
smell, institutional cooking, and the social meanings associated with food and rituals in families.

These classroom experiences were followed by an assignment to interview an older adult (age 65 or over) about his or her current diet, eating behaviors, and long-term cultural patterns around eating and food. In the first part of the interview, the student conducted a 24-hour diet recall that identified all foods eaten, the times at which they were eaten, the amounts of food, and the circumstances under which food was eaten. The student made a rough assessment of the adequacy of the older person's nutritional intake using several guides distributed in class. In the second part of the interview, the student guided a conversation with the older person about background influences on current food preferences and cooking practices, beliefs about nutrition, perceived influences of aging on eating patterns and enjoyment of food, current eating practices, and social aspects of eating. Although they were given a list of suggested questions within each of these areas, they were also encouraged to use

their own initiative in developing additional questions. The students reported the results of their interviews in a short paper.

Discussion: According to the students' papers, the three-pronged approach of introducing the subject didactically, seeing the concepts applied in a dramatization, and then exploring the concepts through an in-depth interview with an older adult was highly successful for raising their awareness of background factors in the current nutrition and health status of older adults. In addition, many students expressed enthusiasm for the opportunity the assignment provided to understand the situation and life history of an older adult they knew or to whom they were related. In future uses of this module, we can incorporate a pre- and post-module surveys of attitudes to assess its impact.

Inquiries: Linda M. Breyspraak, PhD, Center on Aging Studies, University of Missouri–Kansas City, 5100 Rockhill Road, Kansas City, MO 64110–2499; e-mail (breyspraak@umkc.edu).

■ MEDICAL STUDENT EDUCATION AND ASSESSMENT APPROACHES

Medical Student Preclinical Education

Use of Streaming Video in Preclinical Lectures

CHARLES L. SEIDEL, DAVID A. WHEELER, AND BOYD F. RICHARDS, BAYLOR COLLEGE OF MEDICINE

Objective: Recent advances in telecommunication have enabled video recordings of lectures to be accessed via the Internet by large numbers of users simultaneously. We are examining two educational applications of this advance: the greater efficiency with which students can review lectures, and the use of student access data, automatically recorded by the Internet server, to evaluate the quality of lectures and/or difficulty of the material.

Description: Since early 1998, we have developed a procedure for videotaping first-year lectures, converting them to a streaming video format, and making them available on the Web within 24 hours with minimal staff time. In 1998–99, four preclinical courses with at least 24 one-hour lectures each were recorded using a digital camera, a laptop and desktop computer, and various video equipment and software, funded by a grant from the Texas Telecommunications In-

frastructure Fund. Each lecture was digitized directly to the laptop and transferred to the desktop computer, where it was converted to a streaming video file, and then the file was linked to a Web server. Students accessed the lectures using computers in the medical center or via modems from home. Playback software (RealMedia® (<http://www.realnworks.com>)) enabled students to conveniently skip to specific areas of interest.

We asked the students ($n = 168$) to complete a survey at the end of an eight-week academic block to assess their use of the streaming video lectures and their perceptions of quality and value. We also retrieved data from the Web server about the students' accessing of the files, including the durations and numbers of hits. The average numbers and durations of hits per lecture and per course were calculated and matched with the subject material and lecturer.

Discussion: We assumed that to enhance learning or to support assessment of lectures, the streaming video lectures must transmit the lecture content effectively and must be made available to the students in a timely manner. Results of our written survey confirmed that both were being achieved—83% of the students reported reviewing lectures on-

line, and 45% found doing so “valuable” and 46% “very valuable.”

Analysis of the access data showed variations in use within a given course as well as between courses. Several lectures or sequences of lectures had above-average usage, and one course received significantly more overall use than the others. Even though the explanation for these differences is not known, periods of high usage may reflect a combination of difficult material or an inadequate presentation. In addition, these results are an intriguing form of objective information (i.e., actual student behavior) rather than the more typical subjective form (student opinion). In this respect, access data enable us to target a small subset of lectures (which otherwise might have gone undetected) for further evaluation using other assessment tools. Therefore, we have found that streaming video files can be beneficial to both students and faculty alike.

Inquiries: Dr. Charles L. Seidel, Department of Medicine, Section of Cardiovascular Sciences, Baylor College of Medicine, One Baylor Plaza, Houston, TX 77030; e-mail (cseidel@bcm.tmc.edu).



Increasing the Value of Small-group Learning

JESSICA H. MULLER, PHD, UNIVERSITY OF CALIFORNIA, SAN FRANCISCO, SCHOOL OF MEDICINE

Objective: To promote more active learning, small groups are replacing lectures in medical education. However, common problems often arise, such as inconsistent quality, diverse approaches, and varying levels of facilitator skills. To address these problems, we created a small-group teaching model with five components: two-year continuity groups, co-facilitation of groups, required faculty development sessions, articulation of course goals and methods, and faculty attendance at course lectures.

Description: In the Foundations of Patient Care course at the University of California, San Francisco (UCSF), first- and second-year medical students spend one-half day per week throughout the first two years in primary care preceptorships and on-campus discussion groups after scheduled lectures. In small groups, students learn doctor–patient communication skills, discuss their preceptorship experiences and course content, address difficult topics such as death and

dying, and reflect on their own professional development. The group sessions are based on an experiential, self-directed approach to learning, where students take responsibility for their own learning. The course has 48 small groups, with six students and one or two facilitators for each group. Two thirds of the groups have co-facilitators, typically a physician and a non-physician (e.g., a behavioral or social scientist). Of 79 facilitators, 52 are physicians and 27 are non-physicians.

When we started small-group teaching, the groups were uneven in quality and disconnected from the rest of the course. Many groups lasted only a year and were led by a single physician facilitator, thereby lacking the richness provided by having co-facilitators. Facilitators were unaware of other course components and often needed training in group-facilitation skills. Faculty and students lacked a clear understanding of small-group goals or of the self-directed, experiential model of learning. To address these issues, we changed our small-group model two years ago: (1) students were placed in the same group for two years, (2) facilitators were asked to remain with the same group for two years, (3) co-facilitation of small groups was encouraged, (4) facilitators were required to attend faculty development sessions on small groups, (5) facilitators were requested to attend the lectures that preceded the small-group meetings, and (6) course goals and pedagogic approaches were explained to students and faculty.

Discussion: Implementing the two-year continuity, co-facilitation model has allowed groups to become more cohesive, to build trust essential to discussing challenging topics, and to benefit from the skills and perspectives of two facilitators. Similarly, requesting faculty to attend lectures and faculty development sessions has increased their understanding of the overall course and provided the opportunity to learn and practice facilitation skills. Students' evaluations of the course show satisfaction with small groups; the item “this component of the course was excellent” received a mean rating across the last two years of 3.7 on a five-point scale (5 = strongly agree). The challenges of this teaching model include recruiting and maintaining faculty for two years, achieving consistency across facilitators, and spending the time required for problem solving when groups do not go well. In spite of these challenges, the small-group teaching model has provided a successful learning/teaching experience for our students and faculty.

Inquiries: Jessica H. Muller, PhD, Department of Family and Community Medicine, Box 0900, University of California, San Francisco, San Francisco, CA 94143–0900.

Medical Student Clinical Education

The Hidden Curriculum: A New Undergraduate Curriculum to Evaluate Students' Perceptions of Their Third-year Experiences

BRIAN DWINNELL, MD, GWYN BARLEY, PHD, UNIVERSITY OF COLORADO SCHOOL OF MEDICINE

Objective: A three-year longitudinal primary care curriculum was instituted at the University of Colorado School of Medicine in the 1994–95 academic year. In 1999 we implemented a new component of the third-year curriculum called The Hidden Curriculum, designed to evaluate students' perceptions of their experiences during their medical education, particularly in the third year. The goal is to foster positive aspects and reduce the negative aspects of their professional development. Written feedback and suggestions for improving the third-year clinical and professional experiences are provided to the third-year clerkship directors.

Description: The primary care curriculum has been a three-year longitudinal curriculum since its inception in 1994. Students work with a primary care preceptor one afternoon a week over the three years. The third year of the preceptorship has continued to challenge us because of pressures placed on students by residents and attendings to remain in the hospital instead of going to the preceptors' offices. This encouraged us to look into ways to understand better the unwritten curriculum encompassed in professional development, often referred to as the "hidden curriculum," that students face in the third year. The idea for the new component came from a similar one at UCLA School of Medicine.¹ The Hidden Curriculum component has a similar format but uses a different method for evaluation and feedback.

The basic structure involves 11 groups of 12 students, each with two faculty facilitators. The facilitators are clinical as well as nonclinical faculty. The meetings occur on seven evenings throughout the year and typically take place in a home of one of the facilitators or one of the students, thus emphasizing that this is a safe environment for the students to discuss sensitive issues. There are set topics for each discussion (gender bias, student abuse, etc.), but the forum is generally unstructured and open to discussion of any relevant issues. For each meeting, a short list of questions is provided to the facilitators, who record responses, vignettes, etc., that the students discuss. A summary report is generated for each session and provided to the students, facilitators, and a committee composed of the directors of all of the third-year clerkships. The purpose of this report to the committee is that it provides useful feedback to the clerkships, particularly

concerning professional development issues in the third year, and includes suggestions for improvement. In addition, the medical school ombudsperson is involved for particularly concerning scenarios or interactions.

Discussion: The Hidden Curriculum component is a new part of a well-established longitudinal curriculum at the University of Colorado. Initial feedback seems to indicate that it is a useful method for evaluating and addressing the traditionally intangible issues referred to as the "hidden curriculum" encountered by medical students in training. The students also feel it is a safe environment for them to discuss particularly difficult issues. The hope is that encouraging such reflection will lead to a superior training environment and foster appropriate professional behavior.

Inquiries: Brian Dwinnell, MD, 4200 East 9th Avenue, Box B212, Denver, CO 80262.

REFERENCE

1. Slavin S, Wilkes M, Usatine R. Doctoring: innovations in education in the clinical years. *Acad Med.* 1995;70:1091–5.



A Course in End-of-life Care for Third-year Medical Students

LINDA ORKIN LEWIN, MD, CASE WESTERN RESERVE UNIVERSITY, BRUCE AGNEBERG, MD, VISITING NURSES ASSOCIATION, G. CALEB ALEXANDER, MD, UNIVERSITY OF PENNSYLVANIA

Objectives: This course was designed in 1996 to introduce third-year medical students to the knowledge, skills, and attitudes necessary to provide excellent care to dying patients. After participating in this course students can (1) comfortably speak to terminally ill patients about medical and psychological issues pertaining to their health, (2) appreciate the social and cultural aspects of dying, (3) accept the limits of the curative model of medical care, (4) understand the goals of the hospice movement, palliative care, and end-of-life planning, and (5) use reflection to enhance personal and professional development.

Description: The End of Life Care course at the Case Western Reserve University School of Medicine, presented in conjunction with the Hospice of the Western Reserve, has three components: readings, an interview with a terminally ill patient, and two three-hour sessions at the 40-bed resi-

dential Hospice House facility. The readings include poems, essays, and stories about death written by physicians and laypeople in medical and lay publications. Their purpose is to remind the students of the inevitability of death and to provide a contrast to the curative model of health care that is ubiquitous in clinical rotations.

The students attend two three-hour sessions at the Hospice House. The first is an introduction to hospice care presented by the physicians and staff of the hospice, encompassing a general overview of the organization and its mission, a tour of the facility, and an hour with an art therapist, seeing the work of her patients and doing some hands-on activities. During this first session the students also observe an interview of a hospice patient or bereaved relative conducted by one of the hospital staff.

Between the two hospice sessions, each student interviews a terminally ill patient, with an emphasis on the patient's experiences near the end of life. The second hospice session occurs approximately six weeks after the first and is used to discuss the interviews and the students' reactions to them. Experienced hospice staff direct the session and highlight issues that are commonly encountered in treating terminally ill patients, such as spirituality, grieving, and symptom management.

Discussion: This course has been extremely successful in achieving its goals. Holding the sessions at the hospice makes it easier for students to move beyond the curative paradigm that characterizes the inpatient setting. Through the introduction and tour, students learn the goals of the hospice movement, and see how they can be achieved. The art therapy experience, by far the most highly rated part of the course, allows students to understand patient stories through a universal medium and to participate in a reflection exercise that highlights the strength of non-medical techniques in supporting the terminally ill. Interviewing patients, both in the group and individually, and then discussing them allows students to develop some comfort with that process and to appreciate that the experience of dying is different for different patients, each of whom must be approached in a unique way.

Inquiries: Linda Orkin Lewin, MD, General Academic Pediatrics, University Hospitals of Cleveland, 11100 Euclid Avenue, Cleveland, OH 44106.



Using a Clerkship “Mini-course” to Gain Student “Buy-in” for Learning Preventive Medicine

LYNN M. CLEARY, MD, AND TAYLOE LOFTUS, MD, STATE UNIVERSITY OF NEW YORK, UPSTATE MEDICAL UNIVERSITY

Objective: For several years at the State University of New York Upstate Medical University we have integrated in the ambulatory month of the internal medicine clerkship a six-hour preventive medicine “mini-course” that covers screening, immunization, and counseling for behavioral change in adults.¹ It is a challenging area to teach and learn effectively. Despite the case-based format, the students reported that they already knew the material from their previous epidemiology course and that the epidemiologic and statistical concepts are dry and irrelevant. The faculty, however, felt that the students did not know the material well and had difficulty applying the concepts to real patient care. We sought a way to help students realize what they did not know (and to establish the need to know) and to apply their knowledge to their own patient care experiences. For the 1999–00 course, we developed an evaluation pretest and a change in the format.

Description: Five faculty members involved in teaching the course wrote a set of clinical case-based questions; 25 are administered as a pretest at the first session of the mini-course. Before reviewing the “real” answers, students share their answers, and the distribution of answers is displayed on an overhead grid. Students then see the actual display of group knowledge (or lack thereof) among the content areas. Based what they do not know, the group chooses topics they would like to learn about. Individual students each choose a subject about which they become the “expert” (e.g., screening for prostate cancer or osteoporosis). Students choose one or two clinical cases they have seen to serve as a basis for teaching each other. They use the case(s) to stimulate discussion, provide a brief summary, and generate a one-page handout summarizing evidence-based and other appropriate guidelines.

Discussion: Written, anonymous feedback from students thus far ($n = 38$) has not included concern that they already know the material, which is a distinct change. They also report enjoying each other's presentations and would like to give more time to this activity. A minority of students seem uncomfortable using cases to teach, and may resort to giving “didactic” presentations. The three faculty involved thus far have felt relief that students acknowledge their learning needs. The students have chosen excellent clinical cases that illustrate the concepts, and their summaries of information

have largely been excellent. The faculty now plan to be more explicit in stating expectations for the teaching format (including requiring cases and placing time limits on students' presentations). Involving students in self-assessment at the onset of the course has helped their motivation and decreased the faculty burden of proving that the content is valuable. The students' choices of cases help them apply the material to daily work, which we hope will enhance its relevance, utility, and retention. We plan to continue the self-assessment exercise, and the case-based teaching format with students selecting the cases, and we hope to use additional questions in the post-test that will assess knowledge gained.

Inquiries: Tayloe Loftus, MD, Department of Medicine, Upstate Medical University, 750 Adams Street, Syracuse, NY 13210; e-mail: {loftus@upstate.edu}.

REFERENCE

1. Loftus T, Edwards B, Franklin P, Cleary L. A minicourse in preventive medicine. *J Gen Intern Med.* 1994;9:79.



Changing Teaching for Changing Times: The Effect of a Hospitalist Program on the Education of Students

HILARY M. HAFTEL, MD, AND MARY ELLEN BOZYNSKI,
MD, UNIVERSITY OF MICHIGAN HEALTH SYSTEM

Objective: Health care reform has significantly changed the ways medicine is practiced. The call for physicians to justify patient care activities in order to be compensated has forced the attending physician to supervise trainees more closely and document patient contact better. In addition, primary care physicians are required to spend increasing amounts of time in the office rather than in the hospital, as the bulk of patient care shifts to the ambulatory setting. The net effect of these changes has been to decrease overall the contact time that attendings have with residents and students, primarily by decreasing teaching activities. At the University of Michigan, general pediatricians who rounded on the teaching services found it increasingly difficult to spend time teaching students while trying to meet patient care responsibilities. In 1999, the Department of Pediatrics initiated a General Pediatric Hospitalist Program, thereby providing full-time in-hospital pediatricians to supervise the hospitalized patients and to assume the bulk of the responsibility for teaching hospital-based pediatrics to residents and medical students.

Description: The Pediatric Hospitalist Program calls for the hiring of four full-time pediatricians who will share rotating responsibility for overseeing patient care on the general pediatric services, supervising residents, and teaching the medical students. Third-year medical students, who spend three of their six weeks of the pediatrics clerkship on the general services, will be assigned to a single hospitalist preceptor, who is the supervising attending for their service. This preceptor will be responsible for teaching the medical students, stressing bedside, patient-based teaching, providing feedback on students' histories, physicals, and patient presentations, and for the final summative assessments of the students' performances.

Several hypotheses underlie the possible impact of the hospitalist program on education. Pediatricians whose primary responsibility is inpatient care will be able to spend more time in directly supervising students, leading to more accurate assessment of performance, quicker identification of problems and deficiencies in performance, and better feedback to students. The hospitalists will be able to spend more time in direct teaching of students, leading to more and better inpatient teaching in pediatrics, emphasizing bedside rather than didactic teaching. These physicians would also serve as role models for academic inpatient general pediatrics as a career path.

Discussion: Unlike many hospitalist programs, which hire physicians primarily to expedite and facilitate patient care, this program stresses the role of the hospitalist as educator. Changes in medical care delivery have compromised the amount of time that a primary care physician can spend on hospitalized rather than ambulatory patients, leading to less contact time for education. The introduction of hospital-based pediatricians should facilitate educational activities and improve assessment of performance and feedback. Baseline data on physician contact time for education, the quantity and quality of feedback, and the validity of assessment were collected before the program began; it remains to be seen whether the hypothesized improvements will occur.

Inquiries: Hilary M. Haftel, MD, Pediatric Education, Department of Pediatrics and Communicable Diseases, University of Michigan Health Center, D3220 MPB, Box 0718, Ann Arbor, MI 48109-0718; e-mail: {hils@umich.edu}.



The Human Patient Simulator™: Acceptance and Efficacy as a Teaching Tool for Students

JAMES A. GORDON, MD, MPA, HARVARD MEDICAL SCHOOL, AND THE MEDICAL READINESS TRAINER TEAM, UNIVERSITY OF MICHIGAN

Objective: Medical students are typically excluded from the primary management of acutely ill patients, yet such experiences can be vital to integrating basic and clinical sciences and to developing essential medical skills. Not until internship do young doctors usually experience first-hand the anxiety of being responsible for very sick patients, but by this point the risk of medical error may be unnecessarily high. We wanted to allow medical students to fully experience critical patient-care scenarios in preparation for internship, but without a risk to patients or themselves.

Description: At the University of Michigan, we invited a group of clinical clerks ($n = 27$) to participate in a pilot program using a Human Patient Simulator™ (Medical Education Technologies, Inc. (www.meti.com)). The simulator is a computer-controlled full-scale mannequin that replicates human physiology in real time. The simulator possesses mechanical lungs with physiologic air exchange and auscultatory breath sounds, palpable pulses with a blood pressure read-out and heart tones, and extremity movements with a voice transmitter and reactive eyes. The mannequin can be intubated. All of these features are coordinated by a computerized model of physiologic simulation, so that drugs and other “therapy” can be instituted on the “patient” with resultant changes in clinical condition that can be seen, heard, felt, and truly experienced by the student.

The students were individually invited into the simulation room, where a faculty instructor mentored the student through two scenarios: a trauma patient with hemorrhagic shock and a tension pneumothorax, and a cardiac patient with marginally stable ventricular tachycardia. The student was told to proceed with evaluation and treatment as if the simulator were a real patient, and to use the faculty mentor as needed. The scenario was conducted in real time. We debriefed the student immediately after each session, getting both quantitative and qualitative reactions to the experience. At the end of the clinical year, we conducted a survey to compare the knowledge base of the students who had and had not participated in the pilot program with regard to the two clinical scenarios. This pathophysiology is taught in the regular curriculum but not by using the simulator.

Discussion: The students’ response to the simulator experience was overwhelmingly positive, with 89% feeling that it should be a mandatory part of their education. They felt

that the simulator provided important education in a stimulating way. They enjoyed working through problems under the pressure of a realistic simulation and felt that the experience had helped them to practice and build confidence in a protected environment. They requested additional sessions, and thought the exercise was a good way to integrate basic and clinical sciences and to prepare for internship. Although we have yet to put enough students through the simulator to collect statistically significant data, there was preliminary evidence from the survey to suggest better retention of key clinical knowledge among the students who worked with the simulator.

Inquiries: James A. Gordon, MD, Department of Emergency Medicine, Massachusetts General Hospital, 55 Fruit Street, CLN 115, Boston, MA 02114–2696.



Problem-based Learning in the Medicine Clerkship: A Resident-driven Strategy for Teaching Third-year Students

DAVID MALEH, MD, MATTHEW BURDAY, DO, VIRGINIA COLLIER, MD, AND JOSHUA POLSTER, MD, CHRISTIANA CARE HEALTH SYSTEM

Objective: To use a problem-based learning (PBL) format, developed and administered by internal medicine residents, in teaching third-year medical students practical diagnostic and management strategies for inpatients with common acute conditions.

Description: Medical students making the transition from basic science to clinical years often have difficulty applying their basic science knowledge in clinical situations. Although most have a solid foundation in history taking and rudimentary skills in physical examination, they have little, if any, experience in differential diagnosis or in practical, “how-to” methods of data gathering or patient management. Core lectures during an internal medicine clerkship deliver a key body of clinical knowledge but often do not focus on practical aspects of patient care such as order writing or emergency management.

To address these deficiencies, Christiana Care Health System’s internal medicine residents, under the supervision of a faculty member, developed a pilot PBL curriculum for voluntary use by third-year Jefferson Medical College students on their internal medicine clerkships. During multiple 90-minute sessions, resident preceptors presented clinical scenarios for patients with acute symptoms commonly encountered on medicine floors, including chest pain, abdominal

pain, and gastrointestinal bleeding. For each symptom, the students were asked to obtain a complete history from the resident preceptor, who gave answers predetermined by the desired final diagnosis. When needed, the preceptor demonstrated key physical examination techniques. After the students developed a list of possible diagnoses, the resident preceptor discussed the typical presentations, physical findings, and appropriate data gathering for each diagnosis. Based upon the history, abnormal physical findings, and laboratory or radiographic results, the students reordered their initial list until there was agreement about a presumptive diagnosis. They also wrote mock orders based on the patient's presenting symptom and clinical condition. Emphasis was placed not only on diagnostic strategies but also on emergent management (i.e., the specifics of hemodynamic stabilization of a patient with a GI bleed or the appropriate evaluation of a floor patient with new-onset chest pain). Finally, the resident preceptor and medical students interviewed preselected hospitalized patients with similar problems and reviewed their charts. This enabled students to associate specific patients with the symptom or disease entities discussed, to refine physical diagnostic techniques, and to confirm diagnostic and management strategies. Student response was measured with pre- and post-session questionnaires.

Discussion: Both students and residents benefited from this method of teaching. All of the students attended these voluntary sessions. They all reported increases from baseline in differential diagnosis capabilities for the symptoms discussed and increased confidence in practical aspects of patient management. They felt that this format more aptly addressed their perceived weaknesses than did the standard core lectures. The residents reported that their teaching skills increased, as did their understanding of the disease processes presented.

Our experience indicates that carefully designed problem-based cases may successfully enhance the education and practical skills of third-year students during their internal medicine clerkship. In addition, residents' participation in PBL gives structure to what residents teach on the floors and improves the residents' teaching skills.

Inquiries: Virginia Collier, MD, Vice Chair and Residency Program Director, Department of Medicine, Christiana Care Health System, P.O. Box 6001, Newark, DE 19718; e-mail <vcollier@christianacare.org>.



A Scholarly Research Requirement for Medical Students: The Ultimate Problem-based Learning Experience

ROBERT L. RHYNE, UNIVERSITY OF NEW MEXICO SCHOOL OF MEDICINE

Objective: Physicians in clinical practice need lifelong learning skills to assure that their clinical decisions are based on evidence in the medical research literature. Many medical schools are now teaching evidence-based medicine, but few require students to experience the research process firsthand. In 1993, the entire University of New Mexico School of Medicine curriculum was converted to a student-centered, problem-based learning, tutorial-style curriculum. To help them learn about scholarship, the scientific method, writing, and other communication skills, students are required to perform a longitudinal scholarly research project.

Description: To complete this requirement each student identifies a faculty mentor, writes a proposal, does "hands on" research, presents the results in oral or poster form to a professional audience, and writes a scholarly final report. Students can complete the requirement by choosing one of two possible paths designed to require approximately the same amount of student effort. In the primary research track the student asks a primary research question and is responsible for completing all aspects of the proposed study. The research practicum track, a newly designed option, is for those students who choose not to ask a primary research question. Offered for the first time to the class of 2002, this option requires the student to work as part of the mentor's active research team for at least 160 hours over a negotiated period of time. After completing this work, the practicum students may choose to address the practicum research topic or another current medical research question for their scholarly research presentation and paper.

The Medical Student Research Committee (MSRC) is responsible for approving all student proposals and scholarly works, tracking student progress through the requirement, and providing curriculum and technical support for the students. The MSRC has tied specific behavioral milestones (proposal submission and approval and scholarly works approval) to the students' medical school promotion from the basic science phase to the clinical rotation phase to the elective phase to graduation.

Evaluation is based on a credit-no credit system, and students can earn a faculty commendation in research at graduation if they (1) publish or submit a manuscript to a peer-reviewed journal or present at a national conference and (2) receive two faculty commendations for their final research scholarly paper.

Discussion: This longitudinal scholarly project helps students appreciate the process of scholarly endeavor in generating new medical knowledge. All 201 students in the three graduating classes since the new curriculum began have completed this requirement. They have published 17 articles in peer-reviewed journals; and 43%, 36%, and 44% of the respective classes have received faculty commendations in research at graduation. The graduates—the classes of 1997, 1998, and 1999—also report that doing a research project in medical school has helped them obtain their top residency choices. This requirement is faculty intensive and has required yearly changes based on input from the students and mentors, but it provides closer interactions between faculty and students and a deeper understanding of “evidence.”

Inquiries: Robert L. Rhyne, Department of Family and Community Medicine, UNM School of Medicine, 2400 Tucker Avenue NE, Albuquerque, NM 87131: e-mail (rrhyne@salud.unm.edu).



Enhancing Feedback to Students Using the Mini-CEX (Clinical Evaluation Exercise)

KAREN E. HAUER, MD, UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

Objective: Medical students and residents are rarely observed by attending physicians performing history and physical examinations in realistic clinical encounters. To address this problem at the residency level, the American Board of Internal Medicine and residency program directors developed and validated the clinical evaluation exercise (CEX) as a method of assessing residents' history-taking and physical examination skills. Subsequently a mini-CEX was designed as a short, easy form to use in focused first-time or follow-up encounters in any clinical setting.¹ We have used the mini-CEX with medical students to augment the feedback they receive from their attendings regarding their clinical skills.

Description: At the University of California, San Francisco, we introduced the mini-CEX into the core internal medicine clerkship in 1999 to ensure that each student is observed by an attending physician at least once conducting a focused history and physical examination. Each student and ward attending pair are instructed to complete the mini-CEX during the first half of the clerkship, spending 15–20 minutes on the encounter and 15 minutes on feedback. After the clinical encounter, the student immediately presents an as-

essment and plan, and the attending gives feedback. The attending evaluates the student's history and physical examination, clinical judgment, humanism, and overall clinical competence as a student, using the standardized mini-CEX two-page form. The form uses a standardized nine-point scale, with a ratings span from 1–3 (unsatisfactory), 4 (marginal), 5–6 (satisfactory), to 7–9 (superior). Because the primary goal of the exercise is to provide “real time” constructive feedback, the results do not contribute to the clerkship grade. Results with the first 22 students at two of our sites showed that the mean time that the attendings spent observing students was 30.9 minutes (range 10–105), and the mean time for feedback was 15.4 minutes (7.5–37). The mean student performance rating was 7.9. The mean rating for students' satisfaction with the format (7.5) exceeded the mean rating for the evaluators' satisfaction (6.0).

Discussion: The nationally developed mini-CEX for residents functions well for medical students as a learning tool and is easily adapted to an inpatient internal medicine clerkship. The exercise serves as a standardized format for an attending to use to observe a student at the bedside, hear the student's assessment, and critique the interaction in a nonthreatening, non-graded situation. The benefits of the mini-CEX include the breadth of skills evaluated in a short time, assurance that students are receiving feedback, low cost, and opportunity for attendings and clerkship site directors to identify students with deficiencies early in the rotation in order to facilitate remediation. Although the reproducibility of a single encounter per student is limited, we are not using the exercise to evaluate or grade an individual student's competence but rather to improve the process of attendings' observation and feedback. The mini-CEX will become a required component of the core internal medicine clerkship for all students at our institution, and it could be repeated in additional inpatient or ambulatory encounters to further enhance feedback and improve the reliability of the scores.

Inquiries: Karen E. Hauer, MD, University of California, San Francisco, Division of General Internal Medicine, 400 Parnassus Avenue, Box 0320, San Francisco, CA 94143–0320.

REFERENCE

1. Norcini JJ, Blank LL, Arnold GK, Kimball HR. The mini-CEX (clinical evaluation exercise): a preliminary investigation. *Ann Intern Med.* 1995; 123:795–9.



Assessment of Competency in Positioning and Movement of Physically Disabled Patients

SUNIL SABHARWAL, MD, MEDICAL COLLEGE OF WISCONSIN

Objective: Proper positioning of the patient is essential to performing a clinical examination accurately in the physically disabled population. For example, competence in diagnostic skills such as chest auscultation would not be sufficient if a physician were unable to position a patient with paralysis for optimal auscultation of lung bases. Traditionally, assessment of medical students' competency in positioning and movement techniques during clinical examination of physically disabled patients is not stressed, even during clinical rotations. Such skills are taught to nurses, health aides, and therapists, for example, and it may be assumed that physicians do not need to learn them. However, with an aging patient population and the movement towards mainstreaming the health care of the disabled, physicians in all fields of medicine are encountering more patients with physical disabilities. Lack of familiarity with positioning techniques increases the chance of an inadequate clinical examination and an uncomfortable or even unsafe patient experience during such encounters. At the Medical College of Wisconsin, we have developed an objective structured clinical examination (OSCE) to evaluate competency in positioning physical disabled patients in specific situations.

Description: The OSCE assesses the technique of turning a patient with dense right hemiplegia in bed from supine to left-side-lying position for examination, and back to supine after examining the posterior chest. Although actual patients

with hemiplegia can be used, our examination uses volunteers to act as standardized patients to keep it practical and reliable. These volunteers are physical therapists with knowledge of the movement deficits of paralyzed individuals and how this impacts positioning. This expertise enables them to simulate the condition accurately and thus increase the validity of the examination. The examiner evaluates the student's performance using a checklist with a yes/no format. The checklist items are: During the turn, did the examinee avoid pulling on the paralyzed upper extremity; support the arm adequately; and cross ankles in the direction of the turn or assist the patient to bend the involved knee. Once in the side-lying position, was the involved arm correctly positioned for support with a pillow or along the patient's side? On resuming the supine position, was the pillow repositioned under the head for comfort and alignment; hand roll replaced; and bed side-rails replaced. Each item is an important component of safe and effective positioning. Pulling on, or inadequately supporting, a paralyzed arm can cause discomfort and injury, even shoulder subluxation. Bending the paralyzed knee or crossing ankles makes turning much easier. Repositioning pillows, replacing hand-rolls, and replacing bed side-rails on completion of the examination are not only good etiquette but also important aspects of patient comfort and safety that are often ignored by physicians.

Discussion: This assessment tool has been evaluated with medical students as an OSCE station at the end of their clinical rotation in general internal medicine, with excellent inter-rater reliability. We are currently involved in a project, funded by a teaching grant, to assess the efficacy of teaching simple positioning techniques, using this examination for pre- and post-unit evaluation of competency.

Inquiries: Sunil Sabharwal, MD, Medical College of Wisconsin, Department of Physical Medicine and Rehabilitation, 9200 West Wisconsin Avenue, Suite 2103, Milwaukee, WI 53226.

Evidence-based Medicine

A Dissemination Model for Teaching Evidence-based Medicine

KATHEL DUNN, MSLS, NEW YORK ACADEMY OF MEDICINE, ELEANOR Z. WALLACE, MD, SUNY HEALTH SCIENCES CENTER—BROOKLYN, AND ROSANNE M. LEIPZIG, MD, PHD, MT. SINAI MEDICAL CENTER

Objective: To develop a dissemination model for evidence-based medicine (EBM) skills based on training internal medicine residency faculty.

Description: Under the auspices of the New York Chapter of the American College of Physicians, an EBM working group of internists and librarians from New York's teaching hospitals was convened in 1994. It developed a dissemination model that targeted teaching faculty and librarians and that included courses on teaching EBM and the creation of an EBM Resource Center in collaboration with the New York Academy of Medicine.

The course, first offered in 1996, brings together teaching physicians (nominated by either their residency program directors or chairs of medicine) and librarians (nominated by their directors) from New York who work in small groups to

learn the basic skills of EBM and to share experiences about how these can best be taught, practiced, and disseminated. Each small group consists of eight learners plus physician and librarian co-tutors. The first three courses have trained 211 physicians and 28 librarians from 42 academic health centers. Multiple participants from single institutions were preferentially accepted in order to build a critical mass of EBM-trained physicians and librarians to work together at each institution. Twenty-eight institutions have sent between two and six participants to individual courses; over the three years, the median number trained at each institution has been three.

Course participants complete a pre-course needs assessment, a post-course evaluation, and a "contract." The contract identifies the ways that the participants propose to implement EBM back home. A copy is sent to their program directors. Follow-up at six months has revealed that EBM training was most often incorporated into journal clubs and morning report. Some attempts at real-time practice of EBM (ambulatory visits and inpatient rounds) were reported, with varying degrees of success.

The EBM Resource Center was developed to provide ongoing support for the participants. The center provides a Web page that is a free "one-stop shopping" site, with access to Medline and a collection of full-text journals, the Best Evidence database, the ACP Journal Club, and the Cochrane Database, the full-text of 36 textbooks, drug-information manuals, and practice guidelines, and links to useful teaching, practice, and bibliographic sites. The resource center also supports a listserv, a newsletter, and monthly sessions where new developments in EBM and computer technologies are discussed, teaching tips shared, and barriers to implementation identified.

Discussion: The EBM course is not treated as a single event but instead is viewed as the beginning of a lifetime commitment to the teaching and practice of EBM. The physician-librarian partnerships (the intentional formation of cadres of people from institutions to promote EBM), a quarterly EBM newsletter, and the use of technology (including the listserv and Web site) all support teaching and using the evidence-based method.

Assessment efforts include surveying participants' implementation of EBM at their home institutions and developing techniques for collecting data on participants' use of the Resource Center's electronic resources to answer clinical questions. Exploration of how to measure the impact of EBM training on practice is ongoing.

Inquiries: Rosanne M. Leipzig, MD, PhD, Mount Sinai Medical Center, Department of Geriatrics & Adult Development, New York, NY 10029.

The work on the dissemination model on EBM was sponsored by grant G08 LM06648-01 from the Department of Health and Human Services, National Institutes of Health, National Library of Medicine.

A Medical School-Managed Care Partnership to Teach Evidence-based Medicine

CHRISTINE C. MATSON, MD, RICHARD D. MORRISON, PHD, AND JOHN A. ULLIAN, PHD, EASTERN VIRGINIA MEDICAL SCHOOL

Objective: The UME-21 grant program of the U.S. Health Resources and Services Administration is based on the premise that "while health care systems where patient care is intensively 'managed' are becoming more common, young physicians are not being taught how to provide high quality care within these systems."¹ Eastern Virginia Medical School and its managed care partners, Sentara Healthcare and Children's Health System, received UME-21 grants to implement an elective course in evidence-based medicine (EBM) for fourth-year students, using the managed-care partners' resources as a laboratory for applying EBM principles and practices in pursuit of excellence in clinical care for individual patients and patient populations.

Description: The year-long course was offered in 1999-2000. Eight students enrolled. Classes meet monthly and culminate in May with the presentation of a group project at an Annual Conference on Clinical Effectiveness sponsored by Sentara Healthcare and attended by more than 100 community physicians.

During the first four sessions, the principles and practices of EBM were taught by the course coordinator, medical school faculty, reference librarians, and senior clinicians from the managed care partner's network. The expected competencies are (1) framing researchable clinical questions, (2) accessing the latest and best literature, (3) assessing and scoring the literature for its validity and relevance, and (4) performing cost-benefit analyses and meta-analyses.

In the remaining five months, the students will apply these competencies to the production of a peer-reviewed, publication-quality monograph and clinical practice guideline to be presented at the May conference. We also plan a Web-based version of the monograph that can be used in small-group presentations to community physicians or studied independently for CME credit. Students will receive full attribution for their contributions to the product and will share in its presentation.

The group project for the 1999-2000 academic year is hyperlipidemia, a broad topic that provides opportunity for students to work in small groups focused on specific clinical issues that will be discussed by the full class and incorporated into the final product.

Discussion: One goal of the elective course is to temper the

animus for managed care that has been demonstrated to exist among medical school faculty and administrators, residency directors, and students. EBM can provide a forum and framework for negotiating superior care and focusing management's attention on both clinical *and* cost effectiveness. Students who can effectively incorporate EBM into practice will be best equipped to advocate for their patients in managed care settings.

In addition, the course is providing an impetus to survey other initiatives in teaching EBM locally, statewide, and throughout the country. The state's three academic medical centers have jointly proposed a regional workshop on teaching EBM. Funding is also being sought to support a web-based EBM course that can be used at other medical schools and accessed independently by members of the health care practice community. Our school and our managed care partners share twin goals of sustaining any positive impact created by this demonstration program locally and achieving a multiplier effect by making these benefits widely available to medical schools and to all health care practitioners.

Inquiries: Richard D. Morrison, PhD, UME-21 Project Coordinator, Eastern Virginia Medical School, Office of Education, 721 Fairfax Avenue Room 533, Norfolk, VA 23507-2000; e-mail: <morrisrd@worf.evms.edu>.

REFERENCE

1. Undergraduate Medical Education for the 21st Century: A Collaborative Project of the Primary Care Organization Consortium funded by the Bureau of Health Professions, Health Resources and Services Administration, and administered by the American Association of Colleges of Osteopathic Medicine. <http://www.aacom.org/UME-21>. Accessed 2/1/00.



The "EBM Rx": An Initial Experience with an Evidence-based Learning Prescription

LLOYD RUCKER, MD, AND ELIZABETH MORRISON, MD, MSED, UNIVERSITY OF CALIFORNIA, IRVINE

Objective: Medical educators at many training programs are attempting to meet the worthy goal of teaching learners better skills in critical appraisal and evidence-based medicine (EBM). Evidence-based medicine skills are not easily learned or adopted, and faculty often struggle to translate EBM con-

cepts from the classroom to relevant clinical applications. This pilot project was undertaken in 1998-99 at the University of California, Irvine (UCI) to evaluate the effectiveness of a new EBM learning prescription—the "EBM Rx"—a tool to stimulate the use of EBM in the context of patient care.

Description: Sackett and colleagues first reported developing an "evidence-based medicine learning prescription."¹ UCI medical faculty reformatted this prescription's original design with new items and produced a two-part form on pressure-sensitive paper, fitted into a 50-sheet pad that looks like a prescription pad. In the course of patient care, medical teams of faculty and learners identify patient-related learning questions. The teacher helps learners define these questions through writing an EBM Rx in the "PICO" format: describe the patient, specify the intervention to be explored, state the comparison to the intervention, and define the expected outcome. The learner receives a copy of the prescription form with an assigned due date. The teacher retains a copy as a record to ensure completion of the assignment. The learner performs an appropriate search for an answer to the question, critically appraising the findings. After the EBM Rx is completed, the teacher evaluates the learner's work and gives appropriate feedback.

A pilot study was conducted to assess the effectiveness of the new EBM Rx. Fifteen teachers (11 faculty and 4 chief residents) and 85 learners (54 house officers and 31 medical students) participated. The teachers made a total of 126 EBM Rx assignments: 105 were completed (83%); 82 (65%) of them were completed on time; 76 (60%) were judged to have included appropriate references; and 37 (29%) affected patient care decisions. The teachers' positive attitudes toward EBM were the only factor predictive of the number of prescriptions written ($r = 0.7, p < .005$) or of the likelihood of completing the assignment ($r = 0.72, p < .007$). Also, questionnaires completed by both learners and teachers at the end of the study demonstrated strong support for the EBM Rx. According to participating faculty surveyed, the main barriers to using the EBM Rx were lack of time in clinical settings and not having the pad available.

Discussion: The EBM Rx seems to be a useful tool for bringing evidence-based medicine to clinical care. Both teachers and learners were enthusiastic about its use. Further efforts will focus on faculty development, identifying and eliminating barriers to using the EBM Rx, and examining whether the EBM Rx affects measurable patient care outcomes.

Inquiries: Lloyd Rucker, MD, Office of Curricular Affairs, University of California, Irvine, Medical Education Building 802, Irvine, CA 92697-4089; e-mail: <lrucker@uci.edu>.

REFERENCE

1. Sackett DL, Richardson WS, Rosenberg W, Haynes RB. Evidence-based Medicine: How to Practice and Teach EBM. New York: Churchill Livingstone, 1997.



An Evidence-based Medicine Curriculum for Medical Students: The Art of Asking Focused Clinical Questions

PETER ELLIS, MD, MPH, MICHAEL GREEN, MD, MSc,
AND WALTER KERNAN, MD, YALE UNIVERSITY SCHOOL
OF MEDICINE

Objective: One goal of undergraduate medical education is to help students direct their own learning when faced with clinical uncertainty. To address this challenge, in 1998 we introduced an evidence-based medicine (EBM) curriculum for third-year medical students during their four-week ambulatory clerkship. Our learning objectives were for students to identify their emerging information needs, convert them into focused clinical questions, select and search the most appropriate information sources for their type of question, and apply the evidence to decision making for their patients. We also expected students to appreciate the clinical value of EBM and to increase their confidence in practicing it.

Description: During the first week of their clerkship, students participate in a 60-minute interactive workshop introducing the “art” of translating information needs into focused, answerable questions. We solicit their clinical questions arising from recent patient encounters and distinguish between “background” and “foreground” questions (e.g., background questions are usually more appropriate for searching textbooks and foreground for original studies). Students then articulate “well-built” questions consisting of key patient information, intervention(s), comparison, and specific outcome(s). Students also classify their questions by clinical task (e.g., therapy) and learn simple methodologic “filters” for each question type (e.g., for therapy, “clinical trial”) to maximize the yield and relevance of their Medline searches. During the second week, students participate in a more extensive 60-minute workshop on searching Medline and secondary databases (e.g., Best Evidence, Cochrane), facilitated by an expert medical librarian.

Each student completes an EBM project linked to morning report occurring on Monday and Thursday every week. One student presents an actual case, and the group of 10–12 students gives feedback to help identify the most important question (20 minutes allowed). At the subsequent morning report,

the same student briefly presents the clinical question, the evidence, and how this affected decision making (5–10 minutes). Students also distribute a one-page report summarizing the case, the question, the information source, the “bottom line” (evidence), application of the evidence, decision (action), and rationale. We are developing a numerical grading system to assess the quality of the written projects.

Discussion: We emphasized the skill of converting information needs into answerable questions because we have found that this is a major stumbling block for students and residents learning to practice EBM. We expect students to practice EBM in real time, and therefore we try to minimize potential time barriers in preparing their reports. In terms of curriculum resources, students receive one-on-one coaching during and after workshops and have access to excellent computer information facilities and expert medical librarians. We have encountered a few barriers to teaching EBM. For example, during the introductory workshop when we solicit students’ clinical questions arising from their practices, we sometimes receive blank stares and opinions that there is not much uncertainty in ambulatory practice. This leads to a fruitful discussion of the information needs among practicing physicians. We are evaluating the degree to which students are meeting the curriculum’s learning objectives, practicing EBM during their clerkships during and after participating in the curriculum, and encountering any barriers.

Inquiries: Peter Ellis, MD, MPH, Yale Primary Care Internal Medicine Residency Program, Waterbury Hospital, 64 Robbins Street, Waterbury, CT 06721; e-mail: <pellis@wtbyhosp.chime.org>.



An Evidence-based Physical Diagnosis Curriculum for Third-year Internal Medicine Clerks

MARK J. FAGAN, MD, AND REBECCA A. GRIFFITH, MD,
BROWN UNIVERSITY SCHOOL OF MEDICINE

Objective: Studies consistently show important deficiencies in the physical diagnosis skills of medical students, residents, and practicing physicians. At the same time, there is an increasing body of critically reviewed literature supporting the utility of specific physical diagnosis findings. This literature creates the opportunity to teach an evidence-based approach to physical diagnosis. In response to requests from our students for more teaching on physical diagnosis, in 1999 we designed and implemented an evidence-based curriculum on physical diagnosis for the internal medicine clerkship at Brown Uni-

versity School of Medicine. Our primary goal was to improve our students' knowledge, skill, and confidence in physical diagnosis, but we also sought to reinforce evidence-based medicine concepts by applying them to physical diagnosis.

Description: We developed a curriculum based on eight articles from JAMA's Rational Clinical Examination series. The articles were chosen based on their relevance to our learning objectives for third-year medical students. The physical diagnosis topics covered in the articles were central venous pressure, splenomegaly, carotid bruit, ascites, hypovolemia, deep venous thrombosis, low back pain, and systolic murmur. The evidence-based medicine topics covered were sensitivity, specificity, predictive value or post-test probability, likelihood ratios, and decision thresholds. During the eight inpatient weeks of our 12-week internal medicine clerkship, groups of four students and one preceptor met for weekly rounds on evidence-based physical diagnosis. At each session, one student was assigned the responsibility for presenting one of the eight Rational Clinical Examination articles to the group, emphasizing the sensitivity and specificity of maneuvers and findings. The student also was responsible for identifying an inpatient with the physical examination abnormality who was willing to be visited by the group. After discussing the topic, the group visited and examined the patient, focusing on the ma-

neuvuers described in the article. The preceptor observed each student to ensure that the students performed and interpreted the maneuvers correctly. Each session lasted about one hour. To evaluate the effect of the intervention on the student's knowledge, we used a quiz based on the Rational Clinical Examination articles. To assess the students' physical examination skills, we used standardized patients; and to assess students' confidence in their physical diagnosis skills, we administered an attitude survey at the end of the clerkship.

Discussion: We have found this brief course in evidence-based physical diagnosis to be a feasible way to introduce students to critically appraised literature on the utility of the physical findings and also to provide them with an opportunity to practice specific physical diagnosis skills with supervision. The students' response has been quite favorable, and they have suggested extending the curriculum into the four outpatient weeks of the clerkship. In the pilot phase of the project, the students who received this curriculum ($n = 34$) scored higher on the knowledge quiz than did the controls ($n = 46$) (mean correct scores 75% vs 63%, $p < .0001$). We plan to expand the curriculum to all clerkship sites and to consider encouraging other clerkships to develop similar curricula.

Inquiries: Mark J. Fagan, MD, Division of General Internal Medicine, Rhode Island Hospital, 593 Eddy Street, Providence, RI 02903; e-mail (Mark.Fagan@brown.edu).

Focus on Family

The Family Competency Project

VIRGINIA F. RANDALL, MD, MPH, AND JANICE L. HANSON, PHD, UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

Objective: The objectives of this project are to develop discrete behavioral descriptors of the competencies that typify family-centered care and to design, implement, and evaluate learning activities across the four years of medical school that facilitate the development of these competencies. Our strategy involves the parents of children with special needs as co-researchers and teachers.

Description: Because parents of children with special health care needs have frequent and often emotionally intense interactions with physicians, they are in a particularly good position to appreciate and describe competencies that facilitate effective partnerships. Because their perspective and experience are different from those of many health care professionals, they articulate and prioritize these competencies differently than professionals. In 1996 we began this project on family-centered care. We obtained the approval of the

Uniformed Services University of the Health Sciences's (USUHS) Institutional Review Board to conduct a series of four focus groups with parents of children with special needs. We used the parents' expertise to develop a list of desirable competencies for medical students that will enable them to enter into partnerships with families. The 203 discrete competencies include knowledge, attitudes, and skills/abilities in the areas of self-awareness, communication, medical decision making, and advocacy. These areas were defined by the parent focus groups as important facets of family-centered care. (It is of note that these are similar to the attributes broadly described in the Association of American Medical Colleges's Medical School Objectives Project under the headings of "altruistic" and "dutiful.") We then created a pedagogic structure using these competencies that links goals, teaching strategies, and evaluation.

We are working with USUHS course directors in different departments to develop activities within existing courses that are synergistic with course goals, address competencies from our list, and involve the parents as teachers. Thus far, we have collaborated with course directors in pediatrics, ethics, and the human context of medicine (a course on the

doctor's self-awareness in clinical encounters with patients). Learning activities include visits to the homes of families with children with special needs to learn about resilience and helpful doctor–patient/family relationships, small-group discussions between parents and students about critical medical decisions involving seriously ill children, and a research elective using the parents and families as resources. Each activity addresses defined affective, cognitive, and behavioral goals that lead to learning material important to the course as well as developing competencies in family-centered care. Each activity has a specific evaluation strategy appropriate to the goals.

The goals, educational principles, and plan for teaching are carefully defined, carried out in a real-world setting, and continuously evaluated. This continuous analysis and iterative improvement, carried out within a structure of carefully chosen research questions and data gathering, places the project within the realm of educational action research.

Discussion: Over the next two years, we plan to work with other departments and course directors at the university to continue to identify areas in which our competencies for family-centered care and the course goals are congruous and can be achieved in a collaborative activity. We also will convene focus groups of adults with chronic illnesses and explore their perspectives on family-centered care, the competencies needed, and strategies for teaching.

Inquiries: Dr. Virginia Randall, Department of Pediatrics, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Bethesda, MD 20814.

The views expressed in this article are those of the authors and do not necessarily represent the official policy of the Uniformed Services University of the Health Sciences, the Department of the Army, or the Department of Defense.

The activity reported here is supported (in part) by the Josiah Macy, Jr. Foundation.



Expanding the “Standardized Family” across Three Clerkships: A Model for Creating an Interdisciplinary Core Curriculum in Primary Care

MICHELE P. PUGNAIRE, MD, FRANK J. DOMINO, MD, AND ERIC J. ALPER, MD, UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL

Objective: Since 1995, a three-generation “standardized family,” the McQs, has been successfully implemented as a core curriculum in the third-year family medicine clerkship.

In July 1999, the standardized family was expanded into two other clerkships (internal medicine and pediatrics), with the goal of creating an interdisciplinary core curriculum in primary care across three clerkships.

Description: The McQ Standardized Family curriculum is centered around a simulated or “virtual” family and is implemented using case-based clinical problem-solving modules conducted in small groups. This curriculum reinforces continuity of care principles by focusing on the longitudinal care of McQ family members in all case discussions.¹ With support from a UME–21 (Undergraduate Medical Education for the 21st Century) Associate Partnership grant from the U.S. Health Resources and Services Administration, the standardized family was expanded into the core curricula of the pediatrics and internal medicine clerkships by adding new members and a greater breadth of medical issues. Internal medicine, for example, added a new elder member in order to address geriatrics learning objectives. Curricular interventions were developed collaboratively by the clerkship directors, and they include simulated medical records for each family member and encounters with actual standardized patients portraying family members. Through the UME–21 Associate Partnership, a managed care partner (Fallon Health Care System) and a linking organization (the Meyers Primary Care Institute) participated in the expanded curriculum, integrating managed care objectives and materials across the three clerkships (e.g., use of a drug formulary and clinical guidelines).

Discussion: The standardized family curriculum addresses learning objectives that distinguish the ambulatory primary care disciplines: continuity of care, family-centered care, common acute and chronic problems, cost-effective care, outpatient record keeping, evidenced-base ambulatory care, managed care, and preventive medicine. To assess the effectiveness of the expanded standardized family in meeting these objectives, three evaluation measures are being used. (1) A written survey, developed to measure student self-assessment ratings of “confidence” and “competence” in relation to curricular objectives, was administered to all students completing the third year in June 1999 (the non-intervention “control” group) and to students entering the third year in July 1999 (the baseline, pre-measure “intervention” group). The intervention cohort will be resurveyed at the end of the third-year curriculum to assess post-intervention changes compared with the control group not experiencing the expanded standardized family curriculum. (2) A written evaluation, addressing curriculum components relevant to the individual clerkship (i.e., quality and effectiveness of curricular materials and small-group teaching) is completed by students at the end of each clerkship. (3) The Association of American Medical Colleges’ Graduating Student Survey targets many of the objective areas of the standardized family curriculum (i.e., continuity of care, managed care, preventive medicine). The students’ responses to selected relevant items before and after the new curriculum will be compared.

Our experience supports that the standardized family curriculum can be implemented across clerkships and that it provides a model for developing a multidisciplinary and integrated core curriculum in primary care. The curriculum's effectiveness in attaining its primary care learning objectives will be assessed when analysis of data currently being gathered from multiple evaluation measures is completed.

Inquiries: Michele P. Pugnaire, MD, Acting Vice Dean for Medical Education, Office of Medical Education, Univer-

sity of Massachusetts Medical School, 55 Lake Avenue North, Worcester, MA 01655; e-mail: <michele.pugnaire@umassmed.edu>.

REFERENCE

1. Pugnaire MP, Leong SL, Quirk ME, Mazor K, Gray JM. The standardized family: an innovation in primary care education at the University of Massachusetts. *Acad Med.* 1999;74(1 supp):S90-S97.

Education in the Community

Partnership between a Medical School and a Managed Care Organization to Financially Support Community-based Teaching

MARTIN KLEIN, PhD, MPH, AND MARTHA S. GRAYSON, MD, NEW YORK MEDICAL COLLEGE, AND RICHARD H. BERNSTEIN, MD, AETNA U.S. HEALTHCARE

Objective: As community-based primary care training grows, so too does the concern over how to meet the need for more preceptors and how to reimburse them for their efforts. Although a few schools pay preceptors, most provide non-monetary rewards. With the growing pressure on physicians' time and income, non-monetary support may no longer be adequate. The continued expansion of community-based teaching programs, particularly in primary care, and the limited resources of most medical schools, will require new and innovative financing mechanisms to recruit and pay preceptors.

To that end, New York Medical College (NYMC) and Aetna U.S. Healthcare™ (AUSHC) have developed and implemented a program that uses capitation to recognize the teaching contributions of community-based faculty and enhance their teaching and practice skills. We believe that the program is the first time that a managed care organization has agreed to higher capitation rates to support community-based medical student training.

Description: Under the program, community-based physicians teaching in NYMC's primary care programs who are AUSHC providers are eligible for an increase in their capitation rate. These preceptors receive a one-half percent increase in their capitation rate if they participate in a half-day orientation and skills workshop offered to all preceptors at the beginning of the academic year. They receive an additional one-half percent increase in their capitation rate if they participate in a specially prepared faculty development

workshop designed to improve their teaching effectiveness and patient care. The higher capitation rate remains in effect as long as the physician continues to teach a medical student in his or her office and continues to attend faculty development workshops. The average payment for participating in the program has been \$450, with some physicians earning up to several thousand dollars per year for teaching a medical student, depending on the number of AUSHC patients a physician has in his or her panel. To date, 151 preceptors have participated in the program.

Studies are under way to assess the impact of the higher capitation on recruiting and retaining preceptors, on preceptors' attitudes towards managed care, and on the impact of faculty development on participants and patients. Preliminary results have been favorable, and AUSHC has incorporated the initiative in all its markets.

Discussion: This initiative meets the needs of students, preceptors, NYMC, and AUSHC. Students are assured of the availability of community-based teaching physicians and will work in an environment where they are exposed to managed care principles. Preceptors will be financially compensated for their efforts and receive topical faculty development workshops. New York Medical College can pay its preceptors indirectly and reap the benefits of increased preceptor recruitment and retention. Aetna U.S. Healthcare can launch an innovative method to support medical education and to improve the communication and teaching skills of participating physicians to better serve patients and students. Moreover, the organizational and financial commitment by AUSHC is an important step forward in shaping the managed care community's views regarding support for medical education.

Inquiries: Martin Klein, PhD, MPH, New York Medical College, Center for Primary Care Education and Research, Munger Pavilion, Suite 600, Valhalla, NY 10595; e-mail <klein1@nymc.edu>.



First-year Medical Students Designing a Patient Education Handout

C. CAROLYN THIEDKE, MD, MEDICAL UNIVERSITY OF SOUTH CAROLINA

Objective: First-year medical students at the Medical University of South Carolina take a course designed in a small-group format. Its main thrust was to introduce them to community practice by assigning them to primary care practitioners in the community. We did not feel that a traditional multiple-choice examination was an appropriate assessment tool for this type of course. We wanted, instead, to require an end-of-semester project that was more in keeping with the course objectives. Beginning in 1999, students were asked to research and design a patient education brochure on a topic of their choice.

Description: The students were given an article from *Texas Medicine* that discussed the key issues of writing educational material for patients. This article stressed the importance of avoiding jargon, using an attractive format, using well-designed illustrations, and understanding the patients' literacy levels. We believed that this project would require students to "think like a patient," i.e., what is the information that a patient would most like to have about a problem, and how can that information be presented in an understandable way. To lessen the students' burden, we let them use the same topic they had used for a neuroscience project done earlier in the semester.

Students turned in brochures on a wide range of topics. Many were on common problems such as stroke and hypertension, but some were on relatively rare conditions such as syringomyelia or *Nigleria meningitis*. Most students chose a trifold format, but a few designed Web sites or turned in more traditional 8½ × 11" handouts. As a rule, the brochures looked professional in quality, the students choosing different colored papers, using colored illustrations and different fonts to give their brochures an appealing look. Most students appeared to grasp the concept of literacy levels and were successful in avoiding medical jargon.

Discussion: Most students responded positively to this assignment, understanding the its patient-centered nature. A few, however, viewed it as busywork. Most students seemed very proud of the products they had created. Some of the brochures were so well done that it raised for us the unforeseen issue of whether the students might simply have downloaded material from Web sites. A spot check of several Web sites that might be appropriate to the topics did not uncover any instance of plagiarism. In the future we will emphasize that this is not permissible. In retrospect, we found that linking the project to their neurosciences projects (which were done in groups) created confusion as to whether this project

also could be done as a group. In the future we will address this question (and tie the project to their community experience) by requesting that they select topics encountered while with their community preceptors or ask their community preceptors about topics they would like to have patient hand-outs for. In this way we can give back something to the preceptors who give us their time.

Inquiries: C. Carolyn Thiedke, MD, Department of Family Medicine, MUSC, 295 Calhoun Street, Charleston, SC 29425; e-mail: <thiedkcc@musc.edu>.



Incorporating the Community in a Community-based Education Program

EARNESTINE WILLIS, MD, MPH, KAREN WENDELBERGER MARCDANTE, MD, AND TIMOTHY SCHUM, MD, MEDICAL COLLEGE OF WISCONSIN

Objective: The impact of poverty and violence on the health and well-being of children demands coordination of approaches among the health professionals and community representatives who care for them. National experts call for the development of multidisciplinary education programs, but attempts fail because of turf battles between disciplines, exclusion of community involvement, or failure to obtain broad appropriate support. Beginning in 1996, a community-based curriculum for advanced-degree learners in pediatric medicine, education, law, nursing, and social welfare was designed using an 18-month collaborative process to overcome such barriers. This program is referred to as the Multi-dimensional Education Program (MDEP).

Description: Leaders from three universities and five disciplines (Marquette University's School of Law and College of Nursing, Medical College of Wisconsin's Department of Pediatrics, and University of Wisconsin-Milwaukee's Schools of Education and Social Welfare) explored the needs and resources available for "common ground" training of learners and the community. The term *dimension* (instead of discipline) is used to indicate that both medical and non-medical factors contribute to the health status of people in communities. Planning sessions that included representatives from the community, law enforcement, and the five disciplines already mentioned produced educational objectives, core competencies for learners, and 12 core curriculum modules to be taught by multidimensional teams. The ideal MDEP has three components—core curriculum, longitudinal community experiences with community mentoring, and faculty development. The course is designed to increase learners' knowledge, interactive skills, and attitudes in cross-

cultural, family-centered, and community-based coordinated care. Didactic and experiential courses cover team building, applied public policy, ethics, health care financing, respecting and understanding values and health beliefs among consumers, etc. The faculty and the community representatives co-teach the entire course.

Discussion: The time spent in establishing joint educational objectives within MDEP has created a curriculum acceptable to the community for each higher education institution. Welcoming the community perspectives as essential in the program design has produced an innovative curriculum that is a paradigm shift in higher education. This inclusive process, as a whole, has fostered enthusiasm within these institutions and throughout their local communities to implement this program aggressively. After conducting the pilot modules, all partners reported high value in the experiences and agreed to continue to develop educational objectives for the community experience component of the MDEP. These community experiences are being further refined to reinforce the learned skills and knowledge to benefit the community-based organizations' consumers. MDEP supports a significant exchange of knowledge and skills across professions and communities commonly providing child-related services. Our preliminary success with the 12 core modules has led to plans to implement the community-based experiences, which should further increase learners' abilities to address the needs of the children they will serve. Long-term evaluation will include assessment of learners' knowledge, skills, and attitudes through self-assessment and family assessment and the outcomes of community-based projects.

Inquiries: Earnestine Willis, MD, MPH, Associate Professor, Medical College of Wisconsin, 8701 Watertown Plank Road, Milwaukee, WI 53226.



Improved Student Learning and Community Health: The CCPH Faculty Service–Learning Institute

SARENA D. SEIFER, MD, UNIVERSITY OF WASHINGTON,
AND KARA CONNORS, MPH, UNIVERSITY OF CALIFORNIA,
SAN FRANCISCO

Objective: The Pew Health Professions Commission has identified a core set of competencies that all health professionals must possess if they are to meet the health needs of the public in the next century. These include embracing a personal ethic of service, demonstrating critical thinking and problem-solving skills, and providing culturally sensitive

care. Service–learning (SL), by combining community service with learning objectives, preparation, and reflection, has been shown to help equip health professionals-in-training with these and other recommended competencies.¹ The primary objective of Community–Campus Partnerships for Health's SL institute is to prepare faculty to integrate SL into their schools' curricula.

Description: The four-day summer institute was offered annually 1997–1999 at Leavenworth, Washington, for a fee of about \$1,200, including lodging and meals. The institutes were planned and conducted by eight to ten mentors from health professions and other disciplines with expertise in SL. Candidates submitted an application describing their goals and learning objectives. Beginning in 1998, a letter from the applicant's dean, describing the school's support for SL, was also required. Fifteen to 25 participants were chosen based on the mentors' assessments of their abilities to meet the institute's objectives while also achieving disciplinary and geographic diversity. Although faculty in medicine and nursing comprise most of the participants, faculty from public health, dentistry, social work, pharmacy, and allied health also participated. Designed for faculty who are new to SL, the curriculum covers SL theory, curriculum development, reflection and assessment methods, and community partnership building. Each topic is addressed in workshops that incorporate didactic and experiential learning techniques. Mentoring sessions pair four to six participants with two mentors to clarify and reinforce points made during workshops and help translate learning into an action plan for integrating SL curricula. Participants also take part in a theater exercise designed to promote reflection about their relationships with community and challenges they face in implementing SL. To facilitate continued learning and support after the institute, participants and mentors communicate through an electronic discussion group.

Discussion: In December 1998, a follow-up evaluation survey was mailed to all 35 participants in the 1997 and 1998 institutes; 68% responded. Of the respondents, 90% rated the institute "excellent" or "very good," and all reported acting on the information and knowledge gained during the institute. These actions include reviewing the curriculum materials, sharing these materials with colleagues at their school, speaking with their deans or department chairs about SL, and making SL presentations at their schools. The most significant finding is the extent to which they had integrated SL into the curriculum: 55% had integrated SL into a course they had taught previously, 30% into a new course, and 15% into an existing course that they had not taught previously. They reported that the institute had prepared them well in SL theory, curriculum development, reflection methods, and

community partnership building, but that the institute did not prepare them as well in assessment, faculty development, and institutionalization strategies. As a result, we plan to begin offering in 2000 an advanced institute focused primarily on these issues.

Inquiries: Kara Connors, Associate Director, Community-Campus Partnerships for Health, UCSF Center for the Health Professions, 3333 California Street, Suite 410, San Francisco, CA 94118; e-mail: (karac@itsa.ucsf.edu).

CCPH's faculty service-learning institute is supported in part by a grant from the Corporation for National Service.

REFERENCE

1. Seifer SD. Service-learning: Community-campus partnerships for health professions education. *Acad Med.* 1998;73:273-7.



Medical Students as Ambassadors to Wisconsin Communities

CHERYL A. MAURANA, PHD, STACI A. YOUNG, AND JOHN R. BASARICH, MEDICAL COLLEGE OF WISCONSIN

Objective: The Urban and Rural Ambassador programs were created to benefit both elementary and high school students and Medical College of Wisconsin students by (1) inspiring underrepresented students to consider careers in medicine, (2) helping dispel doubts that underrepresented students have regarding their ability to enter the medical field, and (3) giving medical students community-based experiences and encouraging them to consider practicing in underserved communities.

Description: The Rural Ambassador Program was begun in the spring of 1998 by a group of medical students committed to rural medicine. The group proposed the pilot program to the Center for Healthy Communities in the Department of Family and Community Medicine at the Medical College of Wisconsin, and it obtained funding for six successful trips to rural community high schools. The medical students met to plan the sessions, but they avoided a "canned presentation"

approach so that they could share their personal experiences in a meaningful way. The Center for Healthy Communities began the Urban Ambassador Program in the fall of 1998, and under that program medical students visit predominately minority schools in Milwaukee. Since spring 1998, 55 medical students have visited 18 schools and spoken with 1,350 Wisconsin students under the two programs. The sessions begin with an introduction of the presenters and a brief overview of college and medical school, including the application process. A question-and-answer period follows each talk. The medical students typically use personal experiences to highlight key components and offer encouragement and advice during this panel-type discussion.

The high school students then participate in small-group activities keyed to elementary clinical techniques. These activities are designed to be hands-on and provide insights into the applications of science in medicine. For example, one activity focused on the science behind the measurement of blood pressure and why it is important. Another used a model of the ear to explain its anatomy and function, and then students used an otoscope to look in each other's ears.

Discussion: This program is beneficial in many ways for both the medical students and high school students, and it is particularly meaningful to both when the medical students are able to visit their own former high schools. Both medical and Milwaukee students and teachers are evaluated through semi-structured surveys. In focus groups conducted with the medical students, they reported that they would encourage others to participate in the program. The school students reported that they would like programs such as these to continue in their schools in the future. Through these discussions and feedback, it was found that the program is helping to encourage students in urban and rural communities not only to attend college but also to pursue careers in medicine.

Due to the success of the community-based programs, the center has brought a group of 12 rural high school students from Marion, Wisconsin, to the medical college for two days of hands-on lab experience and discussions with faculty and medical students. All of the programs will continue in the 1999-2000 academic year with students from both rural and urban communities.

Inquiries: Cheryl A. Maurana, PhD, Chief, Division of Community Health, Director, Center for Healthy Communities, Department of Family and Community Medicine, Medical College of Wisconsin, 8701 Watertown Plank Road, P.O. Box 26509, Milwaukee, WI 53226-0509.

Longitudinal Ambulatory Care Experiences

A Four-year, Longitudinal Introduction to Clinical Medicine Course Organized in Week-long Blocks

EDGAR MCCOLGAN, PHD, GAIL BEEMAN, MD, AND JOHN R. BOKER, PHD, UNIVERSITY OF TENNESSEE, MEMPHIS, COLLEGE OF MEDICINE

Objective: The Longitudinal Community Program on Professional Skills and Perspectives (LCP) was developed and implemented for the class matriculating in 1999 at the University of Tennessee, Memphis, College of Medicine. The goal was to create an interdisciplinary, required, four-year program with the mission of developing in our graduates a thorough understanding of the needs of patients, families, and communities required for the contemporary practice of medicine. The objectives are to (1) present early and frequent experiences, (2) impart and reinforce professional identity and attitudes, (3) facilitate application of biomedical science concepts, (4) provide better preparation for entering the clinical clerkships, and (5) support interdisciplinary education.

Description: The LCP is a blending of previously required, independent first- and/or second-year courses and new academic content areas. Over a ten-month period, a task force of senior faculty from each core discipline, students, and academic affairs staff met weekly to carry out this new initiative. They developed 13 one-week blocks of instruction interspersed throughout the curriculum: six blocks for freshmen, four for sophomores, two for juniors, and one for seniors. During each block, students have no demands from other courses.

A key feature of the LCP is a community preceptorship throughout the first two years that emphasizes ambulatory care, interpersonal skills, the roles of physicians with the community, and clinical decision making. Time is also dedicated for students to work with community agencies on a two-year project identifying a problem, developing an intervention, collecting and analyzing data, and reporting their findings. The community preceptorship and project constitute 40% of the total LCP hours in the first two years, enabling students to develop attributes that focus on the importance of caring for patients and serving the community.

The academic material presented during each week of the LCP is organized along a framework of normal human development, thus the educational activities can be merged from the multiple disciplines into unified, thematic blocks. The program uses faculty from several basic science and clinical departments to teach the developmental theme of the week. Relevant topics are taught from behavioral science,

preventive medicine, nutrition, legal/ethical principles, women's health, physical examination, interviewing, communication skills, and other disciplines as they relate to each developmental theme. To the extent possible, the academic content and activities are coordinated with other courses in the curriculum, particularly the basic sciences. To accomplish its learning objectives, the program uses a variety of teaching-learning formats, including lectures, conferences, small-group discussions, clinical case studies, laboratory assignments, preceptor experiences, community projects, and independent study. Students are evaluated regularly and given feedback in each week of the program so that they can gauge their own progress.

Discussion: An innovative, major curriculum component was developed in less than one year using existing faculty and resources. Ongoing evaluation of the program assesses whether its goals have been met, and the early results are positive. The LCP also is stimulating additional changes within the traditional curriculum. Finally, the program is the vehicle to establish and strengthen collaborative ties among the medical school, the local community, and community-based physicians.

Inquiries: John R. Boker, PhD, Assistant Dean for Academic and Faculty Affairs, University of Tennessee, Memphis, College of Medicine, 62 South Dunlap, Room 420, Memphis, TN 38163; e-mail: (jboker@utm.edu).



A Longitudinal Community-based Ambulatory Curriculum Using Community Preceptor-Resident-Student Teams

N. KEVIN KRANE, CATHY J. LAZARUS, AND SHEILA W. CHAUVIN, TULANE UNIVERSITY SCHOOL OF MEDICINE

Objectives: Tulane University School of Medicine is implementing and assessing a community-based, longitudinal, ambulatory health care curriculum to train future physicians to deliver high-quality cost-effective medical care. This educational research and demonstration project, begun in 1999, focuses on those skills and behaviors that future physicians must exhibit in the outpatient setting by creating learning teams of third-year medical students, internal medicine residents, and community preceptors. Program assessment, using unannounced standardized patients, compares partici-

pants' application of learned skills in the office setting with that of trainees who did not participate.

Description: This project combined a team-based experience in a community preceptor's office with a formal didactic curriculum. Sixteen third-year medical student volunteers were randomized into control and participant groups (eight students each). Eight internal medicine residents volunteered to participate and eight others agreed to serve as controls. Eight community internists agreed to serve as preceptors and eight others as controls. The participating students and residents were randomly paired to form eight learning teams, each assigned to a community preceptor's office one afternoon every other week for nine months, regardless of other clinical assignments. A faculty development program for the participating preceptors has used workshops, on-site consultation, and written and audiovisual materials. The residents have also participated in a teaching skills curriculum.

The curriculum is organized into five themes: caring for the individual patient, the office environment, the population perspective, information resources, and organizing, financing and evaluating care. Excellent communication skills, an ability to fit within the scope of a larger health care team, and knowledge about health care systems and managed care are essential elements. Subject matter experts present the topics in two-hour interactive sessions every other week; later that week, a resident leads a small-group activity that demonstrates the topic's application, reinforcing the role of the resident as teacher and team leader.

Unannounced standardized patients simulating a common primary care problem serve as the primary assessment tool. The ability of resident and preceptor participants to evaluate the standardized patient in the office setting will be compared with that of the controls using a pretest–post-test design. This office-based assessment strategy examines the real-life application of learned skills. The participating students and control-group students will complete an objective structured clinical examination before and after the project. Program assessment also includes interview, questionnaires, direct observation, document review, and focus groups.

Discussion: It is essential to determine the value of this curriculum in comparison with conventional training programs. The emphasis on learning teams and the use of unannounced standardized patients in physicians' offices are strong features of the program. Faculty development has emphasized the office setting and its members as a learning community. The standardized patients' checklists assess history taking, physical examination, patient management, patient education, communication, and office organization. A "shadow" health care organization was created to prevent detection of unannounced standardized patients. If successful, this project can serve as a model for team-focused curricula in other primary care disciplines.

Inquiries: N. Kevin Krane, MD, Tulane University School of Medicine, 1430 Tulane Avenue, SL-77, New Orleans, LA 70112; e-mail: (kkrane@tmcpop.tmc.tulane.edu).



A University Partnership for Longitudinal Ambulatory Care Education

MAXINE PAPADAKIS, MD, AND HELEN LOESER, MD,
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

Objective: Although medical students acquire extensive knowledge of pathophysiology, they receive relatively little knowledge about caring for patients and populations in managed care or integrated health care settings. Addressing this, the University of California, San Francisco (UCSF), designed a longitudinal, ambulatory-care experience for third-year students in collaboration with local managed care organizations. The primary objectives are to teach students the knowledge and skills needed to practice in those systems and to understand the physician's role in managed care.

Description: UCSF restructured its third-year clinical curriculum into two 24-week blocks and accommodates a longitudinal continuity experience in conjunction with block clerkships in family medicine, obstetrics/gynecology, pediatrics, and psychiatry. During the longitudinal experience, students attend a half-day weekly continuity clinic in an integrated health care setting and attend monthly small-group workshops on topics relevant to managed care. Students also work with a broad spectrum of health care professionals (e.g., utilization review nurses, pharmacy formulary committees, and discharge planners) and participate in prevention and health education programs for their patients. UCSF is one of eight partner schools in the U.S. Health Resources and Services Administration Undergraduate Medical Education for the 21st Century project.

Discussion: The first longitudinal clinic experience began in January 1999 with 26 students. When surveyed later, they identified these benefits of participation: 91% felt well prepared to work in multidisciplinary teams, 86% had learned about the operations of their integrated health care site, 82% were confident they could use clinical practice guidelines to deliver cost-effective care, and 64% could now provide population-based preventive care. The preceptors' feedback was also positive: 91% reported that the students had demonstrated initiative to learn about practice in integrated health care settings, and all were satisfied with the students' overall performance. One commented, "Student Doctor [X] showed an interest in the clinical and programmatic aspects of our program and clients that has been a pleasure to see. I am

happy that, through the program, students can learn about managed care and get direct experience with a public program like ours." Another remarked, "Student Doctor [Y] did an excellent job working with our primary care team—he developed a keen sense of using continuity visits to assess, diagnose and treat patients over time." An additional benefit is the strengthened partnerships for education with the three largest integrated health care systems in San Francisco (Brown and Toland Medical Group, the City and County of San Francisco's Community Health Network, and Kaiser Permanente).

The program was fully implemented in 1999–2000. The program certainly has challenges. From the students' perspectives, they must deal with the competing priorities of the longitudinal clinic and their core clerkships. The preceptors struggle to carve out time for teaching while clinical productivity standards continue to rise. Finally, the school must recruit enough high-quality preceptors. However, this program is successfully preparing students to care for individuals and populations in integrated health care systems by broadening their experience in such settings through a weekly longitudinal clinic and integrated curriculum.

Inquiries: Maxine Papadakis, MD, Associate Dean for Student Affairs, 513 Parnassus Avenue, S-245, San Francisco, CA 94143-0454.



Reducing Reliance on Hospitalized Patients for Undergraduate Clinical Skills Teaching in Internal Medicine

DONALD R. E. FARQUHAR, MD, SM,
QUEEN'S UNIVERSITY

Objective: Teaching clinical skills to undergraduates in internal medicine traditionally has relied on an accessible pool of hospitalized patients. Changes in health care delivery, however, have challenged this model significantly: Reductions in hospital beds and compressed lengths of stay have created a smaller, highly selected population of inpatients whose severity of illness and frailty often make them unsuitable for encounters with medical students. We designed and pilot-tested a model of clinical skills teaching that reduces reliance on hospitalized patients by using a combination of ambulatory clinic encounters and inpatient case scenarios.

Description: At Queen's University, the undergraduate clinical skills program spans each of the first three years. While the first and second years emphasize communication skills, history taking, and physical examination, the goal of the third year is to provide a consolidative experience with greater emphasis on applying clinical and basic science knowledge to the data they collect through history taking and physical examination.

In the third year, students meet in groups of four with a faculty tutor on two half-days per week for six consecutive weeks. In the traditional model, students interview and examine an inpatient on the first half-day and present their findings on the second half-day. In the new model, two students attend an internal medicine consultation clinic on the first half-day to see a newly referred patient and then, with the tutor, formulate a plan of management and follow-up. The remaining two students are given an inpatient case scenario outlining a patient's presenting history, physical findings, and laboratory data and are asked to prepare a written assessment of the patient's problem(s) in the same format that would be required in a hospital admission note, including a set of admission orders. The scenarios are selected so as to provide a sampling of the most common acute medical problems requiring hospitalization. On the second half-day, the students present their ambulatory cases and inpatient scenarios to the group. Assignments alternate biweekly, so that over the six-week course each student attends three clinics and analyzes three case scenarios. Direct faculty observation of the student's performance of the history and physical examination is mandatory in the first ambulatory encounter and optional in subsequent ones.

Discussion: Pilot-testing of the new model has yielded very positive feedback. Strengths of the ambulatory component, as cited by the students, include the breadth of clinical problems, the opportunity for immediate feedback from the tutor, and the sense of contributing to patient care in "real time." Moreover, the students feel that the inpatient scenarios provide a practical opportunity to prepare for their upcoming clerkship in medicine. Challenges to the new model include the constraints on ambulatory clinic space and the additional time commitment required by faculty tutors. We plan to expand this program in 2000–01 to include a greater proportion of the third-year class, and to undertake a formal evaluation in comparison with the traditional approach.

Inquiries: Dr. Donald Farquhar, Division of General Internal Medicine, Queen's University, Kingston, Ontario K7L 3N6, Canada; e-mail: <farquhad@hdh.kari.net>.