ABSTRACT:
Vision 2020 states, “Working with our community partners, University of New Mexico Health Sciences Center (UNM HSC) will help New Mexico make more progress in health and health equity than any other state by 2020.” To address this strategic vision, The University of New Mexico School of Medicine (UNMSOM) integrated a four-year public health curriculum into medical school education beginning with the matriculating class of 2010. All graduating students will receive both a medical degree and a Public Health Certificate (PHC). The first medical school course is Health Equity: Introduction to Public Health, which creates a conceptual framework for understanding health and illness from a socioecological perspective and lays the groundwork for public health concepts and skills that will be reinforced throughout medical school. This prominent timing signals students about the value UNMSOM is placing on these topics. The remainder of the Public Health curriculum consists of Epidemiology & Biostatistics (4 credits), Evidence-based Practice (2 credits), and three courses with fully-integrated content: Health Systems and Health Policy (25% of the Family & Community Medicine clerkship), Community-based Service-Learning Projects (10% of two rural community preceptorships) and Ethics and Public Health (in the required senior Ambulatory clerkship.)

EDUCATIONAL METHODS OR APPROACHES USED:
The PHC incorporates educational methods utilized in UNMSOM’s general curriculum, which include problem- based learning, faculty-facilitated small group discussions and didactic lectures with a primary emphasis on service-learning experiences through clinical rotations in the community locally and statewide, community projects, and capstone student presentations to faculty and community leaders.

PROJECT DESCRIPTION:
New Mexico is a rural and culturally diverse state which ranks 48th in the nation for poverty. Health disparities among ethnic groups, growing numbers of homeless and undocumented immigrants and inadequate access to healthcare have a profound impact on the health of individuals and communities statewide. UNMSOM addresses these challenges through the integrated public health curriculum, which progresses developmentally to incorporate skills and knowledge in clinical epidemiology, health promotion, disease prevention, and health policy and health systems.

The UNMSOM general curricular structure consists of three phases: Phase I, the first two years, students complete a series of integrated organ system blocks focusing on the basic sciences in a clinical context. Methods include problem-based learning, didactics, labs, clinical practice with standardized patients, and other small group activities. Phase II, the third year, consists of required clinical rotations. Methods include inpatient and outpatient clinical practice, case-based discussion, and didactics. Phase III, the fourth year, consists of four required rotations and four electives. Students spend a significant amount of time in the community throughout their four years of education, beginning in the first two weeks of medical school. Service learning occurs in both urban and rural clinic and hospital settings, the majority of which provide healthcare to underserved populations. As compared to traditional medical education, UNMSOM predominantly employs problem-based learning. This allows opportunities for group discussions related to ethics, professionalism and social justice. In the new public health curriculum (graphic attached), key transformational learning objectives focus on the etiological link.
Healthy People 2020 and Education For Health
Successful Practices for Clinical Health Professions

between social determinants and health through community-based service learning. The culmination is a certificate in public health for all graduating students, beginning with the 2010 matriculating class.

The vision for a planned and integrated approach to public health and medicine began in 1999 but gained momentum in 2002 when the UNMHS leadership committed to the strategic initiative to support the goal of the New Mexico Department of Health (NM DOH) to improve the health of New Mexicans. Funding for the project to infuse public health principles into medical school curricula and "strengthen the collaboration between disciplines of academic medicine and public health" was provided in 2006 by a Regional Medicine-Public Health Education Center (RMPHEC) grant through a cooperative agreement between the CDC and the Association of American Medical Colleges (AAMC).

A Public Health Steering Committee of medical school and MPH faculty was developed to determine the core competencies and courses for the PHC and oversee its implementation. The Steering Committee undertook a comprehensive review of institutional policies and identified barriers which were overcome through networking and collaboration with stakeholders. A primary barrier to implementing the PHC was the competition for curriculum time among SOM faculty Block Chairs. The Senior Associate Dean for Education addressed this barrier through successful negotiation with each Block Director to incorporate principles of public health into each medical school block. Another challenge was developing consensus among faculty from the SOM and MPH programs as to how many PHC credits could be transferred toward an MPH degree without formal acceptance of students into the graduate program. Ultimately, 15 credits for the PHC were agreed upon. The committee then reviewed the current 4-year UNMSOM curriculum to determine what curricular components were already in place addressing public health issues, as well as redundancies and gaps. As a result of this analysis, three courses were created to fill significant gaps in the PHC curriculum—Health Equity: Introduction to Public Health, Evidence-Based Practice, and Health Policy and Advocacy. Equally important, public health concepts were introduced, augmented, and/or revised throughout the curriculum in all courses and required clerkships. Lengthy collaboration and negotiation among departments and disciplines resulted in institutionalization of an integrated 4-year PHC curriculum for all medical students beginning with the matriculating class of 2010.

As the first course of the PHC, Health Equity: Introduction to Public Health serves as the foundation for the curriculum. The core concepts learned in this course are reinforced throughout the curriculum. The Health Equity course begins with faculty-facilitated small group discussions of the video "Unnatural Causes: Is Inequity Making Us Sick?" Students use demographic maps of the Albuquerque greater metropolitan area that correspond to data presented in the video researching risk factors and resources in their assigned communities in a web-based interactive session. In this first course in medical school, the students experience the Community as Classroom—small student group visits to assigned community centers; structured interviews of director, staff, and members of the community; participation in community activities; and development of community profiles using asset mapping. The course culminates in student-led capstone oral and poster presentations describing their community and a community-identified public health issue. Students propose interventions to the identified community public health issue using the 3 core functions and 10 essential services of public health (example attached).

In addition to exposing students to communities in the Albuquerque greater metropolitan area during the first 2 weeks of medical school, all students are immersed in rural-based clinical preceptorships throughout New Mexico for 8 weeks in their 2nd year and 4 weeks in their 4th year of education. The second year Practical Immersion Experience is a community-based public health experience and clinical preceptorship. It offers students opportunities to learn in the setting of a clinical practice, using the educational techniques that have been acquired during lectures, tutorials, clinical skills, and continuity
clinics. Students develop and implement a community project that addresses an issue of concern to their assigned community.

The fourth year Medicine in New Mexico course is a public health course with a clinical component. The health equity/public health skills and concepts learned over the last few years are revisited and students theoretically apply them to a community while reflecting on how they may use community assessment tools in future practice. They also develop clinical skills in their area of specialty by working with a preceptor in his/her practice.

In the required 4th year Ambulatory Care rotation, students select a clinical rotation specifically designed to provide comprehensive care to disenfranchised populations in the Albuquerque greater metropolitan area. Populations include high risk women, elderly, children, veterans, mentally ill, and those experiencing homelessness. Students attend biweekly seminars covering topics such as public health law, ethics and public health and national and global healthcare systems and policies. Students demonstrate their mastery of the integrated material through capstone student paper and oral presentations of a contemporary controversy focusing on ethical and public health dilemmas.

To reinforce service-learning components of the curriculum described above, didactic and small group sessions are employed throughout the four years of the public health curriculum. These allow students to acquire foundational knowledge in epidemiology, biostatistics, and evidence-based practice the first two years of medical education, and health policy and advocacy in years three and four.

All of the stand-alone and integrated public health courses have been piloted over the last three years and successfully implemented over the last year with the exception of the fourth year rural-based service-learning course “Medicine in New Mexico.” This course is being piloted in October, 2011. Revisions will be made as necessary and it is expected to be implemented for the class of 2014.

HEALTHY PEOPLE OBJECTIVE ADDRESSED:

The curriculum was framed under the Healthy People 2020 missions and goals, specifically Healthy People Objective ECBP-12: Increase the inclusion of core clinical prevention and population health content in M.D.-granting medical schools. The UNM SOM public health curriculum objectives and content address the relationship between health status and biology, individual behavior, health services, social factors and policies. Using an ecological approach to address disease prevention and health promotion, the public health curriculum includes both individual-level and population-level determinants of health and interventions, which are reinforced throughout medical school education. Specifically, the Health Equity course, “Community as Classroom” activities, summarized in capstone posters and oral presentations, as well as the required rural-based community projects provide future health professionals the opportunity to apply Healthy People 2020 implementation strategies (MAP-IT: Mobilize, Assess, Plan, Implement, Track.)

PROGRAM OR COURSE GOALS:

Number of students enrolled/participating in 2010-2011 school year: 121

121 students (105 medical students and 16 physician assistant students) are required to participate in the Health Equity: Introduction to Public Health course the first 2 weeks of medical education. All matriculating medical students are required to participate in the 4-year integrated public health curriculum.

By incorporating public health core competencies into the medical school curriculum, ALL medical students will have exposure to population health perspectives. Ultimately, we expect this change to equip future physicians with the skills necessary to effectively engage in community partnerships and advocate at a health policy level to improve the health of the public.
Curriculum innovators at UNMSOM realized there were few curricular elements featuring integrated medicine and public health practice models with a population perspectives that students could observe. As a result, a comprehensive curriculum in public health featuring didactic lectures, faculty-facilitated case-based sessions, community-based service learning experiences, community projects and capstone student presentations was designed for all students and integrated into each phase of the 4-year medical school curriculum.

PROFESSIONS INVOLVED:
The development and implementation of the public health curriculum is a solidly collaborative effort that was eight years in the making. Internally, partners include the PHC Steering Committee, the Institute for Community Health Sciences, the Office of Diversity, the MPH Program, and a diverse faculty from across departments in the SOM and Health Sciences Center. Externally, partners include the New Mexico Department of Health and multiple urban and rural community partners. The potential exists to build long-lasting and strong relationships between community centers and the School of Medicine through these collaborative relationships. In particular, the New Mexico Department of Health Public Health Division’s Office of Community Assessment, Planning and Evaluation provides expanded access to local, geo-coded health and social indicator data as well as guidance, design tools, and consultations with students.

An interprofessional group has been involved in the development and implementation of the Health Equity: Introduction to PH course since its inception, including physicians in various disciplines such as Internal Medicine, Family Medicine, Surgery, Pediatrics, Obstetrics & Gynecology, and Emergency Medicine; physician assistants; public health professionals within the Health Science Center, from the Department of Health, and in the community; HSC staff from the Institute for Community Health Sciences; a medical librarian; an internal education consultant; and medical students.

LESSONS LEARNED/EVALUATION RESULTS:
The PHC has only recently been implemented and as a result, evaluation data is limited to student, faculty and community agencies' feedback. Under the guidance of UNMSOM Program Evaluation, Education and Research Office (PEAR), we are in the process of developing and implementing more robust evaluation tools using a variety of environments and contexts to capture different aspects of student performance and curriculum outcomes. Some of these include: continued implementation of the validated Medical Students Attitudes Toward the Underserved (MSATU) survey to track medical student altruism throughout the 4-year curriculum; tracking the number of medical students who pursue a Master’s of Public Health degree utilizing credits from the PHC; self reported students' attitudes toward teamwork and working in interprofessional healthcare teams; performance-based skill stations to evaluate students' abilities to incorporate social determinants of health into an overall patient treatment plan; continued surveys following graduates into practice to determine whether application of training has achieved results (i.e., reported variables on working with underserved populations, practicing in underserved areas, community volunteer service, involvement in advocacy and health policy). Thus far, course evaluations and other feedback indicate that the Public Health curricular components have been well received by students, faculty, and community partners.

Successes include:
• Support and buy in from leadership that stems from a strong institutional strategic focus on health equity and the health of the community
• Transformation of students' perceptions of how they view their role as a future healthcare provider
Healthy People 2020 and Education For Health
Successful Practices for Clinical Health Professions

• Students' interest in staying involved in their assigned communities and giving back meaningfully
• Networking and collaborating across boundaries, both within and outside of the institution
• Introducing the socioecological model as a means of conceptualizing the contexts that shape individual and population health at the very beginning of medical school education
• Recruiting strong faculty role models, some of whom have continued to serve as student mentors
• A collaborative interprofessional team with diverse backgrounds and a common passion for educating for health equity, who are willing to invest the time and energy required to make it happen
• Partnerships with diverse community leaders creating opportunities for the community as classroom
• Curriculum based on educational principles that incorporates service learning experiences

Challenges include:
• Finding time, and support to develop, implement, and sustain learning opportunities for students
• Building community relationships and planning the logistics of community site visits and rotations
• Creating relevance of course content for medical and physician assistant students
• Addressing perceptions of political bias in course content
• Identifying teaching time in an already packed curriculum
• Orienting faculty to new course content and approaches to learning

CONCLUSION:
In spite of multiple recommendations from key academic medical leadership to incorporate principles of population health into all 4 years of medical school education, few medical schools nationwide have risen to this challenge. UNMSOM in collaboration with multiple disciplines and departments within and outside of the UNMHSC have successfully implemented an integrated 4-year PHC curriculum for all matriculating medical students beginning with the class of 2010. Implementation of a public health curriculum in any academic medical institution inevitably faces challenges but is of critical importance in order to prepare future physicians to effectively address individual, population health and healthcare systems issues in the 21st century. Based on our experiences at UNMSOM, a summary of recommendations for successful of integration a public health curriculum into medical school education include the following:

• Take time to develop meaningful relationships with community partners
• Include institutional leadership, student representatives, and community leaders in the project design
• Create an interprofessional core design team, including educational consultants with expertise in curricular development, student assessment, and program evaluation
• Pilot new courses
• Provide a mechanism for continuous quality feedback of the course by eliciting and incorporating student, community members, and faculty feedback, and for evaluating outcomes
• Actively advocate for faculty time to meet with community partners on a regular basis
• Provide faculty orientation sessions that address both the content and process prior to the course

COMPANION MATERIALS: (Course syllabi, resource lists, tests, website, etc.)
1) Graphic of 4 Year PHC Curriculum, 2) Course Handbook 2011 Final (student handbook for course “Health Equity: Introduction to Public Health”), 3) Example student handout of community-identified public health issue with proposed public health interventions from the Health Equity: Introduction to Public Health Course

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