the medical school’s Department of Medical Education and Biomedical Informatics have taken the lead in faculty development across the professions regarding the use of problem-based learning and innovative evaluation techniques, and have opened the department’s year-long faculty development program, Teaching Scholars, to faculty across the six health-science schools.

Cultural components

Probably the most visible and profound change has occurred in institutionalizing a culture of collaboration and resilience. UW’s review of the HSPICE program documented a transformation of interdisciplinarity in education. In an interview of representatives of the Council of Health Sciences Deans, one dean commented, “HSPICE . . . is an overwhelming success by any objective outcome measure used, having broken down traditional walls and boundaries among six independent schools plus the University Library.” Another dean said, “There [were] absolutely no interdisciplinary curriculum efforts before this proposal.”

Examples of changes in interprofessional education and research that have occurred in our settings include:

- Achieving permanent status of the interprofessional teamwork course as part of required curricula in several programs;
- Establishing the clinical practicum at the Adult Rehabilitation Center as a core clinical site for several schools;
- Incorporating the coursework and clinical site developed by the Students in the Community group into the core offerings;
- Establishing the center as the key facilitator for interdisciplinary research training across the schools;
- Developing a repository for curricular materials and teaching aids for interprofessional training and coursework; and
- Developing evaluative materials for interprofessional competencies.

A culture of interprofessionalism was established when the center began, and this culture is continually renewed as new faculty join. There has been relatively little of what have been termed the “forming and storming” stages of team development, described in the team literature as interpersonal disputes and tensions in response to defining shared goals. Throughout our nearly 10-year history we have functioned mostly at the “norming and performing” level, characterized by high levels of cooperation and productivity, with leadership and group behavior norms that emphasize participation and delegation. We may have achieved such a high level of cooperation because we formed as an interprofessional team to enable education, rather than as a multidisciplinary group protecting professional turf. In the beginning, we spent considerable time working at gaining shared meaning across our divergent professional languages, and in examining our own processes of communication and decision making. As group membership and leadership change, we periodically refresh our collective understanding. Remarkably, there has been relatively little attrition of core members over time.

Finally, the working relationships established in our leadership group have spread, stimulating interprofessional working groups of associate deans for research and education across the health sciences. These, in turn, have catalyzed groups of academic administrators and faculty who have come together around major external interdisciplinary initiatives, such as National Institutes of Health Roadmap clinical research training initiatives that share space and personnel with the center. Thus, interprofessional education and research have joined forces.

Generalized Lessons

While some of our experiences are unique to UW, most of the lessons we have learned are applicable to other AHCs. The mix of administrative and “rank and file” faculty in the core working group creates a set of consistent champions with both top-down and bottom-up authority and function. Strategic placement of deans and other university officials in the advisory groups positions them to receive ready feedback about the progress and needs of the interprofessional group. Institutional policies, such as shared course numbering and sharing of indirect costs, are present in many other settings. Shared geography is not uniform across AHCs, but the lack of shared space can be partially overcome by distance technologies. Finally, the development of a culture of interprofessionalism can be accomplished at any AHC, provided there is committed faculty leadership and commitment from the senior administrative leaders.

The components of successful organizational change and interprofessional activity that we have outlined can be generalized to other institutions. Balancing strategic interests,
structural supports, technical knowledge and skill, and a culture of collaboration are crucial, and can be analyzed for each school or health science center. Schools of medicine are keys to institutional leadership and to championing interprofessional activity. A willingness to share leadership and to understand the perspectives and strengths of the full range of professions is critical to success in this arena.

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References
5 Deisher RW. Use of the child health conference in the training of medical students. Pediatrics. 1953;11:538–43.
10 Holmes D. Lessons Learned from Model Interprofessional Programs. Report to the Center for Health Sciences Interprofessional Education. Seattle, WA: 2004.

Did You Know?
Physicians at the University of Washington School of Medicine were responsible for the development, in 1988, of the rating scale used worldwide in the diagnosis of Alzheimer’s disease.

For other important milestones in medical knowledge and practice credited to academic medical centers, visit the “Discoveries and Innovations in Patient Care and Research Database” at (www.aamc.org/innovations).