

School: The Brody School of Medicine, East Carolina University

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Collaborating organizations: Pitt County Health Department
Eastern Area Health Education Center

Project Description:

The Brody School of Medicine, established in 1977, has a mission to increase the supply of primary care physicians in North Carolina; improve access to care for residents of eastern North Carolina and to provide opportunities for minority students to receive a medical education. The school's general curricular structure is traditional; the first two years are predominantly basic science followed by two years of clinical clerkships and electives. Prior to the establishment of RMPHEC (Regional Medicine-Public Health Education Center), the Brody curriculum included a wide range of topics and clinical experiences relevant to population health. However, the coverage of population health was uneven and not integrated. This type of teaching was the responsibility of individual course instructors. No faculty coordinator or department was designated for the population health focus. Public health teaching in the preclinical years included limited instruction in epidemiology, biostatistics and evidence-based practice. Also, in the second year, preventive aspects of particular diseases received attention in a case-based skill building course: Introduction to Clinical Medicine. There was not designated population health instruction in the clinical years; rather preventive aspects were interwoven to various extents within the clinical clerkships.

The RMPHEC award to the Brody School of Medicine catalyzed the development of an integrated program of population health teaching throughout the medical school curriculum. This work is still in progress. Gains in this area have received school-wide recognition and provided important support to the formation of a new Department of Public Health, currently serving as a focal point for population health into the curriculum.

A strategy of *curriculum enhancement*, integrating instruction with existing courses or clerkships was employed as contrasted to *curriculum expansion* or *substitution*. The design of the integration was based on the Clinical Prevention and Population Health Framework; a product of the Healthy People Curriculum Task Force convened by ATPM and AAMC. An initial step was employment of a gap analysis to determine the relative deficits in the Brody curriculum when compared with the objectives set forth in the Framework. A *gap* was defined by the presence of domain(s) and items(s) from the Framework for which only one or no educational offering could be identified within the medical school curriculum. This was followed by meetings with key course and clerkship directors to determine the feasibility of enhancing existing instruction with increased attention to population health content. .

Innovations/products/activities developed by RMPHEC are displayed in the following chart.

**Map of Prevention and Population Health Education Content:
RMPHEC Enhanced Activities**

M-1 Doctoring 1 Course

PHC: *Community Health Assessment, Pitt County, North Carolina*

PHC: *Racial and Ethnic Disparity in Low Birth Weight, Wayne County, NC**
Taking a Prevention History

M-2 Microbiology Course

PHC: *E.Coli O157:H7 Outbreak-Washington County Fair*

EPC: *Unknown Influenza-Like Illness*

M-3 Family Medicine Clerkship

During ambulatory rotation: Assessment of Population Health Factors in common chronic conditions

& *Home visit to at-risk maternal & child health client*
Prevention History

M-4 Pediatric Clerkship

Population Health Issues of pediatric patients during ambulatory rotation

PHC= population health case EPC= emergency preparedness case

*This case is not being taught in 2008-2009; in 2008-2009, epidemiology teaching sessions will be provided by Department of Public Health faculty; increased epidemiology and population health content for M-1 for 2010 will be discussed as a component of a revised curriculum for 2010.

There are four components of the Brody School of Medicine RMPHEC Project.

Component 1-Prevention History Instruction: For MS-1, Plenary and small group sessions (with Doctoring 1 preceptors) are used to provide instruction on the elements and performance of a preventive history. Laminated cards displaying age-specific recommendations for this history taking (child, adolescent, adult) have been developed for student use. Efforts have been made to continue this instruction in the MS-3 Family Medicine Clerkship.

Component 2-Case-Based Series in Population-Oriented Prevention: Four population health cases have been integrated into the first and second year medical curriculum. Three of these were previously published and used previously at SUNY Upstate Medical University. All three cases have been modified extensively to incorporate North Carolina local data and context. Two cases have been taught in the first year: *Community Health Assessment, Pitt County, North Carolina* and *Racial and Ethnic Disparity in Low-Birth Weight, Wayne County North Carolina*. Two cases are taught to second year students in microbiology as laboratory sessions: *E. Coli O157: H7 Outbreak—Washington County Fair* and *Unknown influenza-like illness*. The latter is an emergency preparedness case; the agent is discovered to be tularemia. The important aspect of the second year case teaching is the complete integration into a basic science course, microbiology.

Component 3-Population Health Enhancement of Third-Year Clinical Clerkships: Both Family Medicine and Pediatric Clerkships have additional population health content. While on

Family medicine, students must complete an assignment related to population health factors, facilitating or impeding, clinical progress for patients in their assigned ambulatory practice. Students also complete a maternal and child health home visit at a local health department. This is a 3-session series including orientation and debriefing. During their pediatric clerkship, students also identify and research population health factors related to common pediatric conditions in their assigned ambulatory practice rotations. A group debriefing session is held.

Component 4- Evaluation using Clinical Performance Exams (CPXs): A major thrust of RMPHEC activities is to develop methods of examining skills relying on structured examination similar to those used in medical student evaluation. This type of examination will be superior to traditional methods of evaluating medical student performance that rely on knowledge acquisition or course satisfaction. The goal of our efforts is to measure the acquisition of preventive health screening and counseling and population health skills into simulated patient encounters. Standardized cases and performance checklists can be used for assessment purposes. Pilot testing of this approach in third-year students has been accomplished.

The Brody RMPHEC has made significant progress in integrating prevention and population health instruction in the curriculum. Future progress will be important in increasing attention to several components of the Clinical Prevention and Population Health Curriculum Framework. For example, additional instruction, particularly small group work, in epidemiology and critical appraisal, will be beneficial to the preparation of all medical students. This will also increase the visibility and availability of the dual degree, MD/MPH program. The recent Graduate Medical Education award from AAMC/CDC to the Department of Pediatrics and Pitt County Memorial Hospital, with the collaboration of the Department of Public Health, expands the the educational commitment of public health to primary care residencies throughout the institution. The recent creation of the Department of Public Health and its future role in curriculum renewal augur well for further enhancements.

Publications:

An Enhancement Strategy for Integration of Population Health into Medical School Education: Employing the Framework Developed by the Healthy People Curriculum Task Force. Kerkering, KW, Novick, LF. *Academic Medicine*, 2008, 83:4 345-350

Presentations:

Novick, L.F. How to Incorporate a Prevention and Population Health Focus into the Education of Medical Students, Novick, L. Grand Rounds, University of Wisconsin School of Medicine and Public Health, December 13, 2006, Madison, Wisconsin

Novick, L.F. Evaluating Teaching in Prevention and Population Health: Pilot Testing of OSCEs (Observed Structured Clinical Examination), Regional Medicine-Public Health Education Center (RMPHEC) Meeting, Association of American Medical Colleges (AAMC), February 21, 2007, Miami, Florida

Novick, L.F. and Kerkering, K: Integrating Population Health into the Medical School Curriculum. American College of Preventive Medicine Annual Meeting, February 24, 2007, Miami, Florida

Clay, M. Observed Clinical Examinations (CPXs) to Measure Population Health Skills.

American College of Preventive Medicine Annual Meeting, February 24, 2007, Miami, Florida

Lazorick, S. Integration of Population Health into the Medical School Curriculum at Brody School of Medicine. Southern Illinois School of Medicine, September 2007

Novick, L.F. Population Health: What Works. Association of American Medical Colleges (AAMC), Annual Meeting, November 5, 2007

Lazorick, S. Teaching Medical Students to include a Prevention History When Caring for Patients. American College of Preventive Medicine, Annual Meeting February 22, 2008, Austin, Tx

Evaluating Population Health Skills in Medical Students: Structured Clinical Examinations at the Brody School of Medicine Regional Medicine Public Health Center. Novick, LF, Lazorick, S, Merricks, P., AAMC RMPHEC Grantee Meeting, Chicago, May 29, 2008

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Collaborating organizations: Cleveland Department of Public Health
Cuyahoga County Board of Health
Cleveland Vision Council

Project Description:

The School of Medicine at Case Western Reserve University (CSM) has a great history of innovation in medical education. Prior to the creation of the Western Reserve₂ (WR₂) CSM had a solid, organ-based curriculum with some exposure to public health issues through content provided from the Department of Epidemiology and Biostatistics and participation of our existing Center for Urban Health. Four cornerstones form the basis for the WR₂ curriculum; civic professionalism, leadership, clinical mastery, and research and scholarship.

In the WR₂ curriculum students learn the foundations of health and disease simultaneously in a series of six blocks in which the major organ systems are organized to provide synergies of content. Selected major disciplines including anatomy, histology, cell physiology and bioethics have become threads throughout the blocks where relevant content is learned within each block. The thread concept provided a mechanism to incorporate concepts of population medicine, public health, health care delivery issues such as disparity, social and behavioral determinants of disease, and health policy.

Block 1, entitled *Becoming a Doctor*, has a major focus on introducing these concepts as well as providing key learning objectives in epidemiology and biostatistics. These concepts will be developed beyond the Foundations' blocks during the clinical years on selected Friday afternoons where clinical students return for sessions on relevant basic science topics. In the fourth year, a new requirement called Areas of Concentration (AOC) has been established. An AOC is a 3-month experience with a focus area (for example immunology) that must have two months of clinical experience and a month of a science of medicine related area. Several AOCs are under development which will focus on public health topics.

The first iteration of Block 1 has occurred. Students were first introduced to the fundamentals of the profession including compassion, need for continuous learning, responsibilities to individual patients and medicine as it relates to society. Diabetes was used as an index disease for a full week's discussion starting with the impact of the disease on society as a whole and ending with the impact on an individual patient and finally pathophysiological concepts. A part of the experience was an opportunity for students to visit community health agencies which provide services for diabetic patients.

Active student feedback was solicited and plans are already underway for improvements to Block 1 for the class of 2011. A description of the block and actual student feedback can be seen at the following website.

http://casemed.case.edu/admissions/programs/wr2_feedback.cfm

The scholarship component of the curriculum is achieved through a mandated “medical research thesis” that will be a student-driven, mentored experience. The RMPHEC provides support to develop partnerships with the county and city health departments. Opportunities are being established for students to select research in public health using expertise from these departments. A set of research focus groups with public health themes have been established to provide opportunities for medical students to meet with matriculated graduate students to explore topics for research. The present second year students are the first class to participate and are just embarking on the selection process for their research experiences.

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Website(s): <http://casemed.case.edu/curricularaffairs/newcurriculum/index.htm>

Note: This site is under development but already has substantial information regarding the new curriculum at the School of Medicine at Case Western Reserve University’.

School: Harvard Medical School

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Course Director, Clinical Epidemiology & Population Health

Collaborating organizations: Massachusetts Department of Public Health
Alfred DeMaria, MD,
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Project Description:

We have established the Harvard Medical School (HMS) Regional Medicine Public Health Education Center (RMPHEC) as vehicle to take advantage of the diverse individuals and programs associated with HMS that are engaged in population health and to develop and implement and enhance new learning opportunities for all our students. Our major activities to date have been: 1) to convene a core faculty from across HMS in addition to collaborators from the Massachusetts Department of Public Health (MDPH) and the Harvard School of Public Health's Center for Public Health Preparedness; 2) to design and implement a novel, required course, Clinical Epidemiology and Population Health for all first year medical and dental students. In the upcoming year we will focus on integrating population health themes in the clinical curriculum.

Harvard Medical School's program emphasizes a problem-based learning approach for all preclinical courses. Prior to the HMS RMPHEC, population health and prevention were addressed in two courses within the pre-clinical curriculum: a required clinical epidemiology course in the first semester of year one and a preventive medicine and nutrition (PMN) course in the second semester of year two. Students also chose from one 'selective' course in health policy or social medicine. Although these exposures worked reasonably well, they suffered from disconnection from each other and from other aspects of the curriculum. And, as once weekly courses, they often unsuccessfully competed for students' attention with biomedical sciences.

Our RMPHEC was able to take advantage of a recent effort to reform medical education at HMS. A new series of non-biomedical courses in the first curricular block (approximately 18 months) was implemented called the Fundamentals of Medicine. In addition to basic biomedical sciences, these include required courses in Ethics, Social Medicine, Health Policy, and our course in Clinical Epidemiology and Population Health (CEPH). CEPH was re-designed with the overarching goal to link teaching of the core skills of clinical epidemiology to the care of both individuals and populations. The course was taught during an intensive 1-month period (the January block) during which it was the students' major focus. Each methodological skill was paired with a major public health topic (such as avian influenza, immunization, smoking, and obesity), and several complimentary pedagogical settings and techniques were used: lectures to energize students and provide context, conferences (of 24 students) to teach epidemiological methods, and small tutorials to review papers and problem sets. In collaboration with the Harvard School of Public Health's Center for Public Health Preparedness, we conducted a pandemic influenza "exercise" during which students took on roles of first responders, office and

hospital-based physicians, public health officials, and others. Individuals who have these roles in the community participated as “coaches.” This role-play exercise was particularly well received by our students.

Our RMPHEC also seeks to have significant impact on the education of our students in the clinical years. There is substantial opportunity for integrating population health themes into a new longitudinal framework for clinical rotations at HMS, and we are in discussions with the leadership of this emerging program to accomplish this aim. One of the clinical sites, Cambridge Health Alliance, has been piloting a longitudinal curriculum for several years that we will use as one of our models in our development process.

Having successfully implemented CEPH, we are now focused on continued integration of the population health theme in other preclinical courses, and establishing applied population health summer experiences and other elective opportunities. With the help of our partners at DPH, we have already developed a number of summer opportunities for students to work with local health departments or to do research that addresses surveillance at the State level. We will continue to work to develop new strategies to integrate population health themes into the clinical years of our curriculum.

Publications and presentations:

Shui E, Simon S, Peters A, Huskamp H, Finkelstein J. Center for Population Health Medical Education: Teaching the continuum of medicine and population health. Harvard Medical School Medical Education Day Conference. November 7, 2006; Poster presentation.

“Teaching population health as a basic science” presented at the American Public Health Association Learning Institute Workshop “New Public Health: Innovative Approaches to Teaching Public Health and Population Medicine to Medical Students” November 3, 2007, Washington, D.C.

Panel presentation “Regional Medicine-Public Health Education Centers: Educating for the Public's Health,” Annual Meeting of the Association of American Medical Colleges, November 5, 2007, Washington, D.C.

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Regional Medicine Public Health Educational Centers

School: Mercer University School of Medicine

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Collaborating organizations: North Central Health District
Dr. Joseph Swartwout, Health Director

Project Description:

The mission of Mercer University School of Medicine (MUSM) is to educate health professionals for rural and underserved Georgia. Supporting this mission are the problem-based learning approach for the basic sciences in the preclinical years, a focus on the family and community, dedicated curricular time for population health and community-based experiences and innovations in the use of standardized patients and Objective Structure Clinical Exams (OSCEs) to assess student achievement of clinical skills necessary for practice. Curricular content and structure are guided by ten principles and 71 competencies.

During the first year of medical school, 28 hours of Population Health/Family Systems is taught parallel to basic sciences, clinical skills, and bioethics; during the second year, students learn biostatistics in a self-directed format and 18 hours of Evidence-based Medicine curriculum is delivered, again parallel to other curricular areas. The campus-based curriculum is supported by ten weeks of unopposed community-based education: two weeks in Year One, four weeks in Year Two, and four weeks in Year Four. Students complete population health projects during these visits that include community need assessment, chronic disease management, evidence-based medicine, interactions with public health, interviews with community leaders, evaluation of the area as a potential practice site and other activities that utilize their population health skills. In addition to the population health activities, students complete an in-depth biopsychosocial assessment of two families and follow them over the four years as well as working with their community-based preceptor in patient care activities.

As part of RMPHEC activities, MUSM is engaging in curricular activities in three areas: continuing to build a curriculum thread in population health and public health; developing, testing and evaluating third year OSCEs; and curricular development in emergency preparedness. These activities are supported by an interdisciplinary Advisory Committee and our public health partner, the North Central Health District.

- Building a curricular thread in population and public health
One activity in this area will be to review the medical school curriculum using the “Clinical Prevention and Population Health Framework” and medical school

competencies. Although a stand-alone activity, this review will provide support and documentation for the development of a Public Health Certificate for students and eventually, a MD/MPH dual degree.

- Year Three OSCEs

As part of the grant activities, MUSM will develop, implement, and evaluate three standardized patient cases to be used in the formative evaluation of students' clinical skills during the clerkship year. The cases will be written around clinical scenarios encountered in family medicine, pediatrics, internal medicine, surgery, psychiatry, and OB/GYN and will incorporate population health issues into the case.

- Preparedness Education

Ongoing evaluation of the undergraduate medical curriculum revealed deficiencies in preparedness education. To address these deficiencies, MUSM is exploring development of preparedness competencies for undergraduate education and their inclusion in the curriculum, exploring the possibility of becoming a training center through the National Disaster Life Support Foundation to offer basic and core disaster courses, and participating in a pilot project through the American Medical Association that will provide interdisciplinary, online education regarding emergency preparedness.

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School: Mercer University School of Medicine (MUSM)

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Collaborating organizations: North Central Health District
Dr. Joseph Swartwout, Health Director

Project description:

The mission of Mercer University School of Medicine (MUSM) is to educate physicians to meet the primary care and health care needs of rural and medically underserved areas of Georgia. MUSM utilizes a problem-based medical education program and integrates patient care experiences early in the curriculum. The long term goal of this project was to develop the Mercer University Regional Public Health-Medicine Educational Center with expertise in building partnerships, education, and practice opportunities that would shape the collaborative paradigm necessary for public health and medicine to meet the challenges of a dynamic health care environment. During the pilot year of funding, the RMPHEC sought to enhance collaboration between public health and medicine by developing model curricula and structured public health experiences that would increase the public health knowledge, skill, and attitudes of undergraduate medical students. The project objectives and activities included four areas:

1. *Develop public health curriculum competencies for undergraduate medical education;*
Competencies, including learning activities and evaluation methods, related to public health practice and population health were reviewed and continue to be discussed within the Department of Community Medicine and with public health partners.
2. *Create a curriculum thread throughout undergraduate medical education related to population health and public health;*
Campus-based curricula were reviewed and revisions made to Population Health and Evidence-based Medicine Phases. Appropriate competencies, learning objectives and evaluation methods were reviewed for all curriculum components.
3. *Design and implement structured public health experiences for medical students that focus on preventive care, community health services, and systems of care;*
The second year community visit project was redesigned from a research project to a community-based chronic disease management project. The project focused on the prevention and management of chronic disease at both the individual patient level and the community perspective. An evidence-based medicine problem and disease self management aspects were included in the project. Other community projects were reviewed and revised to include additional interaction with local public health departments.

4. *Create opportunities for collaboration among medicine, academic medicine, public health, and communities.*

Eight regional workshops were held in various areas of Georgia. Community-based preceptors in the MUSM network were invited to attend as well as public health professionals in the area. The workshops focused on the collaboration of public health and medicine and reviewed curriculum changes related to the community projects. The AMA publication *Roadmaps for Clinical Practice: A Primer on Population-Based Medicine* was distributed to all Steering Committee members, 19 Public Health Directors, and 250 community-based preceptors. The publication was also included as a required text for our first year students in Population Health. Two medical students supported by RMPHEC undertook a summer project to research the effects that the growing Hispanic population in Georgia is having on the health care system and how this should impact medical education to prepare future physicians to care for this group (Georgia has the state with the fastest growing Hispanic population—17% growth). The students interviewed key leaders in the state, including public health, observed in clinical settings, and surveyed MUSM Community Preceptors regarding the impact of the Hispanic population on their practices.

Publications:

Dent MM, Boltri J, Outland M, Mathis M. Community-based chronic disease management: Teaching medical students to incorporate community into care. In preparation.

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School: Morehouse School of Medicine
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Collaborating organizations: Fulton County Department of Health and Wellness; DeKalb County Board of Health; Georgia Division of Public Health; numerous community organizations, community agencies, and community health centers in metro Atlanta and rural Georgia and Alabama.

Project description:

The Morehouse School of Medicine (MSM) is a historically African-American institution established to recruit and train minority and other students as physicians, biomedical scientists, and public health professionals committed to the primary healthcare needs of the underserved. It recognizes the relationship between medicine and public health and integrates these principles into the education of its students. The goal of the MSM Regional Medicine-Public Health Education Center (RMPHEC) pilot was to coordinate the training of medical students to ground them in population health and basic public health principles and practices. RMPHEC enabled MSM to enlarge and enhance some of its existing curriculum to implement integrative activities.

The initial objectives of the MSM RMPHEC project were:

- (1) To create a model partnership between a medical school and local public health for the purpose of demonstrating service-learning in public health.
- (2) To demonstrate the integration of public health practices and principles into the medical curriculum.
- (3) To facilitate the convening of a workgroup of the medical school curriculum committee, the Dean of Academic Affairs, the clinical clerkship coordinators and the Department of Community Health and Preventive Medicine for the purpose of developing strategies to incorporate population based public health into all levels of medical education.
- (4) To develop a guide for public health/medical school partnerships based on local experience.
- (5) To facilitate interaction and sharing of input in the southeast region of best practices in educating future physicians in public health principles and practices.
- (6) To provide a basic integrated public health educational experience to 100% of the first year medical students by the end of the 2003/2004 academic year.
- (7) To provide a population-based focus on health problems of specific communities of interest consistent with the mission of the Morehouse School of Medicine to 100% of the 2nd and 3rd year medical students by the end of the 2003/2004 academic year.
- (8) To provide a basic level of integrated public health education to 100% of 4th year students in a clinical clerkship in the academic year 2003/2004.

The existing Community Health course placed all first year students in small groups in several metro Atlanta communities, where the students conduct community health needs assessments and implement health promotion projects. Students also participate in a mock legislative hearing held by a committee of real legislators in a hearing room at the State Capitol. Representatives of each student group offer testimony on health problems in their community, make recommendations on public policy approaches to remedying those problems, and

respond to questions from the committee. As part of the RMPHEC initiative, the students visited local health departments to learn about their services and capabilities. Public health department staff then assisted the student groups in conducting their health promotion projects.

The RMPHEC initiative participated in the longitudinal Fundamentals of Medicine course to integrate didactic public health material and case studies with the 2nd and 3rd year students' study of ethical, epidemiologic, and behavioral issues.

All 4th year students at MSM take a four-week Rural Primary Care Clerkship in a medical practice or community health center in rural Georgia and Alabama. As part of the RMPHEC initiative, each student visited the nearest public health office to learn about services available there and how these services could support and enhance the clinical services offered at the facility or office where the student was clerking.

An important longitudinal initiative developed during RMPHEC is the Honors Program in Community Service. In this program, students who demonstrated outstanding performance in the first-year Community Health course can pursue a population health project through the remaining three years of medical school and graduate with honors.

Publications: [we have published about the community health course, but not since RMPHEC]

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Collaborating organizations: Akron City Health Department
Mahoning County Health Department
Stark County Health Department
The University of Akron
Kent State University
Youngstown State University

Project Description:

The mission of the Northeastern Ohio Universities College of Medicine (NEOUCOM) is to graduate qualified physicians oriented to the practice of medicine at the community level, with an emphasis on primary care: family medicine, internal medicine, pediatrics and obstetrics/gynecology. In order to meet this mission, the need for significant medical student exposure to the community health sciences was identified during the curriculum revision process that was occurring simultaneously with the RMPHEC pilot project. In this environment the overall goal set for the NEOUCOM RMPHEC was to “develop an updated curriculum in which preventive medicine/public health knowledge, skills, and attitudes will be taught longitudinally throughout the BS/MD program.” Associated with this goal were 4 objectives:

1. Increase the number of public health departments formally affiliated with the College of Medicine from one (City of Akron) to at least three.
2. Organize and pilot a revised Community Health Practicum course, featuring horizontal integration of community-based problems across the course.
3. Create and implement an effective learning environment through public health and community site and faculty development to improve the educational experience in health departments.
4. Participate in the NEOUCOM curriculum remodeling process while shaping the preventive medicine/public health curriculum.

Most medical students at NEOUCOM participate in the BS/MD program. Prior to RMPHEC, in the BS/MD Community Health Practicum, the first course in NEOUCOM’s vertically integrated curriculum in population medicine, students had been assigned to one of fifteen groups of seven students (five groups per BS/MD campus) each to address a different community health problem. During the RMPHEC initiative, “horizontal integration” was achieved by assigning one group per campus to each of the following topics:

- Vaccines: Influenza vaccination for infants 6-24 months
- Violence: The impact of Ohio’s new concealed weapons law on public health
- Diabetes: Primary prevention of type II diabetes among college students
- Motor Vehicle Occupant Injury: Preventing vehicular accidents among senior drivers
- Mental health/Depression: Identification and response by university personnel & faculty

Evidence of effective community interventions to address each of these topics exists. Choosing problems for which evidence of successful interventions exists had two important benefits: Helping to assure that the activities undertaken will improve community health status and the health of persons within that community; and contributing to overall educational goals by increasing students' appreciation of evidence-based decision making in clinical and public health programming. In each group, students conduct literature searches to investigate the epidemiology of the problem and evidence-based solutions to ameliorate them. They meet with community members who can address the specific issues relevant to the problem in their community, including solutions that have been attempted or instituted. Midway through the course, student groups from each campus who are investigating the same problem work together to develop a regional plan to reduce the burden of suffering caused by that problem. They demonstrate their knowledge and understanding of the problem, the community, and the effectiveness of community interventions by presenting their proposal to a panel of state legislators as they compete for a share of a mock public health block grant. In order to promote consistency and depth in learning across groups, the course leadership also piloted a new instructional method, Team Learning, in the course.

The main effect of this change has been the production of regional health improvement programming and an increased sharing of knowledge and experience across BS/MD campuses. Evaluations of the one-year program by both students and faculty were highly favorable and the regional integration of problem-oriented, community-based teaching has become a regular feature of the course.

At the end of the project year, NEOUCOM was also able to meet all but one of their stated objectives:

1. Two teaching health departments, rather than three, now have formal affiliations with NEOUCOM (Stark County has been added, and two more are considering application for formal affiliation – Summit County and Mahoning County). This objective was partially met.
2. The Community Health Practicum course changes are described above.
3. The movement of all students into community settings has required extensive development of community sites as well as faculty and community preceptors to support those experiences.
4. The newly approved educational objectives for NEOUCOM's curriculum revision include the role of physicians interacting with public health issues and professionals, and provide for community-based activities for students during five of the six years of the BS/MD curriculum.

Publications: in process

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Collaborating organizations: Illinois Department of Public Health Office of Rural Health; Veterans' Affairs National Center for Health Promotion and Disease Prevention; University of North Carolina School of Medicine; Paul Simon Public Policy Institute; Illinois Governor's Rural Affairs Council; Sangamon, Macon, Adams, Jackson and Macoupin Counties' (Illinois) Public Health Departments, Physician Assistant Program and Department of Health Education & Recreation, and Center for Rural Health and Social Service Development, Southern Illinois University at Carbondale; Public Health Department, University of Illinois at Springfield; Illinois Rural Health Association

Project Description:

Southern Illinois University School of Medicine (SIUSOM) is a community-based medical school created with its explicit mission "to assist the people of central and southern Illinois in meeting their health care needs through education, patient care and research." Curriculum in the first two years is entirely problem-based, and presented in a small group format. Third year consists of traditional required clerkship rotations, with a two-week required segment in Doctoring/Medical Humanities and the fourth year consists of electives, a required rotation in neurology that may be taken in the third year, and another two-week required segment in Doctoring/Medical Humanities.

Prior to the RMPHEC grant, population health and prevention (PHP) activities were largely confined to the second year curriculum with 3-5 hours of curriculum time in each of four organ-system-based units. A few third-year clerkship seminars focused on access to health care for women and children, and some fourth-year electives were available as well. With the advent of the RMPHEC project at SIUSOM, the following have been accomplished:

- Negotiations with basic science and clinical faculty have resulted in development of 4 hours of curriculum time in the first year, divided across three organ-system-based units, focusing on "Introduction to Population Health and Prevention," sensitivity and specificity, and population perspectives on obesity.
- A standardized "package" of PHP activities, amounting to 5.5 hours in each of four curriculum units in the second year has been developed. The "package" consists of resource sessions (lecture/discussions), a Critical Appraisal activity in which students are given a clear clinical question and then work with library staff to do a strategic literature search in order to answer that clinical question, a Critical Appraisal Grand Rounds in which issues about the search strategy and answers to the clinical question are discussed, and a Population Health Roundtable experience, in which students do a "hands-on" small group experience using PHP techniques to address yet another aspect of the clinical issue that is the "theme" for that unit. "Theme" topics include:
 - Hematology/Infection/Immunology Unit: Vaccine Preventable Illness and Outbreak Investigations (Roundtable experience: Pertussis Outbreak Investigation)
 - Cardiovascular/Respiratory/Renal Unit: Cholesterol screening, Characteristics of Good Screening Programs (Roundtable experience: Design a community-based cholesterol screening program with a fixed budget)

- Neuromuscular and Behavior Unit: Stroke and Head Injury Prevention (Roundtable experience: Head Injury Prevention Policy – define target entity, i.e., legislative, judicial, administrative, and develop one-page issue advocacy handout)
- Endocrine/Reproductive/Gastrointestinal Unit: Menopause and Hormone Replacement Therapy (Using the WHI Study) (Roundtable experience: provide patient education to a standardized patient regarding decision to take or forego hormone replacement therapy in menopause)
- In the third year, the clerkship seminars on access to health care for women (OB/GYN) and children (Pediatrics) continue, and a new seminar has been developed for Psychiatry which presents cost-effectiveness analysis of a variety of treatments for depression. The Department of Internal Medicine has welcomed us to pilot “Population Health Ward Rounds,” in which PHP faculty join the team rounding in the hospital, choose a PHP-related learning issue for students, residents and faculty to consider, and lead a discussion about that topic during or after rounds. Family and Community Medicine is following our significant development of student skills in Critical Appraisal by asking students to develop a “clinical question,” design a literature search strategy to answer that question, and then execute the search, review the literature using accepted evidence-based methodologies and present their findings and recommendations to their peers at the end of the clerkship. Discussions are underway with the Surgery Clerkship about potential PHP activities in that venue as well.
- Fourth-year elective offerings have been increased, and a four-week elective in clinical epidemiology is under development with the State Epidemiologist at Illinois Department of Public Health and members of multiple departments within SIUSOM. An elective “pathway” is being developed which will serve as a guide to students who wish to strategically plan their elective year to foster pursuit of a career in public health or preventive medicine.

Evaluation of our curricular efforts is underway, and includes qualitative and quantitative methodologies as well as feedback from a “real-time” quality circle of students and faculty who respond rapidly to suggestions from anyone involved with the curriculum. Student activity groups are supported in bringing outside speakers, and multiple texts have been acquired for our permanent library collection.

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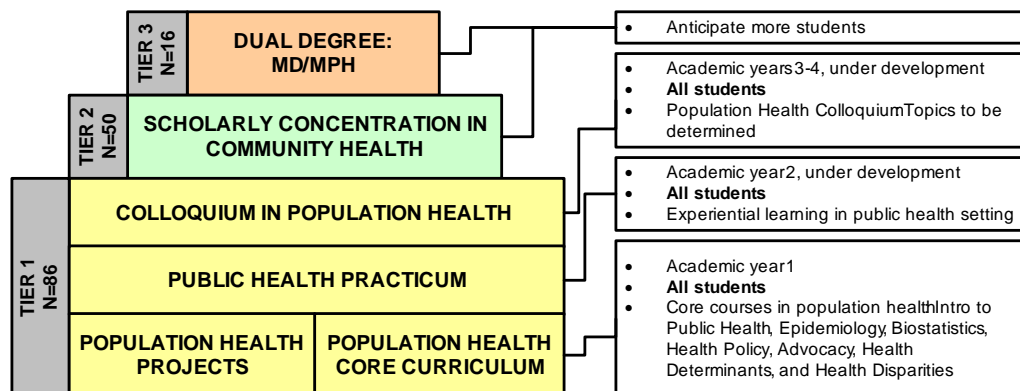
Principal Investigator: Neil Gesundheit, M.D., M.P.H.
Professor of Medicine

Co-Investigators: Ann Banchoff, M.P.H., M.S.W.
Evelyn Ho, M.P.H.
Rhonda McClinton-Brown, M.P.H.
Office of Community Health

Collaborating organizations: Community Health Partnership of Santa Clara County
Ravenswood City School District
San Mateo County Health Department
Santa Clara County Public Health Department

Project Description:

Prior to the establishment of Stanford's RMPHEC, the School of Medicine's curriculum included a number of stand-alone lectures on population health topics, e.g., basic public health concepts, epidemiology, biostatistics, and health policy. With the establishment of the RMPHEC, a population health curriculum was developed and enhanced within the School's "Practice of Medicine" course, which is the principal doctoring course offered during the first and second years. Among topics covered by the population health curriculum are the social determinants of health and how they create health care disparities, quantitative medicine (biostatistics), and epidemiology. During the initial years of the RMPHEC grant, students were required to carry out small-group advocacy/community projects linked to the population health curriculum. More recently, the requirement to participate in a community project has been revised to be responsive both to our community partner's self defined needs, and the passions and interests of our students. While some students elect to participate in community-defined engagement projects, others receive support and skills training for engaging in legislative and/or media advocacy campaigns. Students can also elect to pursue more in-depth projects through the Scholarly Concentration in Community Health and/or the OCH summer fellowship program. For students wishing to undertake further didactic work and to complete a master's level thesis, the School of Medicine has created a dual-degree MD-MPH program with the School of Public Health, UC, Berkeley. Students enrolled in this program can receive credit toward their MPH from coursework completed at Stanford and then complete their degree at UC, Berkeley over 12 months. The goal of improving the foundation of population health education for all Stanford students has been achieved, and the final goal of a full menu of population health opportunities (diagram, below) continues to be the goal for future development.



Publications and presentations:

Chamberlain LJ, Wang NE, Ho ET, Banchoff AW, Braddock CH, Gesundheit N. Integrating collaborative population health projects into a medical student curriculum at Stanford. *Acad Med.* 2008; 83(4):338-44.

Maeshiro R, Johnson I, Koo D, Parboosingh J, Carney JK, Gesundheit N, *et al.* Medical education for a healthier population: reflections on the Flexner Report from a public health perspective. *Acad Med.* 2010; 85(2):211-9.

Ho ET, Chamberlain LJ, Banchoff AW, Wang E, Bauer L, Campo L, Cody S, McClinton-Brown R, Morrow S, Vura-Weis D, Braddock C, Gesundheit N. Population health in medical school: Educating future physicians using the public health paradigm. American Public Health Association Annual Meeting, November 2007.

Chamberlain LJ, Banchoff AW, MPH, McKenzie S, Bunde-Birouste A. Physician leadership in population health promotion: medical education models from Australia and the United States. Meeting of the International Union for Health Promotion and Education World Conference, June 2007.

Gesundheit N., Campos L., Banchoff A. Regional Medicine-Public Health Education Centers: Teaching for a Healthiest Nation. Meeting of the Association of American Medical Colleges, San Antonio, TX, 2008.

Hoover C, Martin M, Wong C, Azzam A, Gesundheit N. Engaging in population health: new curricular initiatives. Meeting of the Western Groups on Education and Student Affairs, Stanford, CA, 2011.

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School: SUNY Upstate Medical University College of Medicine

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Collaborating Organizations:

Onondaga County Health Department
University of Rochester School of Medicine and Dentistry
University of Medicine and Dentistry of New Jersey/ New Jersey Medical School
University of California at Davis, School of Medicine
New York State Area Health Education Center System (AHEC)
SUNY University at Albany School of Public Health.

Overview:

The College of Medicine curriculum integrates the basic and clinical sciences and provides clinical experience starting in the first semester. Coursework is aligned by organ systems and also includes the humanistic aspects of medicine, including its ethical, legal and social implications.

Pillars of the RMPHEC initiative included:

1. Employment of the Association of Teachers of Preventive Medicine (ATPM) Inventory as a framework for prevention and population health teaching
2. Integration of prevention teaching throughout the 4 year medical school curriculum
3. Employment of a teaching health department
4. Use of teaching cases derived from actual clinical and community experience--The Principal and Co-investigators of the SUNY RMPHEC had developed a series of teaching cases in clinical and population-based preventive medicine which had been featured in a supplement to the *American Journal of Preventive Medicine* in 2003. These cases had been implemented at SUNY Upstate and were updated during the course of the RMPHEC pilot year. Cases with answer versions have been requested by more than 20 schools of medicine and are employed by a number of teaching programs.

In the pre-clinical years fundamentals of epidemiology and biostatistics are taught in large group lectures accompanied by small group sessions in critical appraisal. Also in the pre-clinical years, case-based population health exercises are taught in small groups that focus on epidemiology

and prevention. These included: Community Health Assessment, Racial and Ethnic disparity in Low Birth Weight in Syracuse, NY, a Critical Look at Prevention: The Case of Colorectal Screening and an Outbreak of Tuberculosis in a Homeless Men's Shelter.

Three curricular components are integrated into the clinical clerkships. **Component one** consists of specific clinical prevention competencies in each of the 4 primary care clerkships (medicine, family medicine, ob/gyn and pediatrics) keyed to the ATPM objectives.

Component two is the inclusion of population-based cases incorporated into a corresponding clinical clerkship: Sexually Transmitted Disease in Adolescents (ob/gyn); Adolescent Suicide Prevention (psychiatry); and Bicycle Helmet Effectiveness in Preventing Injury and Death (neurology/neurosurgery). These latter two cases have been recognized by the Association of American Medical Colleges (AAMC) as outstanding injury prevention teaching examples. In addition, a bioterrorism preparedness case was developed—Outbreak of an Unknown Influenza-like Illness. Several of these cases are incorporated into the curriculum of our collaborators at the University of Rochester and University of California at Davis.

Component three is the requirement for medical students to participate in community-site visits during their pediatric rotation. These are arranged with staff of the Onondaga County Health Department. Students choose one of the following site visits: family with child suffering from lead toxicity, home visit to women with pre- or postnatal high risk pregnancy or the local jail. In addition, all students accompany health department staff on a home visit evaluation for developmental disability. Orientation and debriefing sessions occur with the groups of students on each rotation.

A one-month **public health selective** at the Onondaga County Health Department is also available. Students complete a specific project and are oriented to the workings of the health department.

Publications:

Novick, L., Editorial, The Teaching Health Department, *Journal of Public Health Management and Practice*, 10:4, 275-276, July-August 2004,

Morrow, C.B., and Novick, L.F., Case Exercise in Public Health Preparedness: A Community Outbreak of Influenza-Like Illness, *Journal of Public Health Management and Practice*, 11:4, 306-310 2005

Mays G, Chapter 3: Organization of the Public Health Delivery System (description of RMPHEC by L. Novick) in Novick, L.F., Morrow, C and Mays, G. (Eds) *Public Health Administration: Principles for Population-Based Prevention*, 2nd edition, Jones & Bartlett, Sudbury, MA (in press) April, 2007

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School: Texas Tech University Health Sciences Center (TTUHSC) School of Medicine at El Paso

Principal investigator: Darryl M. Williams, MD, MPH
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Director, Office of Border Health and Area Health Education Center
El Paso, Texas

Collaborating organizations: El Paso City and County Health District, University of Texas Houston School of Public Health at El Paso

Project description:

The TTUHSC School of Medicine at El Paso provides the clinical education for approximately half of TTUHSC medical students after spending the first two years at the Lubbock campus. The location of the El Paso campus (close to the US-Mexico Border and in a large, predominantly Mexican-American community) presents a challenging set of public health issues that impact the education of medical students. These issues include new and emerging infections, chronic diseases related to ethnicity, and perhaps most importantly, access to health care. TTUHSC has been long concerned with these issues and has embarked on a program of preparing resident physicians and junior faculty members for integrating public health information and research into their practices. At the same time, the incorporation of public health concepts into the medical school curriculum has been limited. Students receive limited instruction in public health during the first two years of the curriculum for all medical students in Lubbock. Those who go to El Paso for their clinical experience during their third and fourth year and who participate in the community health rotation receive considerable exposure to public health.

The Regional Medicine-Public Health Education Center at Texas Tech had the following objectives:

1. To integrate public health principles into the curriculum.
2. To develop curricular materials using public health-related case studies centered on target populations of the U.S.-Mexico Border, especially the *barrios* and the *colonias*.
3. To provide an integrated educational program in which clinical experiences in public health build on principles learned during the second year of study.

This project resulted in expanded public health education in the second and fourth year curricula. Basic public health principles (including biostatistics, epidemiology, and case definition) were incorporated into a second-year course in evidence-based medicine, using web-based learning and evaluation modules as well as lectures, classroom discussions, and community experiences.

The fourth year program emphasizes five topics that are of importance in the US-Mexico border population. These include: environmental health and the risks associated with toxicants in the home as well as risk communication skills; prescription drugs, alternative medicine, and the issues associated with international access to medications; the metabolic syndrome in an

at-risk population; immunizations and international health; and work-related injuries and other health issues in the migrant farm worker population. Writing teams that included medical school faculty, public health officials, and public health school faculty developed case studies that address these issues. The cases are set in *colonias*: poor, predominantly Mexican-American rural communities and usually without water or sewers--the same environment for that the fourth year medical students will experience as part of their required rotation in Community Medicine. Student workbooks, guides for facilitators, pre- and post-tests, and reference guides have been developed to support the case studies.

The long-term goal of this project is to develop educational objectives, teaching methods, and instruments that can be used as a major component of the medical education program of the proposed new four-year medical school in El Paso. The educational objectives for the proposed new school include items that focus on public health and disease prevention:

1. To demonstrate the elements of social structure and to use this information in understanding and managing human behavior and illness.
2. To understand the basic elements of the national health care system, its funding, and the effects of these factors on individual and community health.

It is the intention of Texas Tech to establish a strong foundation of public health and community outreach within the curriculum of that new medical school.

Publications:

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Collaborating organizations: California Department of Health Services
Sacramento County Department of Health
Yolo County Department of Health
Placer County Department of Health

Project Description:

The University of California, Davis School of Medicine (UCDSOM) has recently adopted an integrated and multidisciplinary curricular approach. This new curriculum emphasizes both vertical and horizontal integration in the context of small-group and problem-based learning. The first two years focus on the basic and preclinical sciences, while the second two years focus on clinical experience.

The major vehicle through which the population health curriculum at UCDSOM is delivered is the Doctoring course series. The Doctoring program is a multidisciplinary course series extending throughout the four years of medical school. This course integrates medical decision-making, communication skills, ethics, and evidence-based practice through small-group exercises, many with standardized patients. All students participate in Doctoring for their first three years of medical school; participation during the fourth year is elective. Doctoring 1 and 2 present epidemiology, biostatistics, and preventive medicine in a mixture of lecture and small-group sessions. Doctoring 3 includes clinical epidemiology, Bayesian analysis of clinical testing, evidence-based medicine, and preventive medicine in a small-group setting. Doctoring 4 offers an opportunity for interested students to teach population health themes to their more junior colleagues.

The Regional Medicine-Public Health Education Center (RMPHEC) at UC Davis aims to develop, implement, and evaluate a curriculum for population health that is integrated across all four years and makes use of our strong collaborative links with the public health community. To that end, the RMPHEC has 3 main objectives.

1. Strengthen population health curriculum in the MS-1/MS-2 continuum and expand the curriculum into the clinical years (MS-3, MS-4) with special emphasis in the longitudinal, integrated Doctoring series.

The MS-1/MS-2 curriculum is taught as a continuum and focuses on the basic science of public health and population medicine. Both didactic and case-discussion methods are used. The major efforts at the MS-3 and MS-4 levels include training of clinical faculty and developing teaching cases to incorporate population health principles and approaches. In addition, we aim to establish longitudinal follow-up of patients from various populations in the Sacramento area, develop a web-based literature review utility to aid students in critical assessment of medical literature, establish half-day apprenticeships in population medicine at the MS2 level, and incorporate student-only journal clubs and academic conferences into the clinical clerkships.

2. Engagement of population health practitioners from the state and local health departments.

State and local health department members are active members of the Population Health Curriculum Planning Group. We plan to engage population health practitioners as small-group leaders throughout the four years of the curriculum and as mentors for the Population Health Special Study Module (MS-4) and an elective in community health (MS-4).

3. Population health teaching capacity building:

All Doctoring sessions are preceded by a faculty development session that allows review of population health topics with participating faculty. In addition, we are developing the teaching talent of medical students through the Doctoring 4 course and the MS-4 Population Health SSM.

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Publications:

McCurdy SA, Morrin LA, Memmott MM. Occupational history collection by third-year medical students during internal medicine and surgery inpatient clerkships. *Journal of Occupational and Environmental Medicine* 1998;40:680-684.

McCurdy SA. Preventive medicine teaching cases in the preclinical undergraduate medical curriculum. *Am J Preventive Med* 2003; 24 (4S):108-110

Website(s):

<http://phs.ucdavis.edu/> <http://www.ucdmc.ucdavis.edu/ome/ocs/curriculum/>

School: University of Colorado School of Medicine

Principal Investigator: Lisa Schilling, MD, MSPH
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Co-investigators: Mark Earnest, MD, PhD
Associate Professor, General Internal Medicine

Adam Abraham, MD
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Collaborating organizations: Colorado Area Health Education Center System (AHEC)

Project Description:

The University of Colorado School of Medicine (SOM) completely revised its curriculum beginning with the Class of 2009, which matriculated in 2005. The curriculum focuses on the integration of basic and clinical sciences beginning in Year 1, emphasizes increased small group teaching methods, and incorporates the inclusion of 4 themes, or “threads”, woven throughout the entire 4 years: 1) evidence-based medicine and medical informatics, 2) medicine and society, 3) humanism, ethics, and professionalism, and 4) culturally effective care.

Prior to the RMPHEC, the SOM had excellent education in some of the clinical prevention and population health curricula domains, such as biostatistics and epidemiology, while other components were inadequately addressed, such as community aspects of practice, health systems and health policy.

The RMPHEC funding has allowed us to better integrate the population health perspective into the curriculum and more adequately address domains that were not uniformly covered. This has been done through the creation of small group exercises, modification of problem-based learning materials, new lectures, and special sessions dedicated to population health issues.

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<http://www.uchsc.edu/ebm>

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Principal investigator: Linda M. Frazier, M.D., M.P.H.
Associate Professor
Department of Preventive Medicine and Public Health

Collaborating organizations: Kansas Department of Health and Environment
Sedgwick County Health Department

Project Description:

The University of Kansas School of Medicine (KU School of Medicine) commits to enhance the quality of life and serve our community through the discovery of knowledge, the education of health professionals and by improving the health of the public. Medical students spend their first two years, the pre-clinical phase, in Kansas City. The remaining two years, the clinical phase, are completed at either the campus in Kansas City or at the school's branch clinical campus in Wichita.

The first objective of the KU School of Medicine's RMPHEC was to increase experiential learning activities in public health settings in our required medical school courses. Tasks included in this objective were:

- 1) To increase the number of capstones at public health sites in the required Health of the Public 4th year clerkship so there is at least one per clerkship rotation, exposing 100% of medical students to this experience
- 2) To involve MPH students in these capstones so that joint learning occurs
- 3) To enhance the clerkship evaluation by assessing public health competencies.

The second objective was to study barriers to enrollment in our MD/MPH program. We achieved all these objectives.

Prior to the RMPHEC pilot project, public health and population-based medicine were included in the health promotion and disease prevention course for all first year medical students, in the clinical epidemiology course for all second year medical students, in clinical clerkships for third year medical students, and in the Health of the Public clerkship for all fourth year medical students. The medical school curriculum during the RMPHEC pilot project addressed basic sciences in Years 1 and 2, clinical clerkships in Year 3, and other required clerkships plus electives during Year 4.

Of the several activities supported by RMPHEC, the most important was to increase the visibility of traditional public health practice in the required fourth year clerkship, *Health of the Public*. The didactic component of this clerkship addressed how to define specific populations, ascertain their health needs, formulate interventions to meet those needs and evaluate the impact of those interventions. During the experiential component of the clerkship, groups of two to four students were placed in clinical, public health or community health settings. The student groups worked with site mentors to complete a capstone project. Public health capstones included a needs assessment to help develop community education on West Nile virus, an evaluation of the impact of new state laws on patient care practice, and others.

Evaluation after the RMPHEC year revealed that *Health of the Public* continued to provide medical students with capstone projects in traditional public health practice settings during the clerkship.

Publications: **None**

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Department of Family and Community Medicine

Collaborating organizations: New Mexico Department of Health (NM-DOH);
New Mexico State University (NMSU);
Dean's Interdisciplinary Curriculum Public Health Task Force

Project description: The University of New Mexico School of Medicine (UNM SOM) is dedicated to the creation, evaluation, transmission, and application of biomedical knowledge to be applied directly for the improvement of the health of the public. Our primary focus is on the unique health needs of New Mexico's culturally and ethnically diverse populations. UNM SOM is known for its problem-based, community-oriented innovations in education developed to address the mal-distribution of physicians in the state by specialty and geography.

The goal of the UNM SOM Regional Public Health-Medicine Education Center (RPHMEC) is to equip graduates with expanded population health skills in order to increase their impact on the health of their communities. The UNSOM RPHMEC is strategically housed in the Department of Family and Community Medicine. The Department is also home to the school's Office for the Integration of Public Health and Medicine and its Institute for Public Health, which facilitate partnerships between the medical and public health communities within the University Health Sciences Center and with external partners, respectively. In the pilot year, activities focused on the integration of the major public health goals outlined in the New Mexico Department of Health's *Vision of Health in New Mexico* into a new curriculum for medical students. Pilot year objectives were to:

- Introduce public health vertically and sequentially into all 3 phases of the 4-year curriculum for all medical students.
- Develop public health learning objectives, prevention-oriented case problems and specific learning modules for each phase of the curriculum.
- Offer all medical students the opportunity to graduate with a Public Health Certificate (PHC).
- Double the number of community service/learning sites which integrate medicine and public health.

The UNM SOM curriculum is comprised of three phases. In Phase I, (1st and 2nd year students) tutorial cases, population health content and test questions are introduced into an 11-week Human Structures, Function, and Development block. In a nine-week rural Practical Immersion Experience (PIE), a community project is required, and all students must study population issues related to the patients they see. Students also complete two web-based geriatric modules on population issues in geriatrics and functional assessment of geriatric patients during PIE.

In the Phase II (3rd year), eight-week Family Medicine clerkship, all students participate in the following population health activities: Interactive Preventive Health Seminar covering United States Preventive Task Force topics; interactive seminar on Health Care Financing; Evidence-Based Medicine Tutorial spread over eight weeks; and a community project in public health.

In Phase III (4th Year), all students in the required four-week Ambulatory Medicine rotation work with faculty from the Institute of Public Health to study public health and population health issues in seminars interspersed during the rotation. In addition 15% of the Phase III students spend 3 days per week in the Department of Health's Sexually Transmitted Disease clinic under the tutelage of a public health physician. All students in Phase III participate in a 4-week New Mexico Preceptorship; 70-80% of these experiences are located in tribal, rural or underserved communities.

Finally, all students are required to complete a research project by graduation. Work on these projects usually span Phases I and II and often into Phase III. Two-thirds of the projects are in the area of population health.

At the conclusion of the pilot year, UNM SOM had pilot-tested, with medical students, residents and faculty, different teaching strategies and curricula to develop the PHC; created practice models in the community which integrate public health and medicine; built political support within the institution and within the community regarding population health education; and researched and identified a set of barriers to the implementation of the PHC, which we hope will be a far-reaching curriculum innovation.

Publications:

Velarde, L., Kaufman, A., Wiese, W., & Wallerstein, NB. (Accepted for publication in *Education for Health*). Public health certificate for all medical students; Concept, barriers, and strategies.

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Public Health Certificate for Undergraduate Medical Students, Residents, Faculty and Fellows.
<http://hsc.unm.edu/som/fcm/mph/Curriculum/PH%20Certificate.htm>

Residency in Family Medicine at UNM. <http://hsc.unm.edu/som/fcm/res/pubHealth.shtml>

School: University of Rochester School of Medicine and Dentistry

Principal Investigator: Thomas A. Pearson, MD, MPH, PhD

Collaborating organizations: Monroe County Dept. of Public Health
Wyoming County Dept. of Public Health

Project Description:

The Rochester Regional Public Health-Medicine Education Center

The overall goal of the Center is to create a model program which not only teaches medical students the principles of population health and preventive medicine, but also provides opportunities for experiential learning of the practice of public health in the setting of public health agencies. In order to create this model program, the Center has the following specific aims:

1. To expand the Prevention Theme to a Prevention/Public Health Theme as curricular content area which appears in all four years of the MD curriculum.
2. To expand involvement of public health officials in didactic courses in Mastering Medical Information, Ambulatory Care, and Community Health Improvement which are required of all students.
3. To develop clinical practice rotations in public health agencies under the supervision of public health practitioners, for students contemplating public health careers.
4. To create opportunities for students to perform population health research in public health agencies in preparation for leadership roles in public health careers.
5. To evaluate the Center's attainment of learning objectives and process goals.

The Center builds on two strengths at the University of Rochester School of Medicine and Dentistry. The first is an already strong curriculum in terms of instruction in the public health sciences. The "Double Helix Curriculum" begins with Mastering Medical Information, a four-week course on epidemiology, biostatistics, and related subjects. Later in Year I, a course on ambulatory medicine, Ambulatory Care Experience, emphasizes the U.S. Preventive Services Task Force recommendations on prevention. Finally, Year IV medical students complete their Medical School with a four week required clerkship, Community Health Improvement, which emphasizes the role of the MD in community health. A second strength is a long history of successful collaboration between the University of Rochester Medical Center and public health agencies, including the Monroe County Department of Health, the New York State Department of Health, and the Centers for Disease Control and Prevention. Current active

collaborations include a Center for Community Health (with the Monroe County Department of Health), a Prevention Research Center (with the CDC), a Preventive Medicine Residency Program (with Monroe County and New York State Health Departments) and a Community Engagement Program for Clinical and Translational Research (with the NIH). Involvement of public health agency personnel in the MD curriculum and medical students' participation in clinical and research programs in public health agencies are therefore feasible.

The Rochester Regional Public Health-Medicine Educational Center is designed as a collaboration between the Department of Community and Preventive Medicine (responsible for instruction of medical students in public health sciences) and the new Center for Community Health, formed to carry out the fourth mission of the URMC, namely community health. The Education Center's administration and structure actively involves faculty and staff from the URMC and the Monroe County Department of Health, including Center leadership shared by the Chair of Community and Preventive Medicine and the Director of the Center for Community Health (and Deputy Director of the Monroe County Department of Health). The proposed Center has full support by leaderships of the School of Medicine, the Medical Center, and the Monroe County Department of Health.

The work of the Center will be carried out by four task forces: Curriculum, Clinical/Experiential Programs, Research, and Evaluation. Tasks include curricular needs assessment, involvement of public health agency personnel in didactic courses, development of research rotations in public health agencies including those fulfilling requirements for the MPH degree, and an evaluation plan. The Center and its students have multiple opportunities for involvement with the CDC and AAMC, and the products of the Center should be exportable to other medical schools. A revised Prevention/Public Health theme should be ready for implementation by the end of several years of support. The Center should be implemented, evaluated, modified, and self-sustaining as a model program integrating the theory and practice of public health into the training of the next generation of physicians.

Publications: None

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United Way of Chittenden County
Fletcher Allen Health Care Community Health Improvement

Project Description:

Curricular Structure: Vermont has transitioned to an integrated curriculum, beginning in the fall of 2003. The Vermont Integrated Curriculum (VIC) progresses from the study of the basic Foundations of medicine, both clinical and basic science, to applications in Clinical Clerkship to senior scholarship and supervised patient management in Advanced Integration.

Integrated comprehensive examinations are administered at the end of the first year, the end of Foundations, the closing of Clinical Clerkships, and after completion of two Acting Internships.

Public Health/Population health/preventive medicine education prior to RMPHEC: Public health is introduced at the beginning of medical school, in the first Foundations Course called Introduction to Clinical Decision Making. ICDM is a two-week course to introduce students to the basic vocabulary, concepts, and methods of human and population genetics, epidemiology, statistics, public health, and ethics. Knowledge from each discipline is presented in lecture and readings, with methods and integrated concepts presented through small group case discussions. Students are expected to access information from in-class discussions, textbook and journal readings, and Internet sources.

Beginning in orientation, students meet weekly in groups of 7 or 8, called Medical Student Leadership Groups. The purpose of MSLG I is to foster the development of competent professionals, leaders, and life-long learners who share, interpret, and transfer medical school experiences and knowledge into effective actions to better themselves and others. This course addresses medical leadership and professionalism through weekly small group sessions that meet throughout the Foundations and Systems Integration Levels. It supports professional development through collaborative group learning activities linking personal experience, cultural awareness, leadership topics, and concurrent VIC course content. Learning activities also include periodic large group presentations and regular assignments that will include reading, written reflection, portfolio development, and projects. MSLG I begins with an introduction to group dynamics, and communication skills integral to professional development. It progresses to discussion of family systems, family centered care, personal wellness, medical culture, and socio-cultural issues in healthcare.

During MSLG II leadership groups formed during the first year (MSLG I) apply their knowledge and team skills to a public health project. Public Health Projects, conducted in partnership with local community agencies involved in health, have educational goals to:

1. Learn public health through actions in the community to improve health
2. Understand and apply basic public health research methods
3. Understand and impact public health issues facing our community

Public health needs have been identified by the community agencies, and projects are designed as "Community First" to help improve the health of our community, linked with Healthy People 2010 focus areas, as a framework for public health. These projects are presented in a Poster Session and Community Celebration each January at the College of Medicine. In addition, there are public health topics taught in the Bridge curriculum and Family Medicine clerkship rotations.

Innovations/products/activities supported by RMPHEC: RMPHEC funds have supported our efforts to create the Vermont Center for Public Health in Medical Education, linked administratively into the Office of Medical Education, the hub of our integrated curriculum (VIC). Our steering committee includes representation from the Vermont Department of Health and the United Way of Chittenden County.

Our strategy is to "Create a Culture of Public Health" at the College of Medicine, through a variety of strategies, including the development of "One Minute of Public Health" messages throughout the curriculum. These are currently being evaluated and were pilot tested in fall 2007. Focus groups are being utilized to give us feedback about content and approach that would be successful from both a student and faculty viewpoint.

Faculty surveys showed additional opportunities to integrate public health into the foundation sciences. One evaluation strategy (currently being implemented) is a longitudinal assessment of student knowledge and attitudes around public health.

Publications & presentations:

Carney JK, Delaney T, Richardson-Nassif K, and Youngberg S. *What Do They Think? Faculty and Student Knowledge and Attitudes Regarding Public Health in the Medical Curriculum.* Poster presentation at AAMC Annual Meeting, November 2007.

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