



CONFERENCE SUMMARY

June 16–18, 2010 | Palo Alto, California

Educating Nurses and Physicians: Toward New Horizons

Advancing Inter-professional Education in Academic Health Centers

In June 2010, the Josiah Macy Jr. Foundation and The Carnegie Foundation for the Advancement of Teaching hosted a workshop/conference in Palo Alto, CA to advance new models for inter-professional education within the nation's academic health centers. The two foundations believe that if nursing, medical, and other health professions students learn jointly in clinical settings, as graduates they will improve patient outcomes by working more collaboratively, communicating better with each other, and fostering a health care delivery system that assures quality and patient safety.

The conference, titled “Educating Nurses and Physicians: Toward New Horizons,” brought together academic deans and other leaders from the medical and nursing schools at seven U.S. academic health centers. They came together to exchange information and ideas around their specific efforts to provide their health professions students with education and training in team-based care. The Macy and Carnegie Foundations’ goal for this workshop was to inspire the leaders of each institution to return home with renewed energy to advance their innovative educational efforts and more knowledge to tackle new challenges.

The seven participating academic health centers were selected based on their demonstrated institutional commitment to inter-professional education. An indicator of how interested academic medicine is in pursuing inter-professional education reform: 34 institutions (out of 77 that were eligible because they have both a medical and nursing school) responded to a “Request for Proposals” issued by the two foundations during the planning stages of the conference. The seven selected universities are:

- Duke University
- New York University
- Pennsylvania State University

- University of Colorado
- University of New Mexico
- University of Minnesota
- Vanderbilt University

The “New Horizons” conference emerged from three converging forces. One impetus was the desire of both foundations to observe the centennial of the landmark Flexner Report, which was published by The Carnegie Foundation in 1910. The Flexner Report is credited with revolutionizing and greatly improving medical education in the United States. Another impetus was the ongoing interest of the Macy Foundation in supporting reforms within health professions education to help prepare students to meet the needs of the evolving health care system, which is changing much more rapidly than the teaching and training models that are now used to educate its professionals.

A third impetus was the recent publication of two Carnegie Foundation studies on educational and training reforms within the nursing and medical professions. The books, *Educating Nurses: A Call for Radical Transformation* (Jossey-Bass, 2009) and *Educating Physicians: A Call for*

Mounting research shows that health care delivered by nurses, physicians, and other health professionals working in teams not only improves quality, but also leads to better patient outcomes, greater patient satisfaction, improved efficiency, and increased job satisfaction on the part of health professionals.

Reform (Jossey-Bass, 2010), were part of The Carnegie Foundation's 10-year "Preparation for the Professions" educational research program and provided the background context for the conference discussions on inter-professional education.

While neither book included a focus on inter-professional education, both books raised relevant common themes for change within the medical and nursing professions, including the need to create new educational models that:

1. Help students integrate classroom knowledge and clinical practice,
2. Offer students opportunities to improve the health care system, and
3. Foster both individual and team-oriented professional identities within health professions students.

These three themes became the basis for the work of the conference. Participating institutions were asked to present and discuss how their own inter-professional education initiatives incorporate the concepts of integration, systems improvement, and professionalism.

The conference was designed to be an interactive workshop on inter-professional education. Each of the nursing-medicine institutional teams was assigned two "coaches" from the invited faculty. The coaches worked as facilitators with their assigned teams throughout the three days, helping them to identify problems and solutions and bringing an outside perspective to their work to both probe and validate. Work sessions were interspersed with plenary sessions that highlighted cross-cutting themes and provided a forum for the exchange of ideas across the groups. On the final day, each team presented the current state of its project to the entire group.

This report provides an overview of the three-day working conference, including an introduction to inter-professional education, summaries of the plenary discussions, and descriptions of the inter-professional education initiatives underway at the seven participating

pairs of nursing and medical schools. Also included is a list of references and resources for additional information as well as a list of conference participants and the conference schedule.

Now is the Opportune Time for Inter-Professional Education

Inter-professional education, in which students from two or more health professions learn together, is an idea whose time has come. Mounting research shows that health care delivered by nurses, physicians, and other health professionals working in teams not only improves quality, but also leads to better patient outcomes, greater patient satisfaction, improved efficiency, and increased job satisfaction on the part of health professionals.

In addition, since 1970, numerous health professions schools have demonstrated interest in the concept of inter-professional education (also called interdisciplinary, collaborative, or team-based education), and a variety of relevant organizations have made recommendations intended to encourage health professions schools to move toward a team-based approach to education and training. The Institute of Medicine (IOM), for example, produced a report entitled *Education for the Health Team* as far back as 1972, and many similar calls have been issued since that time. In 2001, the IOM published *Crossing the Quality Chasm: A New Health System for the 21st Century*, which urged a restructuring of health professions education toward inter-professional practice. In 2003, IOM's report, *Health Professions Education: A Bridge to Quality*, stated: "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."

Despite the interest and repeated calls for education reform, action by academic medicine has been slow due to many factors. Today, however, there is a much greater sense of urgency for giving health professions students the competencies they need to work in teams.

- First, the delivery of medical care has changed far more than educational curricula have changed within health professions schools. Training and education have not kept up with the changes in health care practice.
- Second, a recent and rapid explosion in scientific and technological advances, including a greater reliance on informatics, necessitates educational reforms. Conference attendees agree that health professions educators can no longer simply add on new methods or requirements to existing curricula. Instead, they must integrate new science and technology at every level of health professions teaching and training.
- Third, patients present more complicated conditions and require more complex treatments today. Today's patients are more heterogeneous and they live longer with more chronic disease. The current teaching models have not adequately responded to recent changes and have insufficiently aligned health professions education with the needs of the public.
- Fourth, the provisions of the federal Patient Protection and Affordable Care Act will demand changes in the ways that health care professionals are educated—as more patients enter the health care system, as reimbursement structures evolve, as use of technology expands, and as prevention and primary care become a more central part of health care delivery.

Barriers to Team-Based Education

Given both the long-standing interest and the current urgency, many wonder why inter-professional education is not already an established tenet within health professions education. In his opening address to conference participants, Macy Foundation President George Thibault, MD, identified four significant barriers that have hindered this progress: logistical challenges inherent in coordinating between two or more autonomous health professions schools; deep-rooted cultural differences between the health professions; differences in the educational curricula and pathways of the various health professions; and issues around program sustainability and funding.

Logistical Barriers

There are many administrative and logistical hurdles that must be overcome to educate doctors, nurses, and other health professionals together. Inter-professional programs must coordinate among schools on such things as academic calendars, scheduling classes

and faculty time, and identifying and arranging for appropriate classroom space to accommodate larger numbers of students, etc. Depending on the circumstances of the schools involved—for example, are they neighbors on the same campus, located across town from each other, or even located in different parts of the state?—these logistical issues may be relatively minor details to resolve or seemingly insurmountable obstacles. The good news is that the rules and processes that create these barriers were themselves established by the same school administrators who should now be making inter-professional education a priority. These details can be manipulated and the barriers dismantled if schools are willing to make inter-professional education a core component of their health professions curricula.

Cultural Barriers

Every profession has its own unique culture, and the health professions are no different. Historically, the education and training of health professionals has been highly compartmentalized, with students learning how to function only within their own professional cultures and with minimal exposure to the practices and perspectives of the other health professions. This sustained separation during the formative educational and training years, can foster miscommunications, misunderstandings, competition, and distrust when health professionals attempt to work together in the real world.

During the conference, Lee Shulman, who, as president of the Foundation, spearheaded Carnegie's 10-year "Preparation for the Professions" program, referred to this challenge as the "identity" barrier. He explained that professional education—no matter what the profession—seeks to instill three types of knowledge in students: habits of the mind (medical students learn to diagnose illness like a doctor, for example); habits of practice (students become expert in the skills and techniques of the profession through practice); and habits of the heart (students learn to identify with the accepted values, attitudes, and roles of their chosen profession). The common challenge of any type of professional education, therefore, is to integrate all three of these dimensions rather than simply adding discrete elements to already crowded educational agenda.

Identity formation (habits of the heart) may be the most difficult yet most important component to understand within the context of inter-professional education, according to Shulman. Medical students learn to become doctors by absorbing what it means to be a doctor, and also learning what roles and tasks physicians

don't perform because they fall within the purview of nurses or pharmacists or other health professionals. This identity-based knowledge is what students and practitioners alike fall back on when determining how to behave in any given situation, including when they work together in teams. Thus, a barrier to productive collaboration is erected when health professions students are taught, for example, that physicians are the primary decision makers in health care systems and that all other health professionals should defer to them.

Macy's Thibault agreed that strong leadership is needed to begin dismantling some of the more counter-productive cultural beliefs of the various health professions, while continuing to nurture those unique and important differences that distinguish each profession. Carnegie's Shulman suggested that once inter-professional education has become the norm, it won't have been the result of an efficient computer program that resolves logistical challenges, like coordinating schedules or use of classroom space. Rather, it will come from the development of an inter-professional identity that builds relational trust between and among practitioners of different health professions.

Pedagogical Barriers

Pedagogical barriers include questions around the content, design, and implementation of new educational models and curricula. Questions such as: What kinds of experiences are most valuable for nursing, medical, and other health professions students to have together? What subjects should be taught together? And how and at what point in the curriculum should they be taught? In what settings should various subjects be taught—classroom, clinical, simulation? How should students be evaluated and assessed? And how can we resolve these issues in ways that don't conflict with the differing requirements of health professions accrediting and licensing boards?

According to the Carnegie research presented by Shulman, while every profession has its own unique set of educational models and strategies, they also have many similarities. Beyond identify formation, professional education, regardless of profession, also involves the concepts of enactment, embodiment, and "dailyness." Enactment is the process of learning to do something, such as diagnosing a patient. Embodiment refers to the teachers and the ways in which they model for students the values, commitments, and dispositions of their profession—they become for students the embodiment of the profession. And dailyness refers to the daily routines that enable students to acquire

expertise over time. Identifying and understanding commonalities in the ways that health professions students are educated is useful first step when addressing barriers to inter-professional education.

According to Thibault, when educators consider curricular reform, there must always be a clear, rigorous, and measurable educational goal behind every inter-professional initiative. Inter-professional programming must involve more than cameo attempts at socialization of students from different professions, it must establish meaningful, mandatory, and well-integrated components of a rich educational curriculum. Inter-professional courses must become an assumed part of any health professions curriculum, like basic anatomy or physiology.

Sustainability

There have been a variety of efforts to pursue inter-professional education at academic health centers over the last four decades, but they have proven difficult to sustain. Most often, inter-professional programs suffer from a lack of funding, a lack of leadership, or both. Many efforts over the years have been funded by external grants from private foundations or the federal government. Unfortunately, those programs often end when the grant funding runs out. Similarly, some programs have benefited from the committed leadership of a particular champion. When the champion retires or takes a new job, the program suffers. Experience shows how important having strong leadership is to institutionalizing inter-professional education as a core educational component. For inter-professional education to be sustainable, it needs to be fully integrated into the educational agenda and not be an extraneous activity.

Inter-professional Education in Practice: Improving Collaboration and Health Care Quality

Research from organizations such as the IOM and others has shown that when health care is delivered by a team of professionals it results in improved quality and outcomes, and promotes greater satisfaction among patients and providers alike. The Macy and Carnegie Foundations believe, therefore, that teaching health professions students in teams will improve students' ability to practice as part of a team, improve the overall performance of health care teams, and improve the health of patients. These outcomes have yet to be demonstrated through rigorous measurement

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and evaluation of inter-professional educational programming. However, many health professions schools, like those that participated in this conference, are working toward that goal.

Improving Teamwork

Currently, teamwork is not a primary focus of most health professions education programs around the country. Regardless of the health profession—medicine, nursing, pharmacy, social work, dentistry, etc.—students are taught to function independently and usually learn in silos. Today, when students are asked to work in teams, it usually means students within the same health profession. Nursing students may collaborate with other nursing students, for example, and very rarely do health professions students interact with students or faculty from any of the other health professions. The problem with this model is that it does not adequately expose students to what they will need when they go into practice. When students are taught such autonomy and independence, they don't generally learn that they are responsible not only for the health and safety of their own patients, but also accountable for the overall functioning of the health care delivery system. Teaching students in teams will help them learn that they can work together to not only improve patient care, but to improve the processes and systems that support patient care.

When presenting her thoughts about improving teamwork at the conference, Linda Cronenwett, PhD, RN, FAAN, former dean of the School of Nursing at the University of North Carolina at Chapel Hill, cited a research project involving medical and nursing students at Duke University. The project compared team-based learning in different settings—including classroom lecture, standardized patients, and simulation—and found that team-based learning is very valuable no matter how it is experienced or what the setting. Understanding which types of inter-professional experiences provide the most valuable team-based learning environment for students is one very

important question that needs to be answered by health professions schools.

Also important to improving team work is the need to identify the types of incentives that will entice faculty, most of whom have little experience with multi-disciplinary teaching, to embrace the concept of inter-professional education. Another key question is identifying the appropriate support structure for inter-professional education. Should academic health centers create a separate inter-professional education department? Should they bring all of the health professions deans together under one chair of health professions education? Are there ways to leverage licensing and accreditation requirements that might further boost institutional commitment to inter-professional education? And how do schools broaden students' viewpoints about their professional counterparts and begin to chip away at the culture of autonomy inherent in the health professions?

According to Cronenwett, academic literature from the field of executive education contains a wealth of information about teamwork and organizational functioning. If that information was applied to the health professions, the predominant type of team would be what the executive education literature calls the "collaborative work group." In these work groups, people work together, doing essentially the same type of work, but they are not dependent on each other for information or skills. This is like an academic department, such as a department of pediatrics or a nursing unit where all the nurses work within the same skill set. In this model, one person's error can affect the ability of others to work effectively, yet each person is rewarded for their individual performance. In fact, everything is individually assessed though collaboration is often necessary and expected.

The goal of inter-professional education, however, is the development of real teams—not just collaborative work groups. Returning to the executive education literature, a team is defined as a small group of interdependent

people who collectively have the expertise, knowledge, and skills needed for a task or ongoing work. They have clear roles and responsibilities, a shared vision and purpose, and are collectively accountable for performance and outcomes. One quality of these teams includes mutual responsibility for individual success. So one team member feels responsible for their own success as well as for the success of other individuals. In health care, these types of teams currently exist in some specialized settings such as intensive care units, emergency departments, operating rooms, and sometimes within quality improvement initiatives, but they are not uniformly present throughout the system.

To achieve the type of health care team envisioned by proponents of inter-professional education, the types of knowledge, skills, and attitudes needed to function collaboratively within teams must be clearly and precisely defined. Health professions schools and educators must continue to experiment with creating clinical micro-systems in which all team members have a shared purpose and vision and communication is key. To get there, faculty must model effective communications and conflict resolution and build relational trust across the professions.

Improving Quality

Inter-professional education and quality improvement go hand-in-hand because it is impossible to improve health care quality without involving every professional involved in the delivery of care. To that end, Linda Headrick, MD, senior associate dean for education and faculty development at the University of Missouri School of Medicine, presented conference participants with three principles to consider when thinking about ways to integrate health care quality improvement into the education of health professionals:

1. both didactic and experiential learning are needed
2. clinically based learning is more powerful than classroom based learning
3. role modeling of continuous quality improvement is imperative.

Didactic and Experiential, Classroom and Clinical

Experiential learning is a necessary part of health professions education because some things must be experienced to be thoroughly understood. Quality improvement is a perfect example of this. A lecturer can

present example after example of ways that quality can be improved, but it likely won't penetrate until students posit and test their own hypotheses about what may or may not improve patient care. Students should not be left to guess at what improves quality, they must be encouraged to investigate and perform the work themselves.

Along the same lines, while both didactic and experiential learning are important, experiential learning in a clinic, community-based site, or other clinical setting is more powerful than classroom-based learning, particularly when the topic is quality improvement. But the clinically based learning must be meaningful. Students must be allowed to identify their own quality improvement projects and, to the extent possible, design and test their own solutions and interventions. Taking students out of the classroom to observe quality improvement efforts in a clinic setting is only a first step. A more valuable experience would be asking students to identify opportunities for quality improvement and allowing them to design and implement their own project around one or more of those opportunities.

To date, much has been learned about creating meaningful quality improvement opportunities in clinical settings for students. Some recommendations for effective approaches include:

- Student-designed and -implemented quality improvement projects should align with the goals of the health care organization where the project is being performed. The project should be important to others within the organization and have potential for sustainability after it is completed.
- Student projects should be able to be completed within the timeframe that the student is available to oversee the work. The parameters of the project should be focused precisely enough that it can be completed within a realistic timeframe.
- Students should involve a member of the partnering clinical organization in their improvement projects. This will ensure that students are aligning their projects with the organization's goals, and will provide them a resource within the organization to ensure that students are able to access the information they need and receive oversight from someone who knows how the organization functions.

The good news about creating partnerships around clinical experiences for students is that many of the

organizations that allow students to train in their clinics find it very valuable and are receptive to the idea. They understand the importance of training the next generation of practitioners in continuous quality improvement. The challenge is that, for this model to really take off, it will have to occur on a much-larger scale, involving greater numbers of students across many more clinical settings—a major logistical challenge.

Role Modeling Continuous Quality Improvement

Teaching students to integrate continuous quality improvement into their own habits requires faculty to constantly model it. Doing so is not only a smarter way for a clinician to work—because it means they are always thinking about ways to be more efficient and effective—but it also builds credibility with students and helps students develop and internalize their own priorities around quality improvement. Educators can not credibly exhort quality improvement to the next generation of health care professionals without demonstrating their own personal commitment to it—both through words and actions.

Models of Inter-professional Education

Seven academic health centers participated in the New Horizons conference, sending educational leaders from their schools of medicine and nursing to come together in working groups and discuss the daily opportunities and challenges inherent in their inter-professional efforts. Schools were also asked to come to the conference prepared to make considerable progress on a specific project and work closely their coaches, who were responsible for pointing out challenges and opportunities the teams may not have identified. The teams were also asked to describe a successful effort in inter-professional education. Each of the participating institutions has demonstrated a strong commitment to fostering team-based learning among their health professions students, as evidenced on the following pages by brief descriptions of their ongoing efforts.

Duke University

Health professions leaders and educators at Duke University believe health care teams of the future will require enhanced teamwork, collaboration, and communication skills to deliver the most efficient and effective health care. To this end, the deans of education and their colleagues within the University's graduate

health professions programs—medicine, nursing, physician assistant, and physical therapy—have been working for several years to promote shared learning among health professions students.

Over the past several years, Duke has developed a variety of inter-professional efforts, including a 16-hour prevention course in which first-year medical, nursing, physician, assistant, and physical therapy students meet in lecture and small-group settings to foster inter-professional respect and understanding. The academic health center also offers a semester-long elective called “Transitions in the Care of the Elderly,” during which students from Duke's health professions schools as well as pharmacy students from nearby Campbell University collaborate on a final project. Students also have the opportunity to participate in quarterly inter-disciplinary case conferences, during which teams of health professions students interview standardized patients and develop team-based care plans.

For one week in the summer, Duke also offers an inter-professional course in Disaster Preparedness and Response. The program, which was developed and is taught collaboratively by faculty from each of the health professions schools, requires students to work in inter-professional teams to develop and implement coordinated responses to both man-made and natural disasters, such as biological terrorism and disease pandemics. Student evaluations of the preparedness course have indicated that they place a very high value on the opportunity to work side-by-side with other health professions students on high-intensity learning activities.

The success of these and other efforts over the last few years led the University to begin thinking about additional programming to reach more health professions students and advance inter-professional education to the next level. The disaster preparedness course, for example, while successful, poses logistical challenges for the University, which recently had to rent a local high school for the course because appropriate facilities for a class of 300 students were not available on campus at the time they were needed.

Now, Duke University is developing a new training model designed to reduce logistical barriers to inter-professional education, like the one encountered by the preparedness course. The Schools of Medicine and Nursing will leverage several existing online learning environments developed by faculty from both schools to create and implement a longitudinal inter-professional curriculum for its students. For example, models will

be developed that require multi-disciplinary teams of students to care for patients in virtual clinical settings. As part of the program, nursing and medical school faculty will design challenging scenarios to be programmed into the virtual environments, such as a clinic with panels of patients to be cared for over time, a surgical unit requiring students to care for patients in rapid succession, or an exercise requiring collaboration to recognize and avoid adverse events in patients. To engage students more thoroughly, there also will be in-person, classroom learning activities to complement the virtual learning experiences that occur online.

Duke is planning to develop additional inter-professional training opportunities for students, including the creation of a parallel curricular track for medical and nursing students interested in becoming primary care leaders. Students who choose this track will learn nursing and medicine as well as public health skills, such as conducting community health assessments and performing community outreach and engagement. The University also is exploring the development of an inter-professional dedicated education clinic in which multi-disciplinary teams of students would provide care to local community residents. Finally, the University is creating a Center for Health Professions Education to help further the field of inter-professional education through scholarly research, program and curricula development and evaluation, and other activities.

New York University

Deans at the New York University (NYU) School of Medicine and College of Nursing are collaborating on a new inter-professional project, one that features team-based learning and real and virtual case studies on common clinical problems. The inter-professional education model being developed at NYU will help students hone the skills they need to work as a team and, at the same time, exposes them to simulated cases in a classroom setting. Students working to solve a virtual clinical problem can make a mistake, like ordering the wrong test, but will quickly get the teacher's guidance to help ensure that the same mistake is not repeated in the clinic or hospital unit.

NYU brings a wealth of experience to the effort to implement the new teaching model. In 2007, the College of Nursing started using technology to expose nursing students to situations they would face after graduation. For example, the College used high-fidelity simulations of a health crisis, such as a patient suffering from acute chest pain, to teach nursing students to

work together as a team to solve problems or provide bedside care.

The medical school had also started using real patient stories—through videos played on laptop computers—to introduce medical students to the human side of medicine. Previously, first-year students focused almost exclusively on subjects like anatomy and biology in the classroom, but NYU and other schools now are using videos, web-based technology, and other tools to give first-year medical students a preview of what they will encounter in the clinic and on rounds.

These previous innovations in teaching had been conducted separately until the two schools developed a program called NYU 3T: Teaching, Technology, Teamwork. The four-year project will expose nursing and medical students to simulations in which students role-play the physician and nurse roles with patients who are experiencing common health problems. The students must function as a team in the simulated clinical situation and develop solutions or treatments for the problems at hand.

The goals of NYU 3T include:

- Developing a curriculum for inter-disciplinary team training of nurses and doctors.
- Designing and testing new ways to teach students in the health professions.
- Giving students a better ability to care for patients from diverse cultural backgrounds.
- Creating a large cadre of health professionals trained in inter-disciplinary skills.

In 2010, the two schools launched a pilot of the NYU 3T effort by pairing up 15 medical and 15 nursing students. The student groups were presented with different types of health crises and collaborated around treatment plans for the patients featured in the simulations. Student participants said the pilot gave them first-hand experience in situations that would be difficult to fully understand simply by listening to a lecture. And the collaborative team experience allowed nursing and medical students to get a better idea of the challenges that they each will face on the job.

The schools also have begun to pilot its interactive learning modules with groups of medical and nursing students collaborating together online. These modules are providing a wealth of data on how these groups of learners use computer-assisted instruction together. Like

the simulation pilot, this experience is also garnering positive reviews from the students.

For now, the schools will continue to build the project with a focus on longitudinal learning so that students experience how a medical condition can vary, with patients improving or experiencing complications. The schools also plan to give the medical and nursing students more opportunities to collaborate in a variety of settings, including clinics that are located in underserved areas.

Pennsylvania State University

End-of-life care is best provided by inter-disciplinary teams of health care professionals. To better prepare medical and nursing students for that challenge, the Pennsylvania State University's College of Medicine and School of Nursing have undertaken a collaborative project that educates their students together, using team-based learning and small group approaches to caring for terminally ill patients. Penn State's existing inter-professional curricula focus on various contents, such as patient safety and quality improvement, with team-based relationships as the context in which the content is taught. This project will change that model by focusing on the development of team-based relationships as the primary content being taught, with end-of-life care as the context in which those working relationships will be developed.

This is the second major inter-professional education project the College of Medicine and School of Nursing have undertaken. The first was a "Retooling for Quality and Safety" initiative funded in 2009 by the Institute for Healthcare Improvement and the Josiah Macy Jr. Foundation. That project created an inter-professional curriculum in core quality improvement concepts. It brought all senior nursing and first-year medical students together in two workshops using a team-based learning approach. In those workshops, students studied real cases of health problems with several possible solutions, and worked together to propose a treatment strategy. Student evaluations from those workshops indicated that they placed a high value on learning to work in inter-disciplinary education and teamwork.

The faculty will draw on that experience now as they develop the end-of-life project, which combines two existing but separate courses—one in the College of Medicine and one in the School of Nursing. The new combined course will bring nursing and medical students together in both the classroom and in clinical settings to learn how to work as a team

The Anschutz campus in Denver is a natural outgrowth of a University that has been committed to inter-professional education for more than a decade. In 1998, the school began its first foray into team-based learning by requiring medical and nursing students to participate in a bioethics course together.

while providing comprehensive care to terminally ill patients. Anticipated student outcomes include: better understanding of the nurse and physician roles in end-of-life care, increased inter-professional respect, and better coordination of care services in end-of-life settings.

Inter-professional education is a priority for both the College of Medicine and the School of Nursing. The deans of both schools have established a core group of faculty who will continue to initiate curricular reforms designed to increase the opportunities for inter-disciplinary education at Penn State.

University of Colorado

The Anschutz Medical Campus at the University of Colorado is in many ways a model of what an academic medical center should look like today. Completed in 2007, the campus is a state-of-the-art health sciences center that fosters inter-professional education, patient care, and research. A multi-disciplinary faculty task force helped design the campus and instituted a comprehensive inter-professional education program that takes full advantage of a campus that supports team-based learning. Unlike most institutions, the health professions schools here share the same buildings, classrooms, offices, and other campus facilities. Further, the University's inter-professional efforts are overseen by a Director of Inter-professional Education—a new position created in 2008 by the Vice Chancellor for Health Affairs.

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The University of Minnesota Academic Health Center has a rich history with inter-professional education—experience it is now leveraging as it launches a three-phase initiative called “1Health” to assure students graduate with competencies essential for today’s health care environment.

professional education for more than a decade. In 1998, the school began its first foray into team-based learning by requiring medical and nursing students to participate in a bioethics course together. Students from both professions work in small groups and consider cases focused on ethical issues and professionalism. The new campus allowed for the creation of new academic tracks—three of which involve students from other health professions schools—to help prepare medical students for the future of health care delivery. The three inter-professional tracks are centered on developing health care leadership and advocacy skills in students, teaching students to provide care in rural settings, and teaching them to provide team-based care to underserved urban populations.

Today, in addition to the bioethics course and the inter-professional curricular tracks, the University of Colorado is completing a one-year pilot program to educate medical and nursing students together around quality improvement and patient safety. According to the Institute of Medicine, an error occurs in 3.7 percent of all hospital admissions, resulting in unnecessary patient injuries and deaths. The University’s pilot program brings senior nursing and fourth-year medical students together for shared learning experiences around safety and quality. In addition to an online course, students work together on quality improvement projects during shared clinical rotations at either The University Hospital or The Children’s Hospital on the medical campus.

With the conclusion of the pilot, the University is fully implementing it as part of a broader new inter-professional initiative called REACH—Realizing Education Advancement for Collaborative Health. REACH is an inter-professional curriculum involving all health professions schools and programs on the medical campus—medicine, nursing, physician assistant, physical therapy, dentistry, and pharmacy—and is focused on helping students develop competencies in teamwork, collaborative care, and quality and safety.

Under REACH, all health professions students will learn to problem-solve together through a longitudinal, team-based health mentors program. The mentors program will pair multi-disciplinary groups of students with a patient from the local community who has a chronic illness. The student-mentor groups will complete a series of patient-centered tasks that will integrate basic science, clinical care, and prevention with social and behavioral sciences and team-based skill-building.

Students also will receive instruction in Team STEPPS—a clinical communications model—and will be required to participate in high-fidelity, inter-professional simulations of complex clinical problems. Ultimately, all health professions students will participate in inter-professional experiences focused on quality improvement and safety once REACH develops the capacity to support these experiences across multiple clinical training sites.

University of Minnesota

The University of Minnesota Academic Health Center has a rich history with inter-professional education—experience it is now leveraging as it launches a three-phase initiative called “1Health” to assure students graduate with competencies essential for today’s health care environment. Minnesota’s long-standing commitment to inter-professional education began in 1970 when the University’s six health professions schools and colleges joined together as an academic health center and looked for ways to collaborate across the professions.

Early inter-professional efforts consisted primarily of elective courses, “inter-disciplinary hours,” and co-curricular activities that provided students with valuable experiences and interaction with peers in other professions. One early example: the Center for Health Inter-professional Programs, a student-led organization focused on fostering collaborative opportunities that continues to provide programming for students today. However, because these activities and courses were

not required, many students did not experience inter-professional collaboration during their education.

In 2006, the deans of the Academic Health Center's health professions schools renewed their commitment to inter-professional education by issuing a joint leadership statement identifying new priorities and creating the Center for Inter-professional Education. Those steps led the University to launch a bold initiative to transform its approach to health professions education by requiring health professions students to achieve a defined set of collaborative competencies in the areas of professionalism/ethics, communication, and teamwork.

1Health began in Fall 2010 with "Day One," a full-day orientation to patient-centered, team-based care for all 750 entering health professions students from allied health, dentistry, medicine, nursing, pharmacy, public health, and veterinary medicine. Students were assigned to one of 63 inter-professional groups and are taking the required "Foundations of Inter-professional Communications and Collaboration" course, which introduces them to the core concepts of inter-professional collaboration.

The second phase of 1Health will occur during the middle portion of a student's educational program. This phase will allow students to choose from a menu of inter-professional courses—many preexisting and others that are being created. The new courses will center on the educational priorities established by the health professions' deans in their leadership statement and will seek to instill the common collaborative competencies that the school requires of health professions students. Phase III of the program will enable students to practice their collaborative competencies in clinical settings.

At the Carnegie/Macy "New Horizons" meeting, the University of Minnesota team planned a retreat—"1Health: Connecting with Partners"—which was then held in August 2010. During the retreat, 110 stakeholders from health systems, community, government, and higher education identified 10 key attributes of health professionals for inter-professional collaboration. These attributes will be used to guide the design of Phases II and III of the 1Health curriculum. Retreat attendees also discussed the importance of the University partnering with health systems to create experiential, collaborative education rotations for students in authentic health care settings. A partnership currently is being developed with Fairview Health Systems, and the University also will leverage its strong relationships with communities throughout state via the Minnesota Area Health Education Center.

University of New Mexico

The University of New Mexico Health Sciences Center has developed, in recent decades, an expertise in teaching students of medicine, nursing, and other health professions how to work collaboratively. In 1990, the Health Sciences Center launched an innovative program that trained inter-professional student teams to address rural health care needs in underserved communities.

More recently, the Health Sciences Center piloted a half-day inter-professional learning project to help prepare students to address domestic violence. Nearly 300 students of medicine, nursing, pharmacy, occupational therapy, and physical therapy participated in the pilot project.

The program, called the Rural Health Inter-disciplinary Program or RHIP, involved about 100 students and 15 faculty members from 12 different health professions every year. It featured a semester-long course using inter-professional problem-based learning followed by a rural training experience in which teams of students completed community health projects under the guidance of faculty and community members.

Students were organized into faculty-facilitated, inter-disciplinary teams to discuss a complex domestic violence case. Community organizations involved in preventing and responding to domestic violence also participated. By the end of the half day, the student teams had explored available community resources and produced plans to help families reduce their risk of recurring violence.

The Health Sciences Center is now broadening that pilot project. It plans to create a multi-week inter-professional course to teach students how to work in teams to address domestic violence as well as other complex health problems that involve multiple areas of expertise/treatment/services. The expanded domestic violence course—in which New Mexico's Law School has also expressed an interest

The [Vanderbilt University] inter-professional faculty mentors at each clinic oversee the work and help the students understand how each member of the team contributes to the treatment of the patient. Students also learn the challenges that other team members may face when providing care and, thus, begin to develop a broader perspective that is expected to translate into better care and improved patient outcomes.

in participating-- will feature classroom work as well as an online teaching component. Eventually, the Health Sciences Center plans to create cyber-learning communities where students and professors can review cases, conduct seminars, and develop action plans. One such community already exists in the College of Nursing, where a faculty member has created a virtual “neighborhood” of health care providers and multiple evolving family stories.

The University of New Mexico Health Sciences Center is helping to pioneer a better way of teaching the next generation of health professionals. The model inter-professional program will combine the use of a sophisticated web-based virtual community with team discussion to stimulate learning on a variety of topics related to complex health issues and collaborative practice. The model also will provide students with teamwork experiences that lead to tangible course products, such as inter-professional intervention plans. In the end, students will learn to work collaboratively on domestic violence and other health issues that are pressing not just in New Mexico but across the United States.

Vanderbilt University

In July 2010, Vanderbilt University launched a pilot program that will serve as the basis for a more ambitious initiative: an inter-professional education program that will train nursing, medical, pharmacy, and social work students to work collaboratively in clinics throughout the city of Nashville.

To design the model program, the University drew on its extensive experience with multi-disciplinary learning experiences, including a course first offered in 2000 in which the Schools of Medicine and Nursing jointly taught their students about the social and ethical issues involved in the delivery of health care. The students were placed in small, multi-disciplinary groups to discuss the complex issues that often come up in clinical

settings, like treating patients without health insurance who have multiple medical problems requiring comprehensive services.

The success of that course led Vanderbilt, in 2007, to develop an inter-professional program centered on the treatment of chronic diseases. Teams of nursing students and medical students collaborated to help patients understand and manage chronic conditions such as diabetes or heart disease. This experience included making home visits to the patients. Students then presented their experiences in small groups with a faculty member leading the discussion.

Vanderbilt is now drawing on those experiences to move forward with a new inter-professional project, one that features classroom learning as well as team-based clinical experiences with real patients, such as pediatric or AIDS patients. Vanderbilt has partnered with the Belmont University School of Pharmacy, Lipscomb University College of Pharmacy, and the Tennessee State University School of Social Work in order to bring pharmacy and social work students into the effort.

The pilot program involves 30 students who meet for inter-professional classroom time on Mondays, and are grouped into teams seeing patients at one of four clinics on Wednesdays and Fridays. One of the clinics, for example, is a hospital-based medical clinic and another is a community clinic that sees most of the HIV-infected patients in Nashville.

Students in the small groups will take turns performing all of the various duties required, forcing students to appreciate patient care responsibilities that others on the team normally provide. A social work student might take a patient's vital signs, for example, while a medical student might arrange for a stay in a homeless shelter for an HIV-infected man.

The inter-professional faculty mentors at each clinic oversee the work and help the students understand how

each member of the team contributes to the treatment of the patient. Students also learn the challenges that other team members may face when providing care and, thus, begin to develop a broader perspective that is expected to translate into better care and improved patient outcomes.

In 2011, Vanderbilt plans to begin expansion of the pilot, which will become a required part of the curriculum for all medical and nursing students within two to three years. The curriculum planning for the initiative has been completed, but organizers now are struggling with how to assess student performance in a standardized way.

Sponsors worry that barriers to the success of this program might include the tendency to compare the progress of students in the new program with those who are undergoing the more traditional medical or nursing education, which often does not involve collaboration between schools. But at this point, participating faculty and students are enthusiastic about taking the small-scale pilot to the next level and implementing a full-scale inter-professional education program.

Conclusion

For several decades now, academic medicine has experimented with a variety of strategies for integrating inter-professional education into their curricula with varying degrees of success. Both the Macy and Carnegie Foundations firmly believe that it is now time, however, to move beyond tinkering and begin serious and rigorous efforts to fully integrate team-based learning as a core component of health professions education.

To help advance this goal, the New Horizons conference brought together leaders and innovators in inter-professional education from across the country, including deans and faculty from seven academic health centers now actively engaged in developing and implementing new collaborative models for health professions education. During the three-day meeting, participants not only discussed the broader opportunities and challenges posed by inter-professional education, but also provided each other with expert feedback, ideas, and insights regarding specific educational reform efforts at their own institutions.

These small-group discussions about specific efforts likely were the highlight of the conference for the participating educators who are deeply involved in implementing new education models at their institutions. However, the conference also was intended to inform a broader audience of health professions educators as well as educational researchers and policymakers about the urgent need to engage in health professions education reform. Americans are living longer with more chronic and complex health conditions and health care delivery is changing as a result of both new scientific technologies and health care reform legislation. Health professions educators need to keep up with these changes if they are to meet the public need. Collaboration and team work will be the hallmarks of effective health care delivery in the future.

During the conference, the discussion ranged far and wide, but returned frequently to several themes, which are summarized below.

- **Determining optimal timing and content for inter-professional education**

Currently, medical and nursing students may be taught similar content, but the language used in the two courses may be very different, or the course may serve very different purposes for students in different professions. Further, similar content may be presented to students in different health professions at very different times in their training. While it is important to identify these similarities because they present opportunities to train medical, nursing, and other health professions students together, these curricular or pedagogical barriers—such as the use of different language, the differing educational goals and pathways, etc.—must first be addressed.

- **Overcoming logistical barriers**

There are many small and large logistical barriers inherent in efforts to train students from different

health professions schools together. These barriers may be as simple as locating the appropriate classroom space for larger numbers of students or as complicated as developing an online environment in which to jointly educate students whose schools are located far apart or are on different academic calendars. Logistical barriers generally are the making of administrators who establish policies, such as determining a school's academic calendar. Thus, many logistical barriers can be reduced or eliminated when inter-professional education is made a top priority by the leadership of an academic health center.

- **Carrying inter-professional education into clinical education experiences**

Historically, inter-professional education has taken the form of classroom courses that bring medical, nursing, and other health professions students together to learn about professional ethics, for example. For students to acquire proficiency in team-based care, however, they must learn by doing in real-world clinical settings.

- **Need for faculty development**

Changing the way health professionals are educated requires changing the way faculty teach. Unfortunately, most professors and other faculty have little experience with multi-disciplinary education. Academic health centers that are committed to inter-professional education must also commit to providing professional development, support, and incentives to faculty members as they learn to instruct students effectively within new educational models.

- **Need for better measurement tools**

Currently, there are many questions about the best methods to evaluate multi-disciplinary training. These include: How do we make the link between teaching students to work in teams and demonstrating that such training produces graduates who then perform well as part of a health care team—a team that provides better care that results in improved patient outcomes? Developing tools for measuring these kinds of outcomes is imperative to ensuring that inter-professional education efforts are effective and able to produce professionals who are adequately prepared to meet the needs of the health care system.

- **Identity formation: develop team identity alongside specific professional identity**

Identity formation is an important part of professional education. Students absorb the values, morals, attitudes, and habits of their own profession's unique culture—and learn little about the knowledge, skills, and assets that other health professionals bring to the patient's bedside. Effective inter-professional education, therefore, necessitates the development of a team-based identity in addition to the well-established and distinct professional identities of doctors, nurses, and other health professionals.

The conference participants were uniformly exhilarated by the three-day workshop. Many commented that the opportunity to have protected time together with their colleagues across the medicine/nursing divide was one of the most satisfying professional experiences they have had. With the help of their coaches and the stimulation that came from working with other teams, the participating institutions saw their educational projects evolve and improve over the course of the workshop.

Further, participants came to realize the challenges ahead and the need to successfully address the various themes that emerged during the conference. They agreed that they are embarking on a journey to make inter-professional education robust and rigorous, but that all of the details regarding how to accomplish this journey have not yet been defined. Nonetheless, all agreed on the goal of this work: to change the educational paradigm so that there is a clear link between education and improved patient outcomes in our health care system. Interprofessional education must be one element of this new paradigm.

Finally, there was a uniform commitment among participants to continue this work, not only at their own institutions, but also through continued communication and collaboration with the teams from other participating academic medical centers.

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Conference Schedule for June 16–18, 2010

Wednesday, June 16

- 2:00 PM Welcome
Aims of the conference
Introduction of speakers and coaches
George Thibault, Tony Bryk; Bill Sullivan, moderator
- 2:15 PM Opportune Time for Inter-professional Education
Brief remarks on:
- Four barriers to inter-professional education (different cultures, scheduling, who teaches what, and sustainability)
 - IPE Barriers & Solution
 - Discussion
- George Thibault*
- 3:15 PM Each school will present a summary of their poster that describes:
- One success that they have had in one IPE area
 - Primary focus of IPE conference work
- George Thibault*
- 4:15 PM On the Preparation for the Professions Program and the Carnegie studies
Lee Shulman; Bill Sullivan, moderator

Thursday, June 17

- 8:45 AM Teams and coaches meet to reflect on what they have learned from yesterday and propose/decide on changes to conference project
- 10:30 AM Break
- 10:45 AM Reconvene teams with coaches and discuss projects; start worksheets
- 12:30 PM Lunch
- 1:30 PM Plenary: Pushing the Envelope: What are the Possibilities for IPE and What are the Benefits?
Group discussion of challenges teams face, i.e. collaboration within schools; future research
Linda Cronenwett and Linda Headrick; George Thibault, moderator
- 3:00 PM Break
- 3:15 PM Cross School Team Meetings
Each school divides its members in ½ (i.e. ½= school of medicine representatives and ½ = school of nursing representatives)
½ meet with one school; ½ with another school
- 4:15 PM Full teams and coaches reconvene and continue on the team worksheets

Friday, June 18

- 8:30 AM Individual School Meetings
Reflect and revise task/timeline with benchmarks / responsible party plan
Incorporate sustainability, evaluation, and dissemination
Prepare 5-6 min key feature presentation/ spokesperson
- 10:00 AM Break
- 10:15 AM Plenary Session: Presentations by schools
Group discussion on future collaboration across schools; finding common ground
Molly Sutphen, moderator
- 12:15 PM Lunch
- 1:00 PM Panel discussion on opportunities & key constituencies/organizations and roles in supporting IPE
10 min remarks by each panelist
15 min general discussion
Darrell Kirch (President AAMC) and Polly Bednash (President AACN); David Irby moderator
- 1:45 PM Next Steps: Sustainability, evaluation, dissemination
Panel discussion with Malcom Cox, Deborah Gardner, and George Bo-Linn;
George Thibault, moderator
- 3:30 PM Conference ends



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