

Model Approaches for Advancing Interprofessional Prevention Education

Clyde H. Evans, PhD, Suzanne B. Cashman, ScD, Donna A. Page, MPH, David R. Garr, MD

Abstract: Healthy People 2010 included an objective to “increase the proportion of . . . health professional training schools whose basic curriculum for healthcare providers includes the core competencies in health promotion and disease prevention.” Interprofessional prevention education has been seen by the Healthy People Curriculum Task Force as a key strategy for achieving this objective and strengthening prevention content in health professions education programs. To fulfill these aims, the Association for Prevention Teaching and Research sponsored the Institute for Interprofessional Prevention Education in 2007 and in 2008. The institutes were based on the premise that if clinicians from different professions are to function effectively in teams, health professions students need to learn with, from, and about students from other professions. The institutes assembled interprofessional teams of educators from academic health centers across the country and provided instruction in approaches for improving interprofessional prevention education.

Interprofessional education also plays a key role in implementation of Healthy People 2020 Education for Health framework. The delivery of preventive services provides a nearly level playing field in which multiple professions each make important contributions. Prevention education should take place during that phase of the educational continuum in which the attitudes, skills, and knowledge necessary for both effective teamwork and prevention are incorporated into the “DNA” of future health professionals. Evaluation of the teams’ educational initiatives holds important lessons. These include allowing ample time for planning, obtaining student input during planning, paying explicit attention to teamwork, and taking account of cultural differences across professions.

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Introduction

A welcome theme of recent healthcare reform discussions is the notion of transforming our medical care system into a healthcare system. To achieve this transformation, however, substantial changes must be made in the way care is delivered. Among these changes will very likely be the meaningful use of electronic health records to assist with the delivery of preventive services and the care of patients with chronic diseases,¹ a focus on the care of populations as well as individuals, and utilization of interprofessional teams to deliver healthcare services.^{2,3} Adequately trained in a collaborative approach to providing health

care, it is anticipated that such teams will enhance the provision of effective, comprehensive, responsive care.

As preparation for collaborative practice, the interprofessional education of teams is seen as a key implementation strategy for certain phases of the Healthy People 2020 Education for Health framework. In particular, interprofessional prevention education (IPE), in which health professionals learn and practice together, takes place during that phase of the educational continuum in which the attitudes, skills, and knowledge necessary for both effective teamwork and prevention are incorporated into the “DNA” of future health professionals. Thus, interprofessional education with an emphasis on prevention will not only greatly assist with achieving the Healthy People objectives included in the Education and Community-Based Programs topic area but also help prepare the next generation of health professionals to better address preventable health problems.

To place interprofessional education in a wider context, it is noteworthy that the WHO has been a strong proponent for interprofessional education, arguing that it leads to effective collaborative practice that results in

From the Academy for Academic Leadership (Evans), Atlanta, Georgia; the Department of Family Medicine and Community Health, University of Massachusetts Medical School (Cashman), Worcester, Massachusetts; the Association for Prevention Teaching and Research (Page), Washington DC; and the Department of Family Medicine, Medical University of South Carolina (Garr), Charleston, South Carolina

Address correspondence to: Clyde H. Evans, PhD, Academy for Academic Leadership, 12 Perry Drive, Needham MA 02492. E-mail: chee@comcast.net.

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better health services with better outcomes.⁴ In addition, two other countries, Canada and the United Kingdom, are making considerable progress using team approaches to educating future healthcare professionals.⁵⁻⁷ The Canadian Interprofessional Health Collaborative (www.cihc.ca/) and the Centre for the Advancement of Interprofessional Education (in the United Kingdom; www.caipe.org.uk/) are taking the lead in these two countries. In contrast, the pace of advancing interprofessional education in the U.S. has been slower. Nevertheless, some institutions have taken substantial steps to incorporate interprofessional educational experiences into their curricula.⁷

In 2002, the then Association of Teachers of Preventive Medicine (now Association for Prevention Teaching and Research) convened the Healthy People Curriculum Task Force (HPCTF), an interprofessional group consisting of leaders from the disciplines of allied health, dentistry, medicine, nursing, pharmacy, and physician assistant studies. The Community-Campus Partnership for Health and the Association of Schools of Public Health provided additional input. The HPCTF's original charge was to fulfill Healthy People 2010's Objective 1.7: "Increase the proportion of schools of medicine, schools of nursing and health professional training schools whose basic curriculum for healthcare providers includes the core competencies in health promotion and disease prevention." To work toward achieving this objective and to incorporate more prevention content into health professions education programs, the Task Force created and subsequently revised the Framework for Teaching Clinical Prevention and Population Health.^{8,9} Task Force members also believed that prevention education programs are most likely to succeed if interprofessional teams implement them in a coordinated fashion. Prevention education was seen as having great potential for successful interprofessional education because the delivery of preventive services provides a nearly level playing field in which multiple professions each make important contributions. This led to the decision to sponsor the Institute for Interprofessional Prevention Education in 2007 and in 2008.¹⁰

Institute for Interprofessional Prevention Education

The goal of the Institute for Interprofessional Prevention Education was to address high-priority health problems by advancing interprofessional training and increasing the emphasis on prevention in health professions education programs. Based on the premise that the collaboration of varied health professionals can facilitate better health outcomes, the institute brought together interpro-

fessional teams of educators from academic health centers across the country.^{11,12} As such, the institute continued the effort to achieve the Healthy People objective described above and fits into the Evidence-based Thinking and Practice stage of the Healthy People 2020 Education for Health Framework.

The institute was designed with several goals in mind: (1) developing substantive IPE projects at participating schools; (2) increasing the expertise (knowledge and skills) of faculty interested in IPE; (3) preparing and positioning faculty to be change agents within their institutions; (4) creating a network of colleagues interested in spearheading national curricular reform; and (5) engaging the next generation of health professionals (students) in IPE.

To be eligible to attend, teams had to consist of at least three faculty members from different health professions—not merely three different specialties within the same profession. In addition, each team needed to have developed preliminary plans for educational initiatives that would (1) be conducted by interprofessional teams of faculty members; (2) involve interprofessional teams of students; (3) have a curricular as well as a community-based component; and (4) include a focus on prevention areas cited in Healthy People 2010 and Steps to a Healthier U.S. Teams also were encouraged to consider the needs of identifiable populations as they developed their initiatives.

Thus, for example, plenary sessions addressed ways to create an academic environment that was conducive to advancing IPE and evaluation strategies for identifying and measuring outcomes. Small group sessions followed each plenary, which varied in structure as follows:

1st session: Team members from the same institution met to reflect on insights gained from the first plenary that addressed creating an institutional environment conducive to advancing IPE.

2nd session: Institutional teams were separated, with each participant receiving consultation and feedback about his/her team's proposal from four other participants from different institutions.

3rd session: Institutional teams met again to consider proposal modifications in light of the plenary session that focused on evaluation and feedback about their proposal provided by colleagues from other institutions.

4th session: Teams from two different institutions met to present and critique each other's modified proposals.

As a result of these multiple interactions, every team left the institute with modified and improved plans for their initiatives. In order to learn as much as possible from the implementation of the projects, all teams from 2007 and 2008 subsequently were evaluated using three

data sources: an online survey, phone interviews, and year-end reports.

The remainder of this article provides a summary overview of team initiatives (Tables 1 and 2), lessons learned as plans were implemented, key factors for success, and challenges encountered in creating engaging, innovative IPE initiatives for and with health professions educators and students.

Results

The short-term impact of the institutes was immediately apparent: interprofessional teams of faculty enhanced their knowledge and skills, improved the plans for their projects, and proceeded to implement the projects. These results are directly attributable to the institutes. In terms of long-term outcomes from the projects themselves, it is too soon to know their impact because they are in their early stages of evolution. Further, different institutions were at different stages in the interprofessional education continuum, with some teams starting essentially from scratch whereas others were integrating their projects into an already existing, robust interprofessional infrastructure. Thus, the impact directly attributable to the institutes themselves varied greatly from institution to institution. So the results of this program are limited to the observations and insights gained from the implementation of the teams' projects.

Lessons Learned

Key lessons about implementing IPE projects fall into two categories: factors associated with success and challenges/impediments.

Factors Associated with Success

Early planning. Interprofessional education programs are, by their nature, a departure from traditional practice. Consequently, allotting ample time for planning at the beginning to anticipate and address potential difficulties will help avoid problems that could derail the initiative.

Obtaining student input during the planning phase and encouraging student leadership. Consistent with principles of adult learning, inviting and incorporating student input into program design greatly increases the likelihood of success. The potential for success is increased even more if students assume responsibility and leadership for specific aspects of the project.

Taking account of cultural differences across disciplinary units. Different professions really are different—in how they see themselves, approach their subject matter, view their expertise, and relate to other professions. No good purpose is served by ignoring these differences. Unacknowledged, they can undermine the desired collaborative educational

experience. Identifying and acknowledging these differences as early and transparently as possible permits them to become valuable learning opportunities for students.

Obtaining community support for projects located off-campus in a local community setting. Having community leader and community stakeholder support is essential if such programs are to succeed. Ideally, community members would be engaged and involved from the beginning, through every stage of the planning and implementation processes.

Paying explicit attention to teamwork. There are certain well-established principles and practices of high-performing teams. But because most people have never been exposed formally to these principles and practices, the most successful teams in the present study were those that devoted organized, systematic attention to the skills needed to function as part of a team.

Partnering with the Area Health Education Center (AHEC) system. AHECs are inherently interprofessional, with students and staff from multiple professions taking part in their programs. AHECs thus provide a natural partner for facilitating and advancing both educational and clinical experiences in a multiprofessional context.

Challenges/Impediments

Teams encountered several types of impediments, including:

1. Logistic impediments

- offering courses for students from different disciplines and programs with different academic calendars (the most-frequently cited obstacle);
- integration of schedules between schools and community collaborators;
- finding time for faculty to meet together;
- coordinating activities in different geographic locations;
- coordinating complex community logistics in order to provide the necessary clinical experiences for large numbers of students.

2. Institutional impediments

- recruiting students across academic units;
- obtaining course approval across different academic units;
- allocating course credit—and financial payment—across different academic units;
- obtaining IRB approvals.

3. Miscellaneous impediments

- recruiting a sufficient number of interested faculty;
- finding time in faculty schedules to devote to IPE projects—especially in the absence of institutional

Table 1. A summary of educational initiatives for 2007 institute teams

Creighton University New team	Number of students involved: N/A Course to be offered Fall 2010 Academic credit offered
Professions: Nursing, pharmacy, physical therapy, occupational therapy	
Project focus and goals: (1) Identify overall roles and responsibilities of an interprofessional healthcare team; (2) integrate skills of interprofessional healthcare team members to address collaboratively Healthy People 2010 objectives related to physical activity, nutrition, preventive screening, health literacy, and making healthy choices to promote health and prevent disease; and (3) demonstrate ability to work effectively as an interprofessional team member through community engagement to achieve health promotion and disease prevention outcomes.	
Prevention focus: Primary, secondary, and tertiary	
Participating partners: Community agencies	
Educational methods: Didactic course (15 weeks) and a 2-credit hour elective course with a community experiential/service component. Didactic course to be offered to occupational therapy, physical therapy, nursing, and pharmacy students. Course split between didactic (15 contact hours) and community experience/service-related (30 contact hours).	
Products and programs developed: Team skills evaluation instrument booklet; Interprofessional team KAS learning objectives	
Evaluation methods used: N/A	
Structure for addressing and advancing IPE: Office for Interprofessional Scholarship, Service, and Education	
East Carolina University Existing team	Number of students involved: 17 Academic credit offered
Professions: Allied health, nursing, pharmacy, public health	
Project focus and goals: (1) Train healthcare students to work as a clinical consulting team with the goal of promoting healthy lifestyle behaviors in rural adolescents; (2) help the community identify key adolescent health prevention interventions, and then help the community conduct these interventions in a Phase II class; (3) train students from a variety of disciplines to provide consultation services as an interdisciplinary team; (4) teach health science students from a variety of disciplines effective team skills, the consulting process, and content relative to health assessment and prevention; and (5) develop positive health behaviors in middle school and/or high school students in rural eastern North Carolina community.	
Prevention focus: Primary	
Participating partners: Greene County Health Care, Inc.	
Educational methods: Semester course and service-learning interactions with the community. Didactic sessions delivered in asynchronous modules. Synchronous chat discussions. Interactive audiovisual sessions. Implemented within framework of existing course.	
Products and programs developed: School-based clinic program development	
Evaluation methods used: (1) Learner evaluation based on the teams' discussion board posts, discussion contributions, plan determination, final report, and a comprehensive exam; (2) course evaluation: university instrument; and (3) community evaluation: interactive dialogue with students and faculty.	
Structure for addressing and advancing IPE: Office of Interdisciplinary Health Sciences Education	
Loma Linda University (LLU) New team	Number of students involved: 300 Academic credit offered
Professions: Behavioral health, medicine, nursing, physician assistants, pharmacy	
Project focus and goals: (1) Understand challenges of underserved/underinsured, multicultural communities and some of the resources available (i.e., medical managed care/medically indigent/no insurance, government programs for children, disabled, and those who are pregnant and billing requirements for Medicaid and Medicare services); (2) review state-of-the-art diabetes prevention education and care plan protocols, including challenges of sustained lifestyle change; and (3) understand the role and function of interprofessional teams in chronic disease prevention and primary care.	
Prevention focus: Secondary and tertiary	
Participating partners: The Social Action Community Health System, an LLU affiliate that is a community clinic providing services to almost 10,000 low-income, underserved and culturally diverse patients annually	
Educational methods: Post didactic and service-learning student questionnaires and twice-yearly interprofessional faculty and student focus groups	

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Table 1. (continued)

Loma Linda University (LLU) New team	Number of students involved: 300 Academic credit offered
Products and programs developed: Group exercises	
Evaluation methods used: Interprofessional Prevention Education in Diabetes for the Underserved: a 4-hour lab/seminar that occurs monthly; provides IPE around diabetes care to students in a real-life clinic. Lab content has evolved to include a live patient, two group exercises, and some didactic sessions.	
Structure for addressing and advancing IPE: N/A	
Medical College of Georgia New team	Number of students involved: 4 Noncredit
Professions: Medicine, nursing, public health	
Project focus and goals: Integrate two evidence-based lifestyle interventions (i.e., Body and Soul and Diabetes Prevention Project) into a socioculturally, ethnically preferred intervention (Fit Body and Soul) for use in African-American churches in the southeastern U.S. to promote weight loss and improve physical activity. Evaluate recruitment of participants. Implement newly adapted Fit Body and Soul intervention in one church to assess church interventionists' comfort with the sessions.	
Prevention focus: Primary, secondary, and tertiary	
Participating partners: Gospel Water Branch Methodist Church	
Educational methods: Service-learning project with interventions developed by four PhD students and implemented by student teams	
Products and programs developed: Fit Body and Soul manual	
Evaluation methods used: Evaluation emphasized experience of program participants.	
Structure for addressing and advancing IPE: N/A	
Medical University of South Carolina (MUSC) New team	Number of students involved: 35 Noncredit
Professions: Health administration, medicine, nursing, pharmacy, physician assistant	
Project focus and goals: Provide health professions students with an interprofessional learning experience designed to increase their knowledge and skills in interprofessional community healthcare collaboration with a focus on childhood obesity prevention. Specific student learning objectives: (1) Recognize the value of interprofessional healthcare collaboration; (2) discuss the value of a community health approach to healthcare and prevention, including work with community groups; (3) participate in an interprofessional community health service-learning project; (4) recognize sociocultural elements relevant to community and individual health; and (5) discuss ways to address youth obesity through nutrition and physical fitness.	
Prevention focus: Primary and secondary	
Participating partners: Local elementary school and Area Health Education Consortium, which coordinates student assignments to community sites and facilitates interprofessional community project.	
Educational methods: Service-learning, classroom, web-based learning modules, allow students in each community to engage in a common didactic curriculum	
Products and programs developed: Facilitator guide, student guide to interprofessional service-learning project (ISLP) and junior doctors of health, teaching resources, data collection materials, team competencies, and four curriculum modules.	
Evaluation methods used: Students evaluated the ISLP and their work as a team. Means were calculated for the closed-ended items; themes were analyzed for the open-ended items.	
Structure for addressing and advancing IPE: MUSC Creating Collaborative Care (C3) Initiative	
Rosalind Franklin University of Medicine and Science (RFUMS) Existing team	Number of students involved: 48 Noncredit
Professions: Nursing, medicine, physical therapy, physician assistants, psychology, clinical laboratory sciences	
Project focus and goals: To promote prevention education in the areas of physical fitness, preventive screening, nutrition, and making healthy choices. (1) Teach students from the nine health professional programs the skills and knowledge necessary to conduct successful health prevention education programs; (2) continue existing and develop new, sustainable partnerships between university and community agencies; and (3) design assessment tools to evaluate constituents' experiences, (students, community partners, and participants).	

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Table 1. A summary of educational initiatives for 2007 institute teams (*continued*)

Rosalind Franklin University of Medicine and Science (RFUMS) Existing team	Number of students involved: 48 Noncredit
Prevention focus: Primary and secondary	
Participating partners: Grade and high schools, YMCA and YWCA facilities, Boys and Girls clubs, nursing homes, residential facilities for physical and mentally challenged adults	
Educational methods: Service-learning project	
Products and programs developed: N/A	
Evaluation methods used: Reflective assignment, and university-wide poster session. Students, community partners, and participants of the prevention education sessions completed an assessment based on goals established for the service-learning projects.	
Structure for addressing and advancing IPE: Mission statement: "RFUMS will be a premier interprofessional health sciences university that advances academic excellence, furthers innovative research, serves with integrity, and respects diversity."	
Thomas Jefferson University New team	Number of students involved: 30 Noncredit
Professions: Medicine, nursing, and physical therapy	
Project focus and goals: Expand existing Move4Health program into formal curriculum in IPE. Focus is on improving health status of inner-city female patients with type 2 diabetes mellitus. Three core learning units include (1) team work and interprofessional roles; (2) teaching students to teach; and (3) introduction to chronic disease prevention and diabetes resources.	
Prevention focus: Primary and secondary	
Participating partners: N/A	
Educational methods: web-based modules with focus on prevention, population health, and behavioral strategies for health	
Products and programs developed: Three web-based self-study modules. Curricular topics include definition and strategies for prevention, principles of population health, and fundamentals of lifestyle and behavioral strategies to maintain health.	
Evaluation methods used: Reflection and perception of Patients' Health Scale surveys.	
Structure for addressing and advancing IPE: Jefferson Center for Interprofessional Education	
University of Connecticut (UConn) College of Pharmacy New team	Number of students involved: 75 Noncredit
Professions: Dentistry, Medicine, Nursing, Pharmacy, Physical Therapy, Physician Assistant	
Project focus and goals: (1) Identify local residents' prevention needs and work with the city's Department of Health and Human Services to identify priority areas; (2) integrate UConn students into community prevention and education programming.	
Prevention focus: Primary	
Participating partners: City's Department of Health and Human Services	
Educational methods: Web-based oral health training for students to use in community outreach screenings	
Products and programs developed: Web-based oral health training for students. Oral health training module: Senior Smiles (fitsweb.uconn.edu/DentalH/activity.htm)	
Evaluation methods used: Surveys of clients, student participants, preceptors, and community agencies.	
Structure for addressing and advancing IPE: N/A	
University of Illinois at Chicago New team	Number of students involved: 36 Academic credit offered
Professions: Medicine, nursing, and pharmacy	
Project focus and goals: (1) Develop, implement and evaluate an interdisciplinary service-learning experience for medical, pharmacy, and nursing students; (2) provide students a unique opportunity to work in interdisciplinary teams to offer care to diverse, underserved patients; (3) provide care for at-risk vulnerable populations; (4) function as effective members of interprofessional teams; and (5) recognize and appreciate the unique role and contributions of each profession.	
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Table 1. (continued)

University of Illinois at Chicago New team	Number of students involved: 36 Academic credit offered
Prevention focus: Primary, secondary, and tertiary	
Participating partners: Community agencies	
Educational methods: 6-week service-learning courses focused on at-risk populations	
Products and programs developed: New course titled Interprofessional Reflective Practice (IRP) to Address Health Needs of Vulnerable Populations. Resource book with course syllabus and readings related to health disparities, underserved populations, and HIV/AIDS.	
Evaluation methods used: Formative and summative evaluation tool.	
Structure for addressing and advancing IPE: N/A	
University of Missouri at Kansas City School of Nursing New team	Number of students involved: 12 Noncredit
Professions: Medicine, Nursing, Pharmacy	
Project focus and goals: (1) Educate healthcare providers to successfully assemble and function in an interprofessional ad hoc team; (2) educate healthcare providers to identify and intervene in highly charged interpersonal situations such as difficult conversations: develop a marketable educational module, develop and validate measurement tools, pilot educational module, disseminate findings, identify a plan for incorporation of educational module, and identify a plan for joint training opportunities.	
Prevention focus: Secondary and tertiary	
Participating partners: Children's Mercy Hospital–Bridge Program	
Educational methods: To develop simulation scenarios of intimate partner violence (IPV)	
Products and programs developed: IPV simulation scenarios	
Evaluation methods used: Pre and post self-assessments by students and student project/course evaluations	
Structure for addressing and advancing IPE: N/A	
University of Oklahoma Tulsa Existing team	Number of students involved: 50 Noncredit
Professions: Medicine, nursing, pharmacy, physician assistant, social work	
Project focus and goals: (1) Provide care to uninsured and underinsured populations with chronic disease by means of patient education, free clinics, student education, intervention protocols, and protocol activation; (2) increase students' communication and teamwork skills; (3) improve students' attitudes toward other professions; (4) increase interprofessional collaboration; and (5) improve patient satisfaction.	
Prevention focus: Primary, secondary, and tertiary	
Participating partners: Local free clinic	
Educational methods: Experiential; clinic-based. Pre- and post-clinic discussions	
Products and programs developed: Blog site for reflective journaling	
Evaluation methods used: Survey to determine student attitudes regarding working with students from other professions. Patient satisfaction surveys. Retrospective review of the patient health markers.	
Structure for addressing and advancing IPE: N/A	
University of Pittsburgh School of Pharmacy New team	Number of students involved: 10 Noncredit
Professions: Medicine, nursing, dentistry, pharmacy	
Project focus and goals: (1) Develop interprofessional education in the area of geriatrics and aging, including prevention education and care provision; (2) educate and train students in team-based approaches to fostering healthy lifestyles in the elderly; (3) provide wellness education to targeted populations; and (4) establish clinical opportunities so students can promote the biopsychosocial benefits of healthy aging.	

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Table 1. A summary of educational initiatives for 2007 institute teams (*continued*)

University of Pittsburgh School of Pharmacy New team	Number of students involved: 10 Noncredit
Prevention focus: Primary, secondary, and tertiary	
Participating partners: Center for Healthy Aging, Graduate School of Public Health, University of Pittsburgh; Independent living complex, Health Center, Advanced Clinical Education Center, School of Medicine, University of Pittsburgh	
Educational methods: 6-week (3 hours per week) summer fellowship	
Products and programs developed: (1) Established schoolwide Working Group on Interprofessional Education, (2) initiated a first annual schoolwide Interprofessional Forum, (3) developed interprofessional student competition to offer ideas for incorporating IPE in any given health professions degree program.	
Evaluation methods used: Learner evaluation: teams' interprofessional care plans (i.e., representation of each of the involved healthcare professions, appropriateness for the patient; learner observations of functioning interprofessional care teams, such as ability to recognize critical aspects of team performance, exhibit positive team and interpersonal behaviors) and attitudes toward interprofessional education and practice. Course evaluation: measures of student perceptions regarding course quality and impact.	
Structure for addressing and advancing IPE: N/A	
University of Texas–Houston New team	Number of students involved: 9 Academic credit offered
Professions: Medicine, nursing, pastoral clergy, public health	
Project focus and goals: (1) Develop and implement environmental audit; (2) hold weekly seminars with students to discuss interprofessional practice; (3) articulate history, rationale, and purpose of environmental audits; (4) determine types of audits; (5) determine steps in performing audits; (6) provide feedback on experiences in the community; and (7) utilize community-based participatory research methodology.	
Prevention focus: Primary	
Participating partners: Local elementary and middle schools, and local church	
Educational methods: Establish a community-based interprofessional service-learning model for health professional students. Use the model to engage students in environmental audits related to physical activity and nutrition in an underserved community.	
Products and programs developed: N/A	
Evaluation methods used: Ability to attract and retain students in the initiative, student skills acquisition in performing environmental audits, group project grade, and analysis of students' reflective journals.	
Structure for addressing and advancing IPE: N/A	
Yeshiva University (YU) Existing team	Number of students involved: 6 Academic credit offered
Professions: Medicine, nutrition, psychology, law, business, genetics	
Project focus and goals: (1) Provide students with a multidimensional and interprofessional learning environment and perspective on the issue of obesity; (2) provide students with an opportunity to collaborate with other disciplines and community organizers to develop obesity research/evaluation based on public health strategies; (3) offer a modified version of this spring course to students in the Masters in Public Health (MPH) program at YU in the near future; (4) apply this interprofessional teaching method to other courses in the MPH program; (5) implement and present a 16-session, 32-hour course; (6) test instruments to evaluate the mini-practicum experience; (7) resolve university-wide registration and tuition-related issues for matriculating students drawn from different schools from within YU.	
Prevention focus: Primary, secondary, and tertiary	
Participating partners: NYC Department of Health and Mental Hygiene	
Educational methods: Advanced seminar course with 16 faculty members	
Products and programs developed: Web-casts (available at www.CDNetwork.org) related to the obesity epidemic; socio-ecologic and other behavioral frameworks to address obesity research; economic, medical, and social aspects of the obesity epidemic; obesity disparities at home and worldwide; evaluation methods for obesity interventions and research studies; international trade policy and obesity; litigation and obesity evidence base for recommendations related to obesity; obesity-related intervention research in USDA programs; collaborative strategies for addressing environment at community and global levels; and the clinician's perspective.	
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Table 1. (continued)

Yeshiva University (YU) Existing team	Number of students involved: 6 Academic credit offered
Evaluation methods used: Structural (community resources), process (curriculum planning and delivery, integration of multiple schools and disciplines, participant satisfaction), and outcome (course evaluation data, student performance, significance of projects, and impact on career plans for course participants).	
Structure for addressing and advancing IPE: N/A	

NYC, New York City; IPE, interprofessional prevention education; USDA, U.S. Department of agriculture; YMCA, Young Men's Christian Association; YWCA, Young Women's Christian Association

release time from other duties or rewards in the form of promotion and tenure;

- sustaining projects and expanding momentum over time; and
- adjusting the balance of didactic, experiential, and community-based/service-learning activities.

Discussion

Among all teams, the most common and fully developed content area was team-building and the collaboration required to coordinate interprofessional care. Many of the teams used the toolkit developed at the Medical University of South Carolina (MUSC) and found it helpful in teaching team development skills. For example, Creighton University used the toolkit to prepare its submission to the national CLARION competition.¹³

Sustainability was a concern for all teams. Several examples of administrative structural change hold promise for sustainability. Creighton University established an Office of Interprofessional Scholarship, Service and Education to support, plan, organize, and implement the school's interprofessional education and scholarship initiatives related to community engagement. East Carolina University established an Office of Interdisciplinary Health Sciences Education in 1999 that assists in offering courses to train health professions students to function as clinical consulting teams. Loma Linda University developed an educational lab that evolved to include a live patient, two group exercises, and several didactic components. During a 1-year period, the lab expanded from the originally planned 2-hour to a 4-hour experience, the number of faculty involved grew from four key individuals to ten, and the number of health professions schools participating increased from four to five. Thomas Jefferson University instituted weekly faculty team meetings to maintain interprofessional faculty communication and made their new educational learning modules available to other IPE initiatives at their institution.

At the MUSC, the institution's interprofessional initiative, Creating Collaborative Care (C3), provides an administrative infrastructure and an institutional culture prepared to sustain IPE innovations. This initiative encompasses a range of IPE learning experiences—including IPE

projects from teams that have expanded beyond the initial project periods, a required annual interprofessional day for all first- and second-year students, a required semester-long IPE core course, healthcare simulation exercises that include interprofessional rounding and clinical skills assessments, an IPE student fellowship program, an interprofessional faculty development program, and extracurricular activities, all of which help to embed interprofessional education throughout the institution's culture. This broad-based effort is supported by a centralized office that works with a variety of faculty and student committees to develop and implement interprofessional education. Of special note, this office has succeeded at having the deans of all six MUSC health professions colleges agree to value contributions by faculty to interprofessional educational activities in the promotion and tenure review process.

The University of Pittsburgh developed a campuswide working group on interprofessional education and sponsored a 2-hour, schoolwide interprofessional forum. In addition, the university initiated a schoolwide competition for students to gather ideas on ways to incorporate interprofessional education across the health sciences programs and in any given health professions degree program. Students are examining how the theme of interprofessional collaboration might be reinforced, concurrent with the development of their own specific professional identities. Finally, Yeshiva University developed a Certificate in Public Health course that draws students from a wide variety of professional disciplines. Other teams developed courses that quickly have become popular with students and have embedded new interprofessional modules into existing courses. All of these efforts should help ensure that the IPE activity is sustained over time.

Several general observations are worth noting. First, the faculty and students who participated in these two institutes had a high level of enthusiasm and commitment. Second, the institutes successfully served as catalysts for bringing together faculty and students from multiple professions. Third, not surprisingly, prior relationships among team members enhanced their collaboration. Finally, the financial

Table 2. A summary of educational initiatives for 2008 institute teams

Creighton University New team	Number of students involved: 90 Noncredit
Professions: Pharmacy, occupational therapy, physical therapy, dentistry	
Project focus and goals: (1) Integrate into existing curricula common and explicit learning objectives related to interprofessional team skills in the context of disease prevention and health promotion; (2) develop learning objectives and content related to interprofessional team skills.	
Prevention focus: Primary, secondary, and tertiary	
Participating partners: Clarion Project Team, Interprofessional Geriatric Experience	
Educational methods: Online instructional content related to interprofessional team skills	
Products and programs developed: (1) Learning module: team-building skills (PowerPoint); (2) learning activities; and (3) team skills competency inventory	
Evaluation methods used: (1) Reflective interviews; (2) assess interprofessional team skills pre- and post-learning content; (3) assess faculty perception of and readiness for interprofessional team building	
Structure for addressing and advancing IPE: N/A	
Duke University, Schools of Medicine and Nursing Existing team	Number of students involved: 122 Noncredit
Professions: Medicine, nursing, physical therapy, physician assistant	
Project focus and goals: (1) Develop interprofessional prevention course for entry-level MD, DPT, PA, and accelerated BSN students, incorporating principles of team practice within the course core as well as primary, secondary, and tertiary core prevention principles; (2) develop sustainable financial model for the course.	
Prevention focus: Primary, secondary, and tertiary	
Participating partners: N/A	
Educational methods: Case conference series incorporating standardized patients and drawing on expertise of various learner groups.	
Products and programs developed: Four interprofessional case conferences with students and faculty from MD, DPT, PA, and SON programs.	
Evaluation methods used: Simple, one-page qualitative evaluation tool for students and facilitators.	
Structure for addressing and advancing IPE: N/A	
Massachusetts College of Pharmacy and Health Sciences New team	Number of students involved: 6 Academic credit offered
Professions: Pharmacy, nursing, pre-medical studies, and health psychology	
Project focus and goals: (1) Achieve lifestyle modifications and enhanced medication efficacy in older adults at risk for cardiovascular disease; (2) develop and implement a health promotion curriculum to educate an interprofessional team of health professional students in interventions to prevent or slow the progression of cardiovascular disease in older adults aged >65 years.	
Prevention focus: Primary, secondary, and tertiary	
Participating partners: Assisted living facility	
Educational methods: Didactic with community-based service-learning activities. Two five-student interprofessional teams representing pharmacy, nursing, pre-medical studies, and health psychology. Teams participate in didactic instruction while developing and implementing community-based health promotion projects to address cardiovascular disease in older adults.	
Products and programs developed: N/A	
Evaluation methods used: N/A	
Structure for addressing and advancing IPE: N/A	

(continued on next page)

Table 2. (continued)

Medical University of South Carolina New team	Number of students involved: 14 Noncredit
Professions: Dentistry, medicine, nursing, pharmacy, physician assistants	
Project focus and goals: (1) Address pediatric oral health, oral and systemic linkages, adult oral health, geriatric oral health, oral cancer screening, fluoride varnish and performing an oral exam; (2) develop team building exercises, small group discussions, hands-on workshops, and community site visits; (3) require all students to do end-of-elective group project.	
Prevention focus: Primary, secondary, and tertiary	
Participating partners: Preschool serving low-income minority children	
Educational methods: Didactic with web-based modules from Smiles for Life, a national oral health curriculum, combined with service-learning application of new knowledge gained.	
Products and programs developed: Existing curriculum utilized	
Evaluation methods used: Student reflections; end of semester objective structured clinical exam	
Structure for addressing and advancing IPE: N/A	
Minnesota State University Moorhead New team	Number of students involved: 62 Academic credit offered
Professions: Community health, nursing, wellness	
Project focus and goals: (1) Increase college and local community awareness of flu prevention; (2) increase student learning through service to the community by implementing flu vaccination clinics in accessible locations.	
Prevention focus: Primary	
Participating partners: Student Health Center	
Educational methods: (1) Didactic presentations about healthy lifestyles and obtaining flu vaccines; (2) developing and implementing posters, table tents, post card reminders, and public service announcements; (3) hands-on clinical experiences of supervised nursing students administering flu vaccine.	
Products and programs developed: Student survey with outcome comparisons across years	
Evaluation methods used: Students and participants complete surveys	
Structure for addressing and advancing IPE: N/A	
Nazareth College of Rochester New team	Number of students involved: 0 Academic credit offered
Professions: Nursing, speech and language pathology, music therapy, physical therapy and social work	
Project focus and goals: (1) Develop Center for Interprofessional Education at Nazareth College; (2) develop, present, and formalize conceptual model for delivering interprofessional education and practice; (3) assist faculty in designing and implementing interprofessional curriculum; (4) engage faculty and students in interprofessional campus-based and outreach programs that enhance learning, and establish a mindset for interprofessional collaboration; and (5) create interprofessional demonstration projects in the community modeling academic/community collaboration to address community health problems.	
Prevention focus: Primary, secondary, and tertiary	
Participating partners: N/A	
Educational methods: (1) IPE modules expanding on currently used models and curriculum; (2) assessment protocol created for IPE modules; (3) faculty development for interprofessional education; (4) experiential-interprofessional project(s).	
Products and programs developed: Interprofessional resource notebook for each participating faculty member.	
Evaluation methods used: Faculty assessment survey of interprofessional team work.	
Structure for addressing and advancing IPE: N/A	
Thomas Jefferson College of Health Professions New team	Number of students involved: 83 Academic credit offered
Professions: Medicine, nursing, pharmacy	

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Table 2. A summary of educational initiatives for 2008 institute teams (*continued*)

Thomas Jefferson College of Health Professions New team	Number of students involved: 83 Academic credit offered
Project focus and goals: (1) Develop interprofessional planning skills, focus on comprehensive healthcare plans for simulated paper cases with standardized patients; (2) review application of principles of group process, models of service delivery, cultural competency, communication, and common terminology; (3) engage in collaborative process of whole class creating a plan of care for a sample case; (4) present group report of a case study to a panel of clinicians. (WHO's health/illness theoretic framework used as a model to cross disciplines and accustom students to think holistically.)	
Prevention focus: Primary, secondary, and tertiary	
Participating partners: N/A	
Educational methods: New online course, three group meetings, and a reflection paper. Students placed into interprofessional groups; use simulated paper cases with standardized patients.	
Products and programs developed: Online modules and quizzes	
Evaluation methods used: (1) Survey students' perception of roles and responsibilities—pre-test and post-test questionnaire; (2) Interdisciplinary Education Perception Scale and the Readiness for Interprofessional Learning Scale, pre- and post-test, informational mini modules; (3) comprehensive plan of care; (4) plan of care presentation to panel of clinicians—informal evaluation of presentation; and (5) reflection paper and (6) standardized university course evaluation.	
Structure for addressing and advancing IPE: N/A	
University of Colorado (UC) Denver New team	Number of students involved: 0 Academic credit offered
Professions: Medicine, nursing, pharmacy, physician assistant, physical therapy	
Project focus and goals: (1) Prepare health professionals to provide transitional care across hospital, clinic, and home settings; (2) prepare students and residents from multiple disciplines to work as highly integrated teams in safely transitioning patients from hospital to home; (3) provide self-management tools, healthcare team support, and comprehensive care plans for elderly patients with cardio-metabolic risk factors to meet hospital-to-home transition needs; (4) develop plans for health promotion and prevention of acute exacerbation; (5) simulate the following: interprofessional coordination of care and initiation of health behavior change conversations before leaving the hospital (hospital simulation lab) and ways of working as a team to coordinate care and encourage health behavior change after returning home; and (6) include extended family member support in the demands of coping and providing care (home simulation lab).	
Prevention focus: Tertiary	
Participating partners: Center on Aging and Division for Health Policy and Research	
Educational methods: UC Denver Center for Advancing Professional Education simulation and assessment facilities used to simulate and assess (1) interprofessional care coordination and initiation of health behavior change conversations before leaving the hospital and (2) how to work as a team to coordinate care and encourage health behavior change after returning home.	
Products and programs developed: Simulation being planned. Planning year – no students	
Evaluation methods used: N/A	
Structure for addressing and advancing IPE: N/A	
University of Massachusetts New team	Number of students involved: 7 Academic credit offered
Professions: Dentistry, medicine, graduate nursing	
Project focus and goals: (1) Improve oral health among vulnerable populations; (2) provide brief introduction to oral health epidemiology, role of prevention, and the roles and responsibilities of each of the three professions; and (3) work in small interprofessional groups and focus on providing oral health to vulnerable populations.	
Prevention focus: Primary, secondary, and tertiary	
Participating partners: Multiple community-based agencies	
Educational methods: Experiential, community health clerkship; Didactic, service-learning, reflective discussions, presentations	
Products and programs developed: New Community Health Clerkship small group. Optional Enrichment Elective in oral health.	
Evaluation methods used: Pre-test and post-test; reflective journaling; group conversations; evidence provided for fluoride debate; poster content, population framework, PowerPoint slides.	

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Table 2. (continued)

University of Massachusetts New team	Number of students involved: 7 Academic credit offered
Structure for addressing and advancing IPE: N/A	
University of Nebraska Medical Center New team	Number of students involved: 200 Academic credit offered
Professions: Medicine, nursing, pharmacy, physical therapy, public health, social and behavioral health	
Project focus and goals: (1) Promote prevention education approaches and initiatives with a community-based, service-learning activity conducted by interprofessional teams of students; (2) describe principles of effective teamwork and interprofessional care and service-learning; (3) identify, study, and design solutions to preventable health problems in an Omaha underserved population or community; (4) apply teamwork, prevention, and service-learning principles to design solutions; and (5) evaluate community impact.	
Prevention focus: Primary and secondary	
Participating partners: Multiple community-based organizations reflective of wide range of projects.	
Educational methods: Didactic sessions on team skills and clinical outcomes of teamwork. Students work with faculty and community-based organizations to address preventable healthcare problems	
Products and programs developed: N/A	
Evaluation methods used: Course assessment tools and project-specific products	
Structure for addressing and advancing IPE: N/A	
University of Oklahoma Health Science Center, Oklahoma City New team	Number of students involved: 0 Academic credit offered
Professions: Physical therapy, occupational therapy, medicine, nursing, pharmacy	
Project focus and goals: (Planning year) (1) Work through interprofessional healthcare teams to effect positive outcomes for community dwelling elders at risk for falls; (2) plan and implement pilot IPE via case-based simulations; (3) expand pilot IPE learning initiative to community-based setting; (4) track selected pilot opportunities for interprofessional research training related to the IPE initiative; (5) collect and develop foundational material on aging and team-building methods, discipline-specific presentations on assessment tools for falls, fall prevention strategies, and implementation plans; (6) enhance interprofessional research capacity focused on an aging-in-place framework.	
Prevention focus: Primary and secondary	
Participating partners: N/A	
Educational methods: Live classes and Internet-based methods. Practical experience with community-dwelling older adult patient at risk of falling.	
Products and programs developed: New course	
Evaluation methods used: Documented activities and progress in achieving each outcome. Course feasibility assessment	
Structure for addressing and advancing IPE: N/A	
University of South Florida (USF) New team	Number of students involved: 24 Academic credit offered
Professions: Medicine, nursing, public health, engineering	
Project focus and goals: (1) Develop novel approaches to patient safety and response to identified risk; (2) create comprehensive curriculum in patient safety through initial development of graduate-level interdisciplinary course; (3) solve real healthcare patient safety problems by utilizing solutions students developed.	
Prevention focus: Primary, secondary, and tertiary	
Participating partners: USF Health and Tampa Hospital, Colleges of Arts and Sciences and Engineering	
Educational methods: (1) Service-learning, pre–post clinic discussions, web-based activities, classroom, independent study, group projects, electronic wiki's, didactic and practical components; (2) electronic resources and tools: iTunes U, Sharepoint, Blackboard. General and small discussion groups; Wiki for development of the group project; confidential individual electronic diaries.	
Products and programs developed: Course curriculum, including electronic courseware design	
<i>(continued on next page)</i>	

Table 2. A summary of educational initiatives for 2008 institute teams (*continued*)

University of South Florida (USF) New team	Number of students involved: 24 Academic credit offered
Evaluation methods used: Peer team member assessment, presentation and written report, electronic questionnaire for students' course evaluations.	
Structure for addressing and advancing IPE: N/A	
University of Texas at Houston New team	Number of students involved: 8 Academic credit offered
Professions: Nursing, dentistry, and nutrition	
Project focus and goals: (1) Provide evidence-based health information to women transitioning from prison to self-sufficiency in community; (2) establish a community-based interprofessional service-learning model for health professions students; (3) engage students and community participants in reciprocal learning environment with emphasis on health promotion related to periodontal disease, obesity, and medical conditions accounting for the highest morbidity among women.	
Prevention focus: Primary and secondary	
Participating partners: Community program for homeless women, Outreach Ministries	
Educational methods: Interprofessional service-learning experience seminars, interprofessional team activities, presentation, discussion, student seminar, discussion board, journaling, written paper.	
Products and programs developed: Course	
Evaluation methods used: Group case analysis of interprofessional roles, seminar participation, scope of practice statement, reflective journal, project proposal, implementation/ project evaluation, summary paper of implementation/project evaluation.	
Structure for addressing and advancing IPE: N/A	
University of Texas Health Science Center at San Antonio (UTHSCSA) New team	Number of students involved: 24 Academic credit offered
Professions: Medicine, nursing, pharmacy, public health, allied health, and social work	
Project focus and goals: (1) Develop students' ability to function as a member of an interprofessional team in HIV case management; (2) familiarize students with issues of patient safety, health literacy, medication reconciliation, and interprofessional teamwork in HIV care.	
Prevention focus: Primary, secondary, and tertiary	
Participating partners: University Health Systems HIV/AIDS Clinic	
Educational methods: Didactic lectures, clinic visit, and group case analysis, self-reflective exercise	
Products and programs developed: Online lecture modules	
Evaluation methods used: Group case analysis of interprofessional roles, group discussion of cases, pre and post validated tool to measure attitudes about interprofessional teamwork, post evaluation to test knowledge acquisition	
Structure for addressing and advancing IPE: N/A	

IPE, interprofessional prevention education; WHO, World Health Organization

support provided for initial implementation (anywhere from \$2900 to \$10,700) was important to the teams as a way to (1) leverage additional extramural funding; (2) obtain heightened publicity, recognition, and support for interprofessional and/or prevention activities; (3) catalyze initiation of a project; and (4) sustain the effort required for implementation.

Several aspects of participating teams' initiatives limit the ability to generalize from these findings. First, the initiatives were extremely varied in focus, scope, and implementation, making it difficult to draw comparisons and identify "best practices." Second, the small number of

initiatives ($n=28$) did not permit categorization into comparable groups (e.g., those focused on clinical education or those focused on academic course development). Third, the relatively brief time frame during which these initiatives have been in place makes identification of best practices or models of success premature. Longitudinal follow-up should help answer some of these questions.

Conclusion

The rationale for the institutes was based on three convictions: (1) substantial improvements in the delivery of

healthcare services will require greater use of interprofessional healthcare teams; (2) interprofessional education will play an important role in preparing future health professionals to work as members of effective collaborative practice teams; and (3) prevention will receive more emphasis and support in the coming years in the care of both individuals and populations. The institutes were designed to help advance the development of educational programs to train interprofessional teams to deliver preventive care.

In addition to the goal of facilitating and nurturing the development of interprofessional teams by providing them with knowledge and skills to help them succeed, a second goal of the institutes was to help teams develop viable interprofessional prevention education projects that could be implemented as a foundation for more robust future activities. Although it is not possible to claim definitive proof of impact at this stage, it is evident from the summaries in the tables that the implementation of projects after the institute has already had a positive impact and that this educational approach is being embraced at some of the institutions.

The institutes were never conceived as stand-alone ends in themselves but rather as part of a larger effort to advance IPE. Several related developments, with varying connections to the institutes, are contributing to the wider effort of advancing IPE. With support from the Office of Disease Prevention and Health Promotion, USDHHS, an Interprofessional Prevention Education Self-Assessment and Planning Instrument has been developed. This instrument is designed to assist institutions in gauging their stage of development in interprofessional education and advancing further with interprofessional education with an emphasis on prevention. The instrument is constructed for assessment in the following domains: educational venues, educational evaluation, programmatic participation, institutional support, and faculty incentives. Institutions can score themselves on several graduated levels for each item. As a self-assessment, the instrument can provide a snapshot of the current status of an institution's IPE. As a planning document, the instrument can indicate current strengths and weaknesses while providing guidelines for needed advancement and improvement. This instrument is available for any institution wishing to use it.¹⁴

A much simplified version of this instrument will be used to collect baseline data in preparation for submitting a proposal to add an IPE objective to Healthy People 2020. If accepted, the new objective would call for an increase in the proportion of health professions education programs engaging in interprofessional education with an emphasis on prevention.

As a venue for continuing learning and networking among interested faculty, the American Interprofessional Health Collaborative (AIHC) holds the promise of becoming an ongoing center for the advancement of IPE in the U.S. The AIHC had its informal beginning in 2007 as a venue for exploring common needs and goals among individuals responsible for implementing interprofessional education (IPE) programs in the U.S.¹⁵ Formally established in 2010, the AIHC seeks to connect academic and practice communities, advance an interprofessional learning continuum, and create a collaborative system for improving health. AIHC's development grew through the first Collaborating Across Borders (CAB I) conference held in October 2007 at the University of Minnesota. Developed in partnership with the Canadian Interprofessional Health Collaborative, CAB conferences are designed to share ideas across the U.S.–Canadian geographic border as well as across the borders between the various healthcare professions. Following CAB I, several individuals from the U.S. gathered to establish an initiative to share resources, discuss common issues, and facilitate IPE work at local and national levels. The AIHC has expanded its reach through invitations to individuals nationally, at an informal meeting during the May 2009 CAB II conference in Halifax, and at the first AIHC conference in March 2010 in Philadelphia (blog.lib.umn.edu/cipe/aihc/).

Looking ahead, the challenge will be to provide additional opportunities similar to the Institutes that enable faculty to increase their knowledge and skills and to develop high-quality programs that serve as the foundation for future growth in IPE. Longer-term studies could examine the cultural change brought about by such initiatives, the sustainability of the efforts, and continue to identify the key elements contributing to success or failure. To accomplish these goals, it will be important to evaluate the outcomes of these initiatives. The ability to cite such evidence will help build a compelling case for IPE in the future.

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