

Impact of Medical Student Experience on Patients' Willingness to Have Procedures Performed in the Emergency Department

Mark A. Graber, MD, Departments of Emergency Medicine and Family Medicine, University of Iowa

Background: One critical mission of academic emergency departments (ED) is medical student education. One facet of this education is the performance of procedures such as suturing, etc. The purpose of this study is to determine how many procedures ED patients believe that a medical student should have performed on other patients before they would allow a student to perform if on them.

Methods: One-hundred and ninety-six sequential ED patients were asked to complete a questionnaire about how they feel about medical students performing procedures on them in the ED. Patients were excluded if they were under age 18, prisoners, had psychiatric complaints, were unable to give informed consent, were unable to speak English, or were too sick to complete the survey.

Results:

No. of procedures	Drawing Blood	Starting IV	Suturing Arm	Suturing Face	LP	Central Line	NG Tube	Intubate	Cardio-version
None (would be medical student's first patient).	41.61	30.87	33.11	14.09	7.38	8.05	21.09	11.56	25.52
1-3	8.72	11.41	12.16	9.40	5.37	4.03	9.52	8.84	8.97
4-10	16.79	18.12	22.30	18.79	12.75	12.08	20.41	16.33	17.93
>10	12.08	13.42	10.14	15.44	20.81	20.13	15.65	16.33	11.03
Would never allow a medical student to perform this procedure on him/her	20.81	26.17	22.30	42.28	53.69	55.70	33.33	46.94	36.55
No. of answered questions	149	149	149	149	149	149	147	147	145

Conclusion: A majority of patients do not want to be the first patient that a medical student performs a procedure on and many prefer not to have a medical student perform procedures on them at all. This leaves us in a dilemma; if we include the number of

procedures a medical student has performed on informed consent documents, students may not be able to get experience with procedures in the ED. However, if we leave this information off of consent documents, we are not giving patients information that they believe is important. How to resolve this dilemma is a matter for further discussion in the educational community.

Format: Paper Presentation

Time slot: Sat., 8:30-10am

What is the Impact of Commercial Test Preparation Courses on Medical Examination Performance?

William C. McGaghie, Ph.D., Northwestern University
Steven M. Downing, Ph.D., University of Illinois at Chicago

Commercial test preparation courses are part of the fabric of North American medical education. They are also big business as 2000 sales for test preparation and professional training by Kaplan, Inc. in medicine and other professions was over \$244 million. This report reviews and evaluates research published in peer reviewed journals that addresses the impact of commercial test preparation courses on three categories of standardized medical examinations: MCAT, USMLE Steps 1-3 and its predecessors, ECFMG Written and Practical. A systematic search of seven literature databases yielded seven articles that address the research question. Together, the articles show that almost no details are given about the form and conduct of the commercial test preparation courses; evidence in support of the courses is weak or nonexistent; current research lacks control and rigor; studies are confined to courses in preparation for MCAT, the former NBME Part I, and USMLE Step 1, not tests of clinical science; the incremental validity of the courses on medical examination performance, if any, is extremely small; and that cost/benefit analyses of the test preparation courses have not been done. We conclude that the utility and value of commercial test preparation courses in medicine has not been demonstrated and that evaluation apprehension in the medical profession is responsible for their prosperity.

Format: Paper Presentation

Time slot: Sat., 8:30-10:00am

Delusions of Competence and Incompetence Are More Than Regression Effects

Mark A. Albanese, Ph.D., University of Wisconsin Medical School

The purpose of this study is to determine to what extent the phenomenon where low performers over-estimate their performance on exams and high performers under-estimate their performance can be attributed to regression effects. After completing the exam, second year medical students (N=143) estimated their performance on the course final in an Infection and Immunity course (IIF) in terms of both percent correct and percentile rank. Second year grade point averages (M2GPAs) were combined with the IIF results to form five subgroups: 1=lowest third on IIF and M2GPA, 2=lowest third on IIF only, 3=neither lowest or highest third on IIF, 4=highest third on IIF only, 5=highest third on IIF and M2GPA. Results showed no statistically significant difference between subgroups 1 and 2 or 3 and 4, suggesting that regression effects do not account for the phenomenon of low performers over-estimating their performance and high performers under-estimating their performance. Many forms of Problem-Based Learning (PBL), require students to assess their learning needs and set out a plan for meeting those needs. Recent studies have called into question whether low performing students can accurately assess their performance, finding that they tend to have substantially inflated perceptions of their capabilities. Determining whether these findings are real or an artifact of the research design is important to understanding the dynamic that underlies this finding. This study found that the tendency of the poorest performers to over-estimate their performance is not an artifact of the sampling design.

Format: Paper Presentation

Time slot: Sat., 8:30-10:00am

Reading Between the Lines: The Intentions of Letter Writers for Applicants to a Baccalaureate-M.D. Program

Brian Mavis, Ph.D., Michigan State University
Christine Shafer, M.D., Michigan State University

Each year, MSU-CHM accepts 10 high school students into an undergraduate enrichment program with guaranteed medical school admission. The purpose of this study was to determine if individuals who provide reference letters frame the task as “supporting” versus “evaluating” the applicant. Also of interest were the specific attributes describing applicants

Participants were letter writers (N=106) for applicants accepted or alternate for the 2002 Medical Scholars program. Participants received a brief anonymous survey that focused on letter writers’ perceptions of the task. A return postcard allowed individuals to release their past letter for content analysis.

Fifty-three percent of the letter writers (N=56) returned a survey. Most 37 (69%) intended to describe applicants’ positive accomplishments. When not well acquainted with the applicant, most (41%) would not provide a letter. When asked by an applicant with known negative attributes, many (36%) would not provide it, or would (33%) write a generic positive letter with nonspecific suggestions of concern.

Thirty-five respondents (33%) released their letter for content analysis. Most mentioned academic accomplishments (80%) and motivation (60%). Of the 36 categories of attributes examined, four varied by the sex of the applicant: morals and integrity, motivation and dedication, focus and discipline, and professionalism than for women. Most letter writers see their role as supportive rather than evaluative. A broad spectrum of positive attributes is included in letters; negative attributes are seldom mentioned. Academic accomplishments, though often mentioned, are available from other sources. Many non-cognitive attributes of most interest to admissions committees are least likely to appear in reference letters.

Format: Paper Presentation

Time slot: Sat., 8:30-10:00am

Pediatricians' Information Needs and Information Seeking Behaviors.

Donna M. D'Alessandro, MD, University of Iowa
Clarence D. Kreiter, PhD, University of Iowa
Michael W. Peterson, MD, University of Iowa
Peggy Kingsley, BA, University of Iowa
Jill Johnson-West, MSW, The University of Iowa

Little is known about the information needs and information seeking behaviors of general pediatricians. The availability of the Internet and digital libraries has changed the way medicine is practiced. The goal of this study was to characterize pediatricians' information needs and information seeking behaviors and specifically compare their use of computers before and after an educational intervention.

The intervention group received a 10 minute individual training session and handout on how to use a general pediatric digital library to answer professional questions.

Pediatricians were telephone surveyed using the critical incident technique over two 6 month time periods (Year 2000 = control, and 2001= intervention).

Demographics between control and intervention groups were not statistically different. 607 questions were collected. Infants (34.1%), pharmacology (34.1%) and infectious disease (9.1%) were the most common ages and specialties. Pediatricians were slightly less likely to seek answers after the intervention ($p=0.0124$); both groups citing lack of time. Each group was equally successful at finding answers ($p=0.6782$), but the intervention group took significantly less time ($p<0.001$). Pediatricians did use the digital libraries and computers more to answer their questions after the intervention and required less time.

Training pediatricians to use computer resources to answer clinical questions is effective. This study showed higher rates of physician questions pursued, answered and a higher rate of computer use at baseline and after intervention compared to previous studies. Success using computer resources to find answers is the same as other information resources but computer resources including digital libraries are more time efficient.

Format: Paper Presentation

Time slot: Sat., 8:30-10:00am

An Institution-Wide Assessment of Residents' Interpersonal and Communication Skills

Rachel Yudkowsky, MD, MHPE, University of Illinois at Chicago (UIC)
Les Sandlow, MD, UIC – Dept of Medical Education
Steven Downing, PhD, UIC – Dept of Medical Education
Barbara Eulenberg, , UIC – Dept of Medical Education
Allan Olthoff, MD, UIC – Dept of Family Medicine
Dennis Ommert, MD, UIC – Dept of Internal Medicine
Mihaela Popa, UIC – Dept of Medical Education

Purpose: To develop institution-wide standardized patient (SP) based Objective Structured Clinical Examinations (OSCEs) for the formative assessment of residents' interpersonal and communication skills. This paper reports on the first administration of the assessment to internal medicine and family medicine residents.

Method: The assessment includes six tasks: Giving bad news, obtaining informed consent, treatment refusal, domestic violence, patient education, and a focused history and physical exam. These tasks are assessed across all specialties, but the specific content of each task is specialty appropriate.

Each station includes a ten-minute encounter with an SP, a five-minute post-encounter interval while SPs complete a 19-item five-point rating scale, and five minutes of verbal feedback from the SP.

Results: Twenty two internal medicine and family medicine residents participated in the first administration of the assessment.

Coefficient alpha for each station ranged from .84 to .95. Alpha reliability for the test as a whole was .66. Individual resident case scores ranged from 2.4-5.0 (Mean 3.9, SD .64). Mean scores by case ranged from 3.7-4.0 with case SDs ranging from .40 -.81.

Residents felt that the portrayals were realistic, highly valued the verbal feedback from the patients and felt that the assessment experience was helpful overall.

Discussion: An SP-based OSCE can provide reliable information about residents' interpersonal and communication skills. Cases based on these six tasks are being developed for pediatrics, surgery, psychiatry, and other specialties. The assessment will be provided annually to all PGY2 and PGY3 residents at UIC-COM. Institution-wide assessment utilizes resources efficiently to provide useful information for individual and programmatic review.

Format: Paper Presentation

Time slot: Sat., 8:30-10:00am

Characterizing Student Performance Using Q-Sort Methodology

Maureen Valaski MHPE, University of Illinois at Chicago
Debra Klamen, MD, MHPE, University of Illinois at Chicago
Rachel Yudkowsky, MD, MHPE, University of Illinois at Chicago
Robert Mrtek, PhD, University of Illinois at Chicago

Standardized patients are typically asked to fill out Likert scales on students' performances in communication and interpersonal skills. Although these scales have proven adequate for tracking student performance, they do not give a helpful "snapshot" of the student that is useful for feedback. They also may present some confusion among students with regards to quality ratings versus 'opinions' of the standardized patients. The authors created a Q-sort using statements regarding interpersonal interaction and communication skills. The 43 item Q-set was sorted by standardized patients after their interactions with 162 students in two required workshops.

Five interpretable factors or "styles" emerged upon Varimax rotation of the sample.

- 1) Patient-Focused Style - (Hesitant Beginner) - Students who appeared insecure and awkward, although they seemed to take the problem seriously.
- 2) Patient-Focused Style - (Intermediate Communicator) - Students who performed well enough, and seemed to be trying to be compassionate and sensitive. Although they were not excellent in their communication skills, they did not otherwise turn the patient off.
- 3) Patient-Focused Style - (Capable Communicator)
- 4) Test-Focused Style - Students who seemed more concerned with "going through the motions" to score well on the test, rather than about the patient as a person.
- 5) Medical Problem-Focused Style - Students who seemed concerned about the problem, but not about the person.

We believe these five factors capture the essence of the communication and interpersonal skills of students as they are displayed in standardized patient encounters, and will be invaluable to the feedback the students receive.

Brown, SR: A primer on Q-methodology, *Operant Subjectivity*, 16(3/4):91-138; 1993.

Klamen DL, et al: The Effect of Medical Education on Student's Patient-Satisfaction Ratings. *Academic Medicine*, Jan;72(1):57-61; 1997.

Format: Paper Presentation

Time slot: Sat., 10:15-11:45am

Is the “Prestige” of a Medical School the Most Important Factor which Influences URM Students in Their Choice of Medical Schools?

Ara Tekian PhD, University of Illinois at Chicago

Laura Hruska, MEd, University of Illinois at Chicago

Mark Urosev, BA, University of Illinois at Chicago

Purpose. The purpose of this study was to investigate specific factors influencing underrepresented minority students' (URMs) choice among medical schools.

Method. Quantitative and qualitative pre-matriculate data was gathered from all applicants to the University of Illinois at Chicago College of Medicine (UIC-COM) for 1999/2000 and 2000/2001. Applicants were classified both by ethnicity and student groups listed as follows: interviewed and denied (ID); interviewed, accepted and matriculated (AM); and interviewed, accepted but declined the offer (AD). The descriptive statistics of the three student groups were analyzed using t-tests. A series of Chi-square tests of independence were performed to determine the relationship between being a member of a particular student group and choosing a particular medical school.

Results. MCAT scores were significantly higher for the AD group than for both the ID and AM groups, whereas GPA was statistically different only between the ID and AD students. Particular choices regarding the selection of a medical school such as the prestige and affiliation of their undergraduate institutions and medical schools, multiple acceptances, and choices among multiple acceptances were also statistically dependent on student groups and ethnicity.

Conclusion

The evidence supports that the perceived prestige of a medical school is a significant factor in influencing a URM's choice of a medical school and that distinguishable trends exist between AA and non-AA students.

Format: Paper Presentation

Time slot: 10:15-11:45am

Generating a Scoring Algorithm Based on Expert Performances

Clarence D. Kreiter PhD, University of Iowa College of Medicine

Tim Leaven, MA, University of Iowa College of Medicine

Thomas Haugen, MD PhD, University of Iowa College of Medicine

Fred R. Dee, MD, University of Iowa College of Medicine

Assigning valid and reliable scores to performance-assessments employing computerized patient simulations has proven difficult. However, under certain conditions it might be possible to define an “ideal” performance and utilize checklist-style scoring. PathCAPS software is a structured assessment/educational tool for patient simulation that is designed to emulate the pathology laboratory-based component of patient management. Within the simulations, examinees are asked to order tests, interpret results, diagnose and recommend treatment. The examinee can order from over 400 tests and procedures. A scoring system based on expert engagements with the system is described. A checklist-style scoring system is developed and examinee scores are quantitatively compared with expert performances. An all-inclusive checklist of actions is used to guide scoring. Weights based on the proportion of experts who select an item are used to calculate a final score. This score is designed to reflect the degree of similarity between examinee performance and expert performance. Validity studies will examine the degree of consensus between the experts. Qualitative analysis will examine whether the scoring algorithm fails to reward valid strategies employed by examinees. Global ratings will be correlated with quantitative scores. Generalizability studies will be conducted to examine the magnitude of the variance components that define total score variance. The decision study will examine the number of cases required to define competence and how varying the number of expert performances per case impacts the reliability of the final score.

Format: Paper Presentation

Time slot: Sat., 10:15-11:45am

The Relationship Between Medical Student's Performance Anxiety and Patient's Perceived Empathy: Does testing and clinical experience improve performance?

Rene J. McGovern, Ph.D., Kirksville College of Osteopathic Medicine, Case Western Reserve University

Jane Johnson, M.A., Kirksville College of Osteopathic Medicine

There has been much interest in how to evaluate and train medical students in empathy (Suchman, 1997; Colliver et al., 1998). Some suggest that during the natural course of traditional medical education, students become less empathic due to an emphasis on physical diagnosis and achievement, losing the very skill that facilitates patient success (Spiro, 1992). Recently, courses in "doctoring" and early clinical experiences have been created to enhance interpersonal clinical skills and create an active learning environment. To assess these important parts of the curriculum, the current study evaluated second and third year medical students on measures of anxiety and empathy, asking the questions, "Does student anxiety affect standardized patient's evaluation of student-physician empathy?" and "Do student-physicians' rating of empathy by standardized patients improve with clinical experiences?" Students from the classes of 2003 and 2004 participated in the study. Students from the class of 2003 were evaluated during their second year of medical school (N=24) and after their third year following clinical rotations (N=27). Students from the class of 2004 were evaluated after their second year, just prior to leaving for clinical rotations (N=138). Measures used were the State-Trait Anxiety Scale (Spielberger, 1983) and the Empathy Subscale of the Barrett-Lennard Relationship Inventory (BLRI). No significant relationship was found between State-Trait Anxiety and empathy ($p>0.89$). In addition, overall empathy ratings did not improve with either testing experience ($p=0.7$) or clinical experience ($p=0.55$). Implications of the results suggest that clinical experiences alone may not improve student-physician skills in empathy.

Format: Paper Presentation

Time slot: Sat., 10:15-11:45am

Conditional Reliability of Admissions Interview Rating Scales: Implications for Subjective Measurement

R. Brent Stansfield, Ph.D., OCRME, UIHC
Clarence D. Kreiter, Ph.D., OCRME, UIHC
Cathy Solow, UIHC

Objectives: Analysis of interview scores can maximize their reliability. This research is the first to the authors' knowledge investigating conditional reliability of subjective rating scales in education or psychology.

Methods: A set of applicants to a Midwestern university hospital medical school were interviewed on two consecutive years by different interviewers using the same structured interview process. Interviewers rated applicants on 5-point scales for a series of questions. A set of simulated applicants were created and rated by simulated raters using a completely unreliable scale; ratings were drawn randomly from a distribution matching that of the ratings in the observed sample. Statistical comparison of the inter-rater agreement in the observed sample to the simulated data allowed inference of conditional reliability for multiple levels of the rating scale.

Results: Low and high ends of the distribution of ratings showed high reliability, while the middle of the distribution showed almost no reliability. Moreover, the rating distribution appeared bimodal, indicating that raters basically used the scale to make binary decisions; the rating scale appears most reliably to differentiate poor and good applicants.

Significance: According to these results, interview scores should not be treated as linear variables and combined with MCAT and GPA scores to effectively evaluate applicants. Rather, the most informative cut-off score can be deduced from this analysis so ratings can be treated as binary (poor/good) information. This finding may extend to other areas of assessment that use subjective rating scales, such as program evaluation, peer review, and student surveys.

Format: Paper Presentation

Time slot: Sat., 10:15-11:45am

Prediction of Step I and Step II USMLE Scores from COMLEX-USA Scores

Philip Slocum, D.O., Kirksville College of Osteopathic Medicine

Jane C. Johnson, MA, Kirksville College of Osteopathic Medicine

Objective: Graduates of osteopathic medical schools frequently seek graduate medical education in allopathic programs. One concern expressed by these graduates is that they feel compelled to take USMLE exams in addition to COMLEX-USA exams in order to feel competitive with their allopathic counterparts. This study examined the relationship of scores from the COMLEX-USA and the USMLE exams.

Methods: Data from a cohort of 155 students from an osteopathic medical school who took both the COMLEX-USA and USMLE Step I exams and a cohort of 56 students who took both Step II exams was analyzed using Pearson correlation and regression.

Results: The mean(\pm sd) score on Step I of COMLEX-USA was 549(\pm 73), Step I of USMLE was 201(\pm 22), Step II of COMLEX-USA was 575(\pm 86), and Step II of USMLE was 200(\pm 22). The Pearson correlation coefficient of the scores from the Step I exams was 0.83 ($p < 0.0001$) and the Step II exams was 0.70 ($p < 0.0001$). The Step I USMLE score is predicted by the corresponding COMLEX-USA score using the equation $y_I = 67.97 + 0.24 \times x_I$ ($R^2(\text{Prediction}) = 0.68$). The Step II USMLE score is predicted by the corresponding COMLEX-USA score using the equation $y_{II} = 102.21 + 0.18 \times x_{II}$ ($R^2(\text{Prediction}) = 0.46$).

Conclusion: There is a correlation between the scores on both Step I and Step II of COMLEX-USA and the corresponding USMLE exams. USMLE scores can be predicted from COMLEX-USA scores moderately well, indicated by $R^2(\text{Prediction})$ values. The unexplained difference between the two exams could result from additional material included on the COMLEX-USA.

Significance: Osteopathic medical students can demonstrate their proficiency through COMLEX-USA exams only.

Format: Facilitated Poster

Time slot: Thurs., 6-8pm

Explaining the effects attributed by simulated patients (SPs) to Participating in medical education programs

Joshua Chapman, B.S., University of Minnesota
Ilene Harris, PhD, University of Minnesota
David Power, MD, MPH, University of Minnesota

Purpose: Previous studies have shown that the experiences serving in teaching and evaluation situations significantly impact simulated patients (SPs). These studies identified numerous effects, but little has been offered that explains what might lead to these effects. In this study, we sought to provide further explanation for the perceived effects identified by patients in previous studies, including our own.

Method: We elicited written feedback from SPs, using structured and open-ended questions. For example we asked, “Choose the effect that has been most important to you and describe the circumstances through which this effect was realized (you may wish to tell a story or give an example).” In addition, we selected individuals for structured interviews using a “purposeful sampling” approach. Patients’ responses were analyzed, using descriptive statistics for structured questions, and standard qualitative research methods for responses to open-ended questions.

Results: Patient responses were strikingly thoughtful and informative. Effects perceived by patients included benefits to one’s own health care, the opportunity to perform meaningful work, and psychosocial effects of serving in teaching and patient roles. Explanations related to positive and negative effects included, among others, specific interactions with students and physicians, internal realizations or changes in perspective, and observations about the role of SPs in medical education.

Conclusion: Clearly, programs could benefit from further explanation into the various effects that SPs attribute to their participation. An improved understanding of these effects may enable programs to positively impact a greater number of patients, while limiting situations that lead to negative experiences.

Format: Facilitated Poster

Time slot: Thurs., 6-8pm

Changing Medical Students Knowledge of, Attitudes About, and Contact with Older Adults: Measuring the Impact of a Geriatrics/Gerontology Curriculum Initiative

Kim McNeley, Ph.D., University of Missouri, Kansas City SOM

Carolyn K. Shue, Ph.D., University of Missouri, Kansas City – SOM

Louise Arnold, Ph.D., University of Missouri, Kansas City – SOM

Purpose. Research indicates that increased gerontological knowledge and personal interaction with well older adults improve caregivers' attitudes. This study assessed changes in medical students' knowledge of and attitudes about older adults and older patients prior to and upon conclusion of their participation in an 18 month geriatrics/gerontology curriculum. Curriculum components involved both formal instruction and the pairing of students with healthy older adults in a retirement community. Through the establishment of mentor relationships, the students were able to create interpersonal relationships with older adults that increased their contact with and participation in an aging community.

Methods. A survey was administered to Year 1 students during orientation to medical school. The survey consisted of items from standard knowledge and attitudinal questionnaires about aging and older adults as well as researcher constructed items targeting attitudes toward older patients, contact with older adults, and students' demographic characteristics. Those students who successfully completed the geriatrics/gerontology curriculum and promoted to Year 3 were administered the survey again as a posttest assessing changes in their knowledge of and attitudes about older adults.

Results. Prior to participation in the geriatrics/gerontology curriculum, students lacked knowledge of the aging process. After fulfilling curriculum requirements, students' knowledge scores increased on average 21 percentage points. Changes in specific knowledge content areas (i.e., medical issues, psychosocial issues) will be explored. Additional analysis will examine changes in student attitudes of the aging process and the relationships between knowledge, attitudes, gender, and ethnicity.

Format: Facilitated Poster

Time slot: Thurs., 6-8pm

Student-Facilitated Small Group Learning in Cardiovascular Physical Diagnosis

Cathy Logue RN, MA, University of South Dakota School of Medicine
Robert C. Talley, MD, University of South Dakota School of Medicine
Maureen Battistella, MLS AHIP, University of South Dakota School of Medicine
Susan Anderson, MD, University of South Dakota School of Medicine

Objectives.

Constructing meaningful active learning experiences for a class of 50 students with only one instructor can be a challenging task. One way to design an active learning class with limited teaching faculty is to use students as small group learning facilitators. This poster describes how student-facilitated groups are used to create rich and engaging educational experiences in a five-week cardiovascular physical diagnosis module in Introduction to Clinical Medicine.

Methods.

2002 peer and module/course evaluation data and students grades were analyzed to examine these research questions:

- 1) are peer evaluations of group leaders consistent with faculty evaluations of group leaders?
- 2) are peer evaluation results different for group leaders and group members?
- 3) is there a correlation between peer evaluation results for groups and module grade for students in the group?

Module evaluation data is also presented to reflect student satisfaction with the course module and with their personal learning.

Results.

In three of the six teams, student peer evaluation of team members reflected faculty identification of students with the highest potential for facilitation. Student leaders were rated more highly with respect to facilitation in all but one of the twelve evaluation aspects. Paper patient team exercises were rated more highly than other course components. Correlations between team evaluation results and module grades are in progress.

Educational Significance.

Students can be used to facilitate small groups, enhancing their own skills while doing so and increasing active learning opportunities in large classes.

Bibliography.

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Format: Poster Time slot: Thurs., 6-8pm

“Survival Skills”—The development and evaluation of a new workshop for orienting third year medical students to the hospital environment.

Amanda Ebright, MD, Mayo Medical School, Rochester
Robert Tiegs, MD, Mayo Medical School
Jeanne Huddleston, MD, Mayo Medical School

Background

At our institution, students transitioning into third year clerkships have not received orientation to the logistics of providing patient care in the hospital environment. A hospital “Survival Skills Workshop” (SSW) was developed and evaluated to determine the need for a formal curriculum.

Methods

A needs assessment was performed by surveying clerkship directors and students. A query to the AAMC list-serve identified orientation practices at other institutions. Using information from both sources, a 2.5-hour workshop was developed and piloted. SSW attendees completed an evaluation at the workshop and 6-8 weeks later.

Results

The needs assessment determined that 78% of medical students favored an SSW in contrast to 33% of clerkship directors. Workshop topics included: presentation skills, order and note writing, and tips from 4th year students. Order writing and student advice were felt to be most helpful. Dictation skills (78%) and discharge summary preparation (67%) were the leading recommendations for future workshops. Of the attendees, 76% indicated some anxiety about starting clerkships and 82% felt the SSW decreased their anxiety. All students initially rated the SSW as “helpful” or “very helpful” and 89% did so at 6 week follow up. All but one student indicated they would recommend the workshop to the upcoming class.

Conclusions

Preliminary data suggests the Survival Skills Workshop reduced student anxiety and provided a useful skill set for the clinical environment. Based on feedback, future workshops will incorporate practical skills not formally taught elsewhere in the curriculum and provide an opportunity to model best practices.

Format: Facilitated Poster

Time slot: Thurs., 6-8pm

Course Evaluation Methods and Management: A 2002 Survey of CGEA Institutions

Janet Lindemann, M.D., University of South Dakota School of Medicine
Maureen Battistella, MLS, University of South Dakota School of Medicine
Patrick Redinius, MS, ABD, University of South Dakota School of Medicine
John Thomas, PhD, University of South Dakota School of Medicine

Objective:

The objective of this research was to determine how course evaluations are administered and managed at Central Group on Education Affairs (CGEA) institutions.

Methods:

In early 2002, a telephone survey was administered to 22 CGEA institutions asking whether course evaluations were 1.) administered centrally, 2.) of standard format, 3.) using online or paper method, and, 4.) if online, using what software. Respondents were also asked 5.) what aspects of the course were evaluated, 6.) to whom the evaluations were reported, 7.) whether anonymous or signed, and 8.) what was being done to improve student response rate.

Results:

Course evaluations are administered centrally at 59% of the responding institutions with another 32% having at least some central oversight. Only 14% of institutions have no standardization of evaluation questions, while all others are to some extent standardized. Evaluation reports go only to course directors in 18%, course directors and dean in 18%, course directors and a curriculum committee in 18%, and to all three in 32%. Another 14% also share the reports with students. Course items evaluated include administration, lectures, and student participation. Thirty-six percent are using a computer-based evaluation, 32% a paper form, and 32% some of each. Of a mix of platforms, WebCT® is most popular (21%). Anonymity of respondents is maintained in all but 9% and a variety of incentives are used to boost response rate.

Conclusions:

Course evaluation is predominantly centralized, standardized, and shared and is moving towards computer-based administration at most institutions.

Format: Poster

Time slot: Thurs., 6-8pm

The Validity of Student Evaluations of a Rotation

R. Brent Stansfield, Ph.D., OCRME, UIHC

Bruce Johnson, M.D., UIHC

Susan Lench, Ph.D., OCRME, UIHC

Barcey Levy, M.D., UIHC

Jerry Woodhead, M.D., UIHC

Joel Gordon, M.D., UIHC

Objectives: What does a student's evaluation of a course mean? Does it inform us more about the quality of the teaching or the quality of the student? The structure of a multi-site Ambulatory Practice Module rotation provided a natural experiment allowing a validity study of student evaluations.

Methods: Students participated in a rotation in which the same content was taught in parallel at several sites by different faculty, and some sessions involving all students were taught at one site. Student evaluations of site-specific and general sessions were correlated with test-score variance from site-specific sources, content-specific sources, and student-specific sources.

Results: Certain sites and certain content areas showed significant correlation with student evaluations, validating their use in course evaluation. Not all variance was predicted by student evaluation, however, suggesting guidelines for their use.

Significance: Student evaluations are often taken at face value with little evidence that they accurately reflect teaching effectiveness. These data indicate to what degree teachers should or should not take student ratings as indicators of teaching quality.

Format: Poster

Time slot: Thurs., 6-8pm

Use of Problem-solving Frameworks in Problem-based Learning

Susan Lenocho, M.A., The University of Iowa/Roy J. and Lucille A. Carver College of Medicine

Marcy Rosenbaum, Ph.D., University of Iowa

Kristi Ferguson, Ph.D., University of Iowa

Purpose: To determine to what extent PBL-type groups make use of a structured framework for approaching case-based problems and how such use affects learning.

Methods:

12 groups from 22, PBL groups in a first-year medical course were randomly selected and invited to participate in the study. Eight groups, consisting of 7-8 students and one faculty facilitator, agreed to participate.

Records of each group's board work were collected across multiple discussion sessions on the same case. Other data included interviews with students about their group's problem-solving approaches, separate interviews with facilitators, student perceptions of their confidence in knowledge about the case, and performance on exam questions that were relevant to the case. Groups were characterized and assigned a numeric score reflecting the degree to which they used a framework advocated by the course director (facts, problems, hypotheses, need to know, learning issues). Groups with similar problem-solving approaches were combined and compared on quality of learning issues, exam performance, and confidence in knowledge.

Results:

Most groups used the problem-solving framework but differed in the degree to which they adhered to it. Significant differences were detected in the quality of learning issue topics, but not in exam performance or confidence. Analysis of other facilitator/group characteristics is ongoing.

Educational significance:

Several factors affect learning via PBL-type groups, including group problem-solving ability, which in turn may be facilitated by use of a scaffolding framework. Therefore it is important to examine whether, and how, use of a framework affects problem solving and learning.

Format: Poster

Time slot: 6-8pm

Staying on the Medical School Island: Medical Students' Stress and Their Use of Diverse Coping Strategies

Arif Kamal, Year 4 Medical Student, University of Missouri, Kansas City - SOM
Carolyn K. Shue, Ph.D., University of Missouri, Kansas City - SOM

Purpose: Medical students discover and employ diverse stress coping techniques during their medical training from personal care techniques such as exercising and reading non-textbooks to substance abuse techniques such as binge drinking and using illicit drugs. Attention has focused on the more negative ways that college students may cope with stress, but investigating more positive coping strategies is essential to form a composite picture of medical students' stress and their coping strategies.

Methods: Students were asked to voluntarily reply to a survey administered in either their class or in their school mailbox. The survey instrument was composed of questions from the Young Adult Social Support Inventory, Costello-Comrey Anxiety Scale, Multidimensional Scale of Perceived Social Support, medical school-oriented questions, and a coping strategies inventory.

Results: Medical students reported feeling low to moderate stress in general and moderate stress in medical school. Subsequent analysis indicated that a positive correlation existed between the two variables. Personal care techniques utilized to relieve stress were talking to friends, napping, and watching television. Substance abuse techniques utilized to relieve stress were smoking cigarettes, drinking alcohol socially, and using marijuana. Overall, substance abuse techniques were used less often compared to personal care techniques and considered less helpful in the relieving of stress. Students reported that the most helpful sources of social support during times of need were their parents, college friends, and siblings. Additional analysis explored the relationships between stress, coping, age, sex, and relationship status. Discussion of and implications for these results are presented.

Format: Poster

Time slot: Thurs., 6-8pm

Evaluation of Two Internal and Two External Assessments as Predictors of Student Success on the USMLE Step 1

Robyn A. Gandy, Ph.D., Medical College of Ohio
Patricia J. Metting, Ph.D., Medical College of Ohio
Christine Taylor, Ph.D., Medical College of Ohio
Carol Bennett-Clarke, Ph.D., Medical College of Ohio
Howard Rosenberg, M.D., Ph.D., Medical College of Ohio
Debra Buchman, Ph.D., R.N. , Medical College of Ohio

The purpose of this study was to evaluate four possible predictors of passing the United States Medical Licensure Examination (USMLE) Step 1. Two hierarchical regression analyses were performed (SPSS 10.1), in which the final grades in two pre-clinical curricular blocks, Human Structure and Organ Systems, were entered into both models followed by one of two USMLE Step 1 “practice tests,” the National Board of Medical Examiners Comprehensive Basic Science Examination (CBSE) and Lippincott, Williams and Wilkins’ Medrevu - Diagnostic 180 (MD-180). A total of 129 second-year medical students consented and took the USMLE Step 1 ($\bar{X} = 215.8$, $SD = 22.9$), Human Structure block ($\bar{X} = 81.2$, $SD = 6.8$), Organ Systems block ($\bar{X} = 82.4$, $SD = 6.9$), and the CBSE ($\bar{X} = 82.4$, $SD=7.8$). A total of 96 students also took the MD-180 ($\bar{X} = 49.5$, $SD= 6.2$). All four predictors were statistically significant. The final grades in Human Structure and Organ Systems accounted for 46.8% of the variance in the USMLE Step 1 scores. The CBSE accounted for an additional 15.9% and the MD-180 accounted for an additional 18.6% of the variance above that attributed to the curricular grades. The total amount of variance in the USMLE Step 1 scores explained by either model was approximately 64%. Our data demonstrate that the performance in two portions of our curriculum was a good predictor of success on the USMLE Step 1, though scores on either of the Step 1 “practice tests” significantly improved the predictive model.

Format: Poster

Time slot: Thurs., 6-8pm

Shifts in Perceptions of Ideal Learning Environment: Pre- and Post-Questionnaire
Statistical Results from an Ambulatory Pediatric Clerkship Experience

Gary L. Beck, B.S., University of Nebraska Medical Center
Mihaela T. Matache, Ph.D., University of Nebraska at Omaha, Dept. of Mathematics
Fredrick A. McCurdy, M.D., Ph.D., M.B.A., University of Nebraska Medical Center
Department of Pediatrics

Introduction: Pediatrics is primarily an ambulatory specialty. Consequently, the UNMC Pediatrics Clerkship was modified to reflect this practice. A community practice option was also added in lieu of the traditional University course. Students opined they felt the inpatient ward was the most ideal for learning pediatric medicine despite giving excellent overall course ratings. The objective of this study was to determine if preconceived opinions about learning environment changed from day one of the course to the end. **Methods:** Each student is required to complete a precourse questionnaire and end of clerkship critique. The following question was placed on each: “What environment do you find to be most conducive for learning pediatric medicine and why?” Options included inpatient wards, outpatient clinic, and other. Blanks were indicated as no opinion in the dataset. **Participants:** 356 Students completing the pediatrics clerkship from 1999 to 2002. **Results:** Survey results are in Table 1.

Table 1. Pre- and Post-Questionnaire Results

	<u>Precourse Selection</u>	<u>End of Clerkship Selection</u>
Inpatient Wards	150	119
Outpatient Clinic	84	148
Both inpatient and outpatient	81	82
No opinion	41	7

Various tests of statistical hypotheses and analysis of variance were performed, which will be presented in detail. Our data demonstrate a shift toward a preference for the outpatient setting. In addition, we found a positive correlation of a precourse preference for inpatient when OB/GYN preceded pediatrics. **Conclusions:** Preference for a specific site of instruction may be influenced by prior experience and modified by offering a high quality alternative learning environment.

Format: Poster

Time slot: Thurs., 6-8pm

Medical Resident Perspective on Professionalism

Joseph York, PhD, University of Illinois at Chicago
Laura Hruska, MEd, University of Illinois at Chicago
Gerald Stapleton, MEd, University of Illinois at Chicago
Leslie Sandlow, MD, University of Illinois at Chicago

Objective

The Accreditation Council for Graduate Medical Education (ACGME) and the American Board of Medical Specialties identified “Professionalism” as one of six core, or general competencies that medical residents must demonstrate before completing their residency training. A baseline is needed if institutions want to develop programs to increase knowledge and competency in professionalism, which is the focus of this study.

Methods

The University of Illinois College of Medicine offers a short course entitled *THE NATURE AND SCOPE OF PROFESSIONALISM IN MEDICAL PRACTICE* as part of its on-line Graduate Medical Education core curriculum. Responses from the first exercise which solicit resident medical professionalism definitions were analyzed using NUD*IST software to categorize the responses of 412 residents from 17 different institutions from August 1999 to May 2002. The ACGME description of professionalism (*professional responsibilities, ethical principles, sensitivity*) served as the framework.

Results

Three main ACGME dimensions divided into subcategories creating a hierarchical structure. The dimension of ‘professional responsibilities’ branched into skills and knowledge. ‘Sensitivity’ branched into several humanistic traits of which some further divided into sub-categories(e.g. respect – self, patient, colleagues). The ‘ethical principles’ dimension included four principles some of which also branched into subcategories: care (providing, withholding), confidentiality, informed consent, business-practice (against clinic, against patient). Overall residents provided multiple ‘sensitivity’ descriptors, and identified ‘professional responsibilities’ but did not expound on ‘ethical principles.’

Educational Significance

Clear gaps in the residents understanding of medical professionalism as described by the ACGME were identified. Therefore, viewing professionalism as a complex structure provides a framework for instruction and assessment of residents.

Format: Poster

Time slot: Thurs., 6-8pm

Does Curricular Alignment Affect Student Preceptorship Performance?

Becky Dawson, B.S.E., Kirksville College of Osteopathic Medicine
Barbara Kimberly, Kirksville College of Osteopathic Medicine

Beginning in 1998, significant changes directed toward greater coordination of the curriculum were implemented at KCOM. The first was a longitudinal primary care skills course, which combined a number of primary care topics/courses (Physical Exam Skills, Communication Skills, Death and Dying, etc.) previously taught in a “patchwork” pattern during the first two years.

In 1999, the content of Osteopathic Theory and Methods was coordinated with Gross Anatomy, Histology/Embryology, Radiology and Physical Exam Skills in order to teach the Anatomical and Functional Foundations of Osteopathic Medicine (AFFOM).

In the academic year of 2000-2001, the Principles of Medicine I, II and III courses were instituted. These are integrated internal medicine courses consolidating eight areas of internal medicine (i.e. cardiology). It shifted the emphasis from subspecialty medicine to primary care internal medicine. During the same year, the Principles of Surgery I and II courses were also instituted. These courses combined general and subspecialty courses and aligned topics with various Principles of Medicine topics. Surgery II included a manikin-based surgery lab.

Neuroscience I and II, introduced in 2001, integrated information previously presented in Neuroanatomy, Neurophysiology, Neurology and a few hours of related Pharmacology. With these changes in the first- and second-year curriculums, it is important to assess the effect on students’ preceptorship performance. Using qualitative performance evaluations from preceptors, comparisons were made between classes that matriculated at each stage of the curriculum evolution. Comparisons between classes are in the dimensions of Medical Skills, Communication Skills, and Professional Skills.

Format: Poster

Time slot: Thurs., 6-8pm

Up to Date vs. Out of Date?

Andrew Bland M.D., Carver College of Medicine at the University of Iowa
Joel Gordon, M.D., University of Iowa Carver College of Medicine

Background: The internet has increased the availability of medical knowledge to medical students. A web-based version of Up-To-Date (UTD) became available at no charge to students at the University Of Iowa Carver College Of Medicine during the 2001-2002 school year. We were interested in whether UTD supplemented or replaced traditionally used resources.

Methods: We reviewed the bibliographies of students who presented “learning issues” after completion of 3 case-based computer assisted learning assignments over the last 5 school years. Resources used by the students were classified into 4 categories: Textbook, Journal, UTD, and other web based resources. Two-hundred-eighty-four student’s presentations were reviewed. The data on resource use was compared using analysis of variance.

Results: Each year averaged about 2.5 presentations per student with a total of about 10 resources used per student. There was a statistically significant increase in the use of UTD during the 2001-2002 school year 2 citations per student vs. 0 citations per student on average over the 4 previous years. There was no concomitant decrease in textbook use seen during this time. There was a statistically significant decrease in journal use between 2001-2002 and the other school years. Journal use decreased by about 2 citations per student in 2001-2002 over the previous 4 years. A statistically significant increase in web based resources was also noted.

Conclusion: Student use of UTD supplants the use of journals, but not the total number of resources used in these student learning issue reports. UTD changes learning behavior of medical students.

Format: Poster

Time slot: Thurs., 6-8pm

The Interplay of Communication Competence, Apprehension, Anxiety, and Performance in the Assessment of Medical Students' Communication Abilities

Carolyn K. Shue, Ph.D., University of Missouri, Kansas City - SOM

Darci Graves, MA, University of Missouri, Kansas City – SOM

Louise Arnold, Ph.D., University of Missouri, Kansas City – SOM

Purpose. Several factors can influence medical students' performance during an interview. The purpose of this study is to examine the degree of anxiety and confidence experienced by the student in relationship to student performance during a communication exercise.

Study Context. As part of the geriatrics/gerontology curriculum, Year 2 students received communication skills instruction and were paired with a healthy older adult to serve as a mentor on aging. Students meet with the mentor over an eight month period interviewing their mentor regarding the psychosocial aspects of aging after which they participated in a performance-based assessment of their interviewing skills.

Methods. Prior to the assessment, students completed self-report measures of communication competence and apprehension. They also provided information regarding their experiences with and perceptions of the importance of communication training.

During the assessment, trained older adults served as interviewees and evaluators of the students' communication abilities. After the assessment, students rated their own performance and completed a measure of situation anxiety.

Results. While students believed communication training tailored for the practice of medicine was important, they moderately valued general communication training. Students' ratings of their own communication apprehension, competence, situation anxiety and performance were significantly related. However, there was no relationship between students' self-report of competence, apprehension, anxiety, or performance and the evaluator's ratings of student performance. There was a relationship between the evaluators' ratings of students' information gathering skills and interpersonal communication abilities. Possible explanations and implications for the results will be explored.

Format: Poster

Time slot: Thurs., 6-8pm

Correlation of NBME Shelf Exam Performance with Basic Science Course Achievement in an Osteopathic Medical School

Rebecca McClure, M.M., Kirksville College of Osteopathic Medicine

Becky Dawson, BSE, Kirksville College of Osteopathic Medicine

Performance profiles received from the National Board of Medical Examiners Comprehensive Basic Science Examination given April 1, 2002 at the Kirksville College of Osteopathic Medicine show overall scores and performance bands indicating areas of relative strength and weakness for 136 participating students in 18 basic science disciplines. The data was not broken down by discipline. Questions arose as to (1) whether a correlation exists between the individual scores obtained by the 136 students and their class rank; (2) whether a correlation exists between individual test/course grades obtained by students for four of the eighteen disciplines on the exam more closely aligned with the KCOM curriculum and exam scores for those four disciplines; and (3) whether a correlation exists between the average scores for those same four disciplines and the chronological order in which those disciplines were presented at KCOM, possibly affecting curriculum decisions for the school. The four courses were: Cardiovascular System, Gastrointestinal System, Pathology, and Respiratory System.

Performance bands representing exam results were comprised of rows of X's showing low to high range on each student's score sheet for all 18 disciplines. Numeric values were assigned to the X's to facilitate manipulation of data.

The data showed a fairly significant correlation between class rank and performance on this exam, while a less significant relationship between test/course grades for the four disciplines mentioned above and the NBME Exam scores was evident. Similarly, a strict correlation was lacking between overall performance in the four disciplines and the order in which the disciplines were presented.

***National Board of Medical Examiners Subject Examination Program NBME
Comprehensive Basic Science Examination Score Interpretation Guide for Students,
2002.***

Format: Poster

Time slot: Thurs., 6-8pm

Is There a Differential Cognitive Impact of Basic Science and Performance Based Learning?

R. Brent Stansfield, Ph.D., OCRME, UIHC

Objectives: An experiment investigates how the shift from a basic science to a performance-based curriculum affects the structure of students' medical domain-specific knowledge.

Significance: Knowledge structures correlate with decision-making, memory, and judgment. Measuring how they change as a function of pedagogical method informs us of the effectiveness of our teaching. As more medical schools are integrating performance-based learning methods, the effects of a hybrid system are worthy of study.

Methods: Students make simple similarity judgments about domain-related concepts. Multi-dimensional scaling analysis of these judgments---patterned after McGahie et al (2000)---allows inference of whether students' knowledge structures resemble those of clinicians or of basic science faculty before and after the shift. A comparison of these structures by students' year (second, third, and fourth) and department (medical or graduate school) reveals how divergent the students are in their understanding of the same material as a function of their education.

Results: Methodology and preliminary data will be presented suggesting that medical students' knowledge structures do not deviate substantially from those of graduate students or basic science-faculty until performance-based education begins.

Format: Poster

Time slot: Thurs., 6-8pm

Changes in Feedback Behavior Following an Iterative Faculty Development Course

Mark H. Gelula, PhD, DME, University of Illinois at Chicago

Rachel Yudkowsky, MD, MHPE, DME, University of Illinois at Chicago

Objective:

We examined the impact of an instructional program on two feedback behaviors and an “overall rating” for ten participants over six months.

Method:

The program consisted of three, 3-hour workshops with 5-6 participants. The first two workshop interventions were separated by two weeks. Six months later an “advanced” workshop was held. Prior to each intervention participants were videotaped during two feedback encounters with trained and scripted standardized students. Feedback behaviors demonstrated on the six videos were rated by the authors with an author developed instrument.

Results:

Subjects were ten faculty from the Colleges of Medicine, Dentistry and Pharmacy who completed the program by June, 2001. We looked for improvement from baseline and maintenance of skill. For “informing students that feedback was being delivered” Ss improved significantly between each stage (Wilcoxon Signed Ranks Test:

Stage 1-2 $Z = -2.67$, $p = .004$;

Stage 2-3 $Z = -2.041$, $p = .02$,

Stage 1-3 $Z = -2.312$, $p = .01$).

On “description of the specific feedback issue” Ss improved significantly between stages 2 and 3 ($Z = -1.857$, $p = .03$), but not between stages 1 and 2 nor between stages 1 and 3.

On the “overall rating” the changes from Stage 1 to Stage 2 were significant ($Z = -1.784$, $p = .05$). Importantly, the regression from Stage 2 to Stage three was not significant ($Z = -.868$, $p = .1$); nor was that from Stage 1 to Stage 3 ($Z = -.918$, $p = .2$).

Conclusion:

Greater and more frequent reinforcement appears to be needed to assure change and maintenance of feedback skills.

Format: Poster

Time slot: Thurs., 6-8pm

The MCAT as a Predictor of USMLE Step 1 Failure: A Multi-institutional Perspective

Mark A. Albanese, Ph.D., University of Wisconsin Medical School

Jerry Colliver, Ph.D., Southern Illinois University Medical School

William C. Mootz, M.D., Saint Louis University School of Medicine

Ara Tekian, Ph.D., University of Illinois School of Medicine

Low MCAT scores have been related to failure on the USMLE Step 1 exam in a number of studies. In 2001, Dr. Jordan Cohen, President of the AAMC, called for medical schools to consider using an MCAT threshold to eliminate high risk applicants from consideration and then to use non-academic qualifications for further consideration. There has been some data reported which supports this approach to using the MCAT in admissions, however, it has been reported in many different ways and over various time periods, making comparability problematic. This symposium will report data on the relationship of MCAT scores to USMLE Step 1 failure in terms of individual MCAT subscores and as a total sum of the three numerical subscores for data between 1992-2002 from four separate Midwestern medical schools. Preliminary studies suggest that there are comparable results from the various institutions. The use of single and multiple cutpoint methods will be modeled for these data and the results discussed in terms of between school variability, differences in findings depending upon what types of statistical analyses are used and the implications of the results for admissions decisions. At least one of the participating schools has implemented a threshold approach advocated by Dr. Cohen and will report on the impact it has had on admissions committee deliberations and the performance of students in medical school and on USMLE Step 1.

Format: Symposium

Neurological Exam and Problem-solving by Year 2 Students:
Perceived Confidence and Rated Performance

Kathryn L. Lovell, Ph.D.

Jane Turner MD

Dianne Wagner MD

Brian Mavis MD

Michigan State University College of Human Medicine

Purpose: Performance Based Assessment (PBA) events in our curriculum have been designed to evaluate second-year medical students' abilities to integrate basic clinical skills and medical knowledge. In the spring 2002, we assessed students' subjective prior confidence as well as actual performance related to performing and interpreting a neurological exam.

Methods: Second-year medical students participated in the neurological PBA after completion of relevant course exams. Prior to the encounter with a standardized patient (SP), students (N=101) completed a survey form to assess confidence related to the neurological exam (11 items.) Following the encounter, students reported opinions about aspects of the experience (10 items.) The SPs completed a checklist for 50 items in the neurological exam, and rated overall performance.

Results: Students indicated a wide range of confidence on a single item for ability to perform a complete screening neurological exam with a mean of 3.1 (five-point rating scale, 5=very confident.) This mean was lower than for items addressing subsections of the exam (e.g. motor; mean=3.5). After analysis of checklists, 28% of students were rated as "needs improvement" on the neurological exam. Correlations between individual student confidence and performance will be presented.

Conclusions: Results for both student confidence and performance provided useful information regarding effectiveness of teaching strategies. While many students demonstrated excellent skills, knowledge, and problem-solving ability, some students were deficient even after passing written course examinations. Changes are in progress to target this category of students.

The Upgraded Rheumatology Elective Curriculum: A Status Report
Anne G. Minenko, MD, FRCPC
University of Minnesota

Objective

Internal Medicine residents from the University of Minnesota have under performed on the rheumatology section of the ABIM In-training and Certification Examinations. The clinical case-mix and case-volume of the Rheumatology Elective are unknown. Time constraints and inefficiencies of the outpatient teaching clinic present as challenges to improving the content and structure of the Curriculum. In an effort to address these issues, an upgraded Rheumatology Elective Curriculum was devised and implemented.

Methods

Starting July 2002, one half day/week consisting of modular lectures and supervised “Question of the Week” exercises was integrated into the clinic and hospital consultation schedule. The musculoskeletal examination, serologic testing, x-ray interpretation and pharmacotherapeutics are reviewed. Residents complete eight self-selected ACR Core Curriculum Tutorials. Log books table clinical cases seen and procedures performed. Pre- and Post tests are written. Residents report their confidence levels at Elective entry and exit interviews.

Results

The upgraded Curriculum has been extremely well received by the residents. Confidence levels in most areas queried improve. Exposure to cases of vasculitis and to procedural opportunities has been infrequent. Improvement in pre-and post test scores has been inconsistent, particularly in knowledge of vasculitis.

Conclusions

Preliminary data indicate that with minimal disruption to the existing schedule, the upgrades in structure and content to the Rheumatology Elective Curriculum improve resident confidence in lectured topics. Additional upgrades will be necessary to address the inconsistent improvement in knowledge of general rheumatology, and particularly of vasculitis, as measured by differences in pre- and post test scores, and to provide procedural opportunities.

Using Triple Jump to Evaluate Students' Clinical Reasoning and Problem Solving Skills

Lori Hansen MD

Maureen Battistella MLS, AHIP

Sandi Isburg RN

Paul C. Bunger PhD

University of South Dakota School of Medicine

Objective. A modified version of the McMaster's triple jump model has been used for the last ten years in the Yankton Model Program at the University of South Dakota. The triple jump (tj) exercise can be used to evaluate students' clinical reasoning, problem solving and research skills. The tj encourages self-directed learning, reflection and emphasizes the importance of data-based medical care.

Methods. Students complete four tj exercises annually using a standard format representing a variety of clinical disciplines. Faculty present a clinical problem for which students suggest initial hypotheses, request pertinent history and physical, laboratory and X-ray tests, determine the final hypotheses and identify learning issues. Following this one-half hour session the student has two hours to research the hypotheses and learning issues. In the final half hour session the student and faculty meet to review the research.

Results. Yearly reviews indicate that students' performance improves over the course of the year, but the exercises are faculty intensive. Faculty scoring can be subjective despite established evaluation criteria.

Conclusions. The triple jump exercise is an excellent means of assessing clinical reasoning and problem solving skills and reinforces the need for data based medical care. USDSM is developing computer-based triple jumps to make the exercise less faculty intensive and scoring more objective.

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Improving Clinical Skills with Technology
Linda K. Gunzburger, PhD
University of Illinois Chicago

Problem:

Studies show medical students lack necessary clinical skills for the adequate diagnosis of cardiovascular problems. There is limited time available to listen and learn from the heart sounds.

Purpose:

This skill deficiency in heart sounds may be improved via new technology. Projects at several medical schools intended to improve the physical exam by introducing handheld ultrasound devices.

Methods:

An RFP was sent to faculty leaders within the Introduction to Clinical Medicine courses explaining how handheld ultrasound devices with instructional content would be provided to selected schools. Nine schools were accepted for the technology. The Faculty were to design curricular content. Seven Schools produced core curriculum, trained teaching faculty, and developed Poster Presentations.

Results:

- ☞ Two Schools dropped out because of time, available faculty, need for technical support or budget planning
- ☞ Seven Schools successfully completed Year 1 and requested continuing in Year 2
- ☞ Students reported positive learning and fun experiences
- ☞ Faculty expressed concerns in learning new technology unless an experienced cardiologist and technician introduced the handheld ultrasound
- ☞ The length of time for learning was consistent across sites.

Conclusions:

- ☞ Handheld ultrasound improved medical student cardiac skills
- ☞ Learning was efficient and accurate
- ☞ Non-cardiologist faculty need support and time to learn new technology.

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An Assessment of the Group Problem-Solving Process in PBL

Dianne P Wagner, MD, FACP

Brian Mavis MD

Elizabeth Werner PhD

Michigan State University College of Human Medicine

Background: Our second-year curriculum at MSU-CHM is delivered in Problem-Based Learning format and evaluated using multiple-choice examinations. Students are taught to identify CUES in the cases, list HYPOTHESES derived from the cues, and then create basic science LEARNING ISSUES. While the importance of the small-group process is emphasized to students, and preceptors rate small group participation, there has not been a small group process assessment to complement the objective scores. A Group Problem-Solving Exercise (GPSE) was developed and implemented to address this concern.

Innovation: As part of the GPSE, students completed a pre-and post survey of attitudes toward PBL and small group process. For the GPSE, students had one PBL session to identify cues, hypotheses and learning issues from a complex case, and submit these for a group grade. Hypotheses and learning issues were to be drawn from the five first semester PBL domains. Students then had until the next PBL session to research the learning issues and create a “basic science assessment.” During the second session, the group was required to develop a final “basic science assessment” and submit it for a group grade. All group and individual products were graded by the Chair of the Pulmonary Domain Curriculum Development Group.

Conclusions: The poster will present students’ perceptions of the GPSE as well as the ratings derived from the individual and group products of the GPSE. The extent to which it achieved its purpose and plans for refinement will be discussed.

Evaluating a Curriculum on the Patient-Physician Relationship Using Creative Projects

Janet Osuch, MD

Dianne Wagner MD

Michigan State University College of Human Medicine

Background: Increasing importance is being placed on the Patient-Physician Relationship (PPR) in medical schools. Evaluation of students' incorporation of this material, however, presents challenges to faculty. At the Michigan State University College of Human Medicine, our long-standing first-semester PPR course has been recently redesigned both in content and evaluation.

Objective: To create an evaluation strategy that would encourage students to reflect on the meaning of the PPR to them and to express that reflection in a creative way.

Method: In our curriculum, course objectives are presented in weekly modules that include a large group experience (lecture and/or panel discussion) and small group meetings. The topics covered include patient and physician roles, patient autonomy and the consent process, culture and the PPR, confidentiality, honesty, truth-telling and disclosure, boundaries in medicine, and challenges and rewards of the PPR. The midterm evaluation consists of a creative project (drawing, poem, musical composition, web page) whose inspiration is derived from the material from the first three weeks of the course. Projects are presented during a reception attended by first and second-year students and faculty. This takes place in the Student Learning Center under the dome explicating the "Virtuous Student Physician" themes of the College of Human Medicine.

Conclusion: The creative projects and the reception which features them serve to emphasize the multiple ways in which physicians and patients engage each other, the importance that the College of Human Medicine places on the PPR, the ideals to which student physicians aspire, and the roadblocks to those aspirations. Faculty and students respond very positively to this method of evaluation. Examples of these inspirational projects are shown.

Can resident development of standardized order sets provide a process of evaluating the new competencies adopted by ACGME?

Thomas Foster MD

Lannie Cation MD

University of Illinois Peoria

Background: The ACGME adopted six general competencies including practice based learning (PBL) and systems based practice (SBP). Reliable and valid measurement tools are not available for all the competencies. Our parent institution will implement computerized physician order entry (CPOE) in 2003. Order sets are a key component of CPOE. We sought to explore if resident development of order sets in small groups provides a process of evaluating the PBL and SBP competencies.

Methods: Each resident was assigned to a Physician Order Entry Team (POET) consisting of an attending physician and several residents. Each POET was assigned an order set and given a timeline for development. Time at noon conference was set aside for searching and evaluating the literature and developing the order set. A competency self rating form was completed by each POET member at the start of the order set. An evaluation form was created to assess resident competence in PBL and SBP competencies and this was completed by the POET attending physician. A feedback form was completed at the end of the order set. Order sets will be rated by a corporate CPOE oversight committee to establish validity.

Results: Eight POET groups produced eight order sets over a four-month period. Feedback ratings were favorable for the following: the POET experience was educational, EBM was utilized, the importance of CPOE was understood, library applications and resources were applied, the importance of teamwork was recognized, and faculty provided leadership. Ratings were neutral for the following: consideration of cost in the order sets, understanding the importance of working in a healthcare system, and the initial lectures were educational. Additional data will be collected with future order sets including feedback from external reviewers to validate our findings.

Conclusions: The POET concept is a novel way of evaluating the PBL and SBP competencies. It integrates the need to evaluate these competencies with the institutions needs for the development of evidence-based order sets. The benefits included active application of evidence-based medicine by faculty and residents with the faculty and residents more aware of their deficits in searching and reviewing the literature. The faculty and residents are aware of an organizational, systems-based approach to patient care. Communication among POET members, time constraints, and team member commitment were identified as barriers. Further study of this concept is warranted to establish its validity.

Development of Tools for Assessing Communication Skills

Ingrid Toews PhD

University of Manitoba

Effective assessment of communication skills is a challenging component of undergraduate medical education. This project was initiated in order to create assessment tools that measured communication skills comprehensively and efficiently, with satisfactory validity and reliability.

At the University of Manitoba a broad array of communication skills' assessment tools have been developed over the past two years. To strengthen both the learning and teaching of communication skills it was recognized that evaluation determines what is taught and what is learned (Kurtz et al, 1998). Targeting and improving communication skills assessment could strengthen both teaching and learning throughout the curriculum. These tools have been designed for first year, second year, and clerkship. Both formative and summative evaluation forms were created which were rating scales. The assessment instruments were based on the communication skills emphasized in the Patient-Centered Clinical Method (Stewart et al., 1995). Evaluation of learners focused on both competence and performance.

The poster will present how assessment tools have been developed. The process will be outlined including identifying deficiencies in prior instruments, identifying the needs, piloting the assessment forms, and collecting feedback from those who have used the new instruments.

Other medical schools, to assist them in evaluating communication skills at all levels of undergraduate education, can adopt the tools. Those who are seeking tools that are clear and understandable, efficient, and comprehensive would benefit from this projects' resources. A variety of instruments have been developed created specifically for course preceptors, examiners, standardized patients, and self-assessment.

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Performance Assessment of Third Year Students Following an Integrated 12 Week Ambulatory Practice Experience

George Bergus MD, MA

Bruce Johnson MD

Barcey Levy PhD, MD

Jerold C. Woodhead MD

Ellen Franklin MA, MBA

University of Iowa Carver College of Medicine

Objective: Establish a performance assessment of the clinical and communication skills acquired by third year medical students during an ambulatory practice experience composed of Family Medicine, Internal Medicine, and Community Based Primary Care clerkships.

Methods: The University of Iowa College of Medicine has a new 12-week long Ambulatory Practice Module composed of 4 weeks each of Family Medicine, Community Based Primary Care, and Internal Medicine. The clerkships use different means of evaluation at the end of the module, but share a final written test and a performance assessment with standardized patients. The cases for the performance assessment are drawn from the common curricular blueprint and involve both biomedical and psychosocial issues.

Results: Students completed four 15-minute encounters with standardized patients. Following each encounter students completed a post-encounter exercise or received feedback from a faculty who directly observed the clinical encounter. Most students (83%) reported the cases were representative of what they had learned during this 12-week block. Nearly all students (97%) reported that the cases challenged their clinical skills and most (73%) agreed that the encounters allowed their skills to be fairly assessed. All students were positive about the feedback sessions. The correlation between the written test and performance test was moderate ($r=0.45$, $p<0.05$).

Conclusion: Performance assessment can be integrated into an ambulatory experience spanning three different clerkships. The students report that the cases are representative of the problems they saw on their rotations and they are positive about the assessment experience.

Performance-based Assessment of PGY-1 Internal Medicine Residents: Evaluation of Baseline Clinical and Communication Skills

George Bergus MD, MA

Scott Vogelgesang MD

Ellen Franklin MA, MBA

University of Iowa Carver College of Medicine

Objective: Assessing the baseline clinical (data gathering) skills and communication skills of entering PGY-1 internal medicine residents through simulated clinical encounters.

Methods: In June 2002, 22 entering PGY-1 internal medicine residents at the University of Iowa completed an assessment involving three standardized patient encounters. The assessment was completed prior to the start of the residents' clinical rotations. The fifteen-minute simulated office visits included encounters with a hypertensive man unresponsive to medical treatment because of non-adherence, a woman with a new mammogram suggestive of cancer, and an elderly woman with progressive shortness of breath. After each encounter, the standardized patients assessed the data gathering skills of residents by completing history and physical exam checklists and rated the residents' communication skills.

Results: The mean performance of the residents was 74.7% of all possible points on the clinical skills and communication checklists (SD 7.7%). Composite scores ranged from a high of 85% to a low of 57%. The reliability of the performance assessment scores was 0.44. Residents demonstrated the lowest performance of clinical and communication skills during the case involving the non-adherent patient. Across all cases, there was moderate correlation between the resident's clinical skills scores and communication skills scores ($r=0.49$, $p<0.001$). The assessment was completed in three hours and residents were generally positive about the experience.

Conclusion: Performance-based assessment can be integrated into the orientation week of incoming PGY-1 internal medicine residents and can provide faculty with an additional means of analyzing the strengths and weaknesses of their new trainees.

How well do residents perform at outpatient coding? An Analysis of resident coding skills.

Fawzia Salihuddin MD

Faraz Khan MD

Lannie Cation MD

University of Illinois College of Medicine Peoria

Background: Physician coding and billing is an integral part of a physician's practice and many believe that these skills should be taught during residency training. There is little data on internal medicine resident coding in the literature. We studied the coding practices of our residents to identify the degree of accuracy of resident coding and its relationship to several variables.

Methods: From October 1999 – June 2001, a hospital professional coder used the HCFA 1997 Evaluation and Management (EM) guidelines to review five patient clinic notes twice a year for each internal medicine (IM) and medicine-pediatrics (MP) resident. The areas evaluated were basic documentation (chief complaint, history of presenting illness, exam, diagnosis and plan) and EM code matching the corresponding documentation. This led to four areas of analysis: basic, EM match, EM under-coding (under), and EM over-coding (over). This data was further broken down per PGY level, residency type, international (IMG) versus United States (AMG) medical graduates, and whether the resident had attended one of the two available optional one-hour coding workshops run by professional coders. In-training examination (ITE) percentile correct score for each resident was also collected. Statistical analyses using Mann-Whitney test and Spearman's Rho correlation was performed.

Results: A total of 61 residents were included in these reviews including 28 IM and 33 MP residents. There were 172 reviews (83 IM and 89 MP) with a mean 2.8 reviews per resident (range 1-4). Some residents had reviews performed at multiple PGY levels. Table 1 summarizes the results.

Table 1: Outpatient Encounter Coding Statistics of IM and MP Residents

PGY	N	Basic	Match	Under	Over
1	49	92%	30%	49%	21%
2	51	93%	37%	40%	23%
3	50	91%	46%	37%	19%
4*	22	93%	46%	45%	9%

*Med-Peds only; N = total number of reviews.

Mann-Whitney testing revealed that MP residents did better than IM residents in PGY-1 and PGY-3 years ($p < 0.05$ for both) in basic documentation. IMG and AMG residents had similar coding in the beginning of residency but IMG residents did significantly less under-coding and over-coding by PGY-3 ($p < 0.05$ for both). Of the residents who attended one or both coding workshops, only the PGY-2 residents showed a significant improvement in their basic documentation scores and in reducing under-billing as compared to those who did not attend the workshops ($p < 0.05$ for both). Spearman Rho testing revealed no significant correlation between coding scores and resident medical knowledge base as determined by ITE percentile correct scores.

Conclusions: Our study reveals that a majority of residents meet basic documentation requirements. However, more than half of the charts reviewed per PGY level did not have a code that matched EM documentation. There was a modest improvement in EM matching with increasing training level and if the resident was an IMG. Coding did improve with attendance of the coding workshop. Coding skills were not related to a resident's medical knowledge as measured by ITE scores. Based upon the results of our study, we conclude that we may not be training our residents adequately in coding skills. Incorporation of more coding workshops into the curriculum may help address this issue. Further study is needed to evaluate resident coding and training on these skills.

Combined Internal Medicine-Pediatrics Chief Residents: Where are they and what are their roles?

Brian Bostwick, MD

Lannie Cation MD

University of Illinois College of Medicine Peoria

Background: Chief Residents are ubiquitous in categorical internal medicine (IM) residency programs and fulfill many duties like teaching, administrative and patient care activities. There is a paucity of information on Combined Medicine-Pediatric (MP) chief residents. To better define the MP Chief Resident position, we undertook a survey of MP Program Directors to determine the number and training level of MP Chief Residents and their roles in the residency program.

Methods: A three-page survey was developed based on reported data from previous surveys of Internal Medicine chief residents. Surveys were sent to all Combined Med-Peds Residency programs, data was compiled looking at total numbers, roles, importance, and what MP chief residents do after graduation. Statistical analysis was done using SPSS 10.

Results: To date, we have received 52 of 106 surveys mailed. Four surveys were excluded as they were from defunct programs leaving a total of 48. Not every program answered every question. Sixty-nine percent of programs reported having a MP chief resident. Eight-seven percent were PGY-4 and 13% were PGY-5 residents. Regarding duties, PGY-4 MP Chief Residents spent 8% of time doing administrative duties, 7% of time teaching and 5% of time doing research with the remainder of time in their regular resident duties. PGY-5 MP Chief Residents spent 43% of their time doing administrative duties, 36% of time teaching, 17% in patient care, and 15% of time in research. MP Program Directors rated the importance of MP Chief Resident as 4.2 (5 point Likert type scale). The top administrative duties were recruiting, conference schedules, and call / rotation schedules. The top teaching duties were journal club, resident lectures, student lectures and morning report. The funding for PGY-5 MP Chief Residents came from Department of Internal Medicine and Department of Pediatrics in a majority of cases with a minority receiving funding from a Medicine-Pediatrics Department.

Conclusions: Based upon the initial results of our study, MP Chief Residents are present in a majority of MP residency programs. MP Chief Residents are most often PGY-4 residents who spend a majority of their time in regular resident duties. PGY-5 MP Chief Residents spend more time in administrative and teaching roles than their PGY-4 counterparts. MP Chief Residents were reported of moderate to high importance by their Program directors. Further analysis of the survey results are pending completion of the survey set.

Peer Facilitation of a Problem-Based Learning Case in Medical Pharmacology

Julia M. Ousterhout

Kirkville College of Osteopathic Medicine

For several years we have utilized students as peer facilitators for a problem-based learning case in the cardiovascular section of the second-year Medical Pharmacology course. The web-based case includes prerecorded patient responses, results of a history and physical exam, lab results, other diagnostic test results, and a case summary. The case is viewed on a SMARTboard by groups of 7-8 students.

After attending a brief orientation session, facilitators guide their groups through the case, assign individual learning objectives, and organize contributions to a written group report. Each group is required to submit a suggested treatment plan for the patient that includes both pharmacotherapy and behavioral changes. Online discussion forums have been provided for each group to discuss the case, but students have preferred other means of completing the assignment. Upon completion of this experience, all students are asked to fill out an evaluation form containing six items. Facilitators complete a separate survey regarding their impressions. Feedback about this learning experience has been generally positive, and students feel that they work together effectively in a group. Facilitators enjoy the opportunity to lead a group and help their peers achieve the group's objectives.

Most of the students feel that peer facilitators are effective, but a few would prefer to have a faculty member available to answer questions about the case. Conclusion: Using students instead of faculty members as facilitators fosters active learning in a collegial, collaborative environment. Students perform successfully as facilitators with minimal training and support.

Design and Implementation of a Competency-Based Emergency Medicine Elective

Pamela Derstine PhD

Joseph Mueller MD

Loyola University, Stritch School of Medicine

Loyola University Chicago Stritch School of Medicine required the redesign of 28 elective courses, incorporating competency-based outcomes as the framework for student learning and assessment. The 4-week Emergency Medicine elective was the first course to implement this new curriculum in July 2002, with 15 fourth-year students enrolled July-Dec. 2002.

The new curriculum consists of specific outcomes for the 6 SSOM competencies, which guide faculty design and implementation of learning components (lectures, patient-based teaching, assessment, etc.) and student approaches to setting personal learning goals, self-monitoring of progress towards goal achievement, reflective learning, and self-assessment. Students are required to carry a pocket-sized notebook to record their competency goals for the elective, patient encounter information with faculty sign-off for performance of procedures/skills, and personal reflections on significant experiences in patient interactions. Students must also maintain a portfolio containing all articles and valuable information obtained, write-up of the required topic review oral presentation, narrative essay describing their one-day ride-along with medics and its affect on their understanding of the continuum of care, self assessments, mid-rotation formative feedback, and end-of-rotation evaluation forms.

Student response is very positive. They like the competency-based outcome objectives (knowing what is expected), scheduled formative feedback session (demonstrated interest of course director), and patient logs as a record of clinical experiences. The patient log and portfolio provide the course director with objective evidence of achievement of objectives, but little additional insight into students' inner self beyond what is learned through direct interactions and observation. Thorough incorporation of outcomes by faculty will require more time for individual "coaching" by the course director.

Evolution of an Outcomes-based Competency Assessment of Lifelong Learning in a Basic Science Course

Pamela Derstine PhD

Loyola University, Stritch School of Medicine

A basic principle of assessment is that what is assessed and which methods are used will significantly affect what is learned.¹ Lifelong learning is a skill that consists of identifying and refining a learning issue, finding and selecting appropriate resources, and the critical study, practice and integration of new knowledge, skills, attitudes and behaviors into an existing framework. We have previously reported on the use of the Frontiers in Clinical Genetics online lecture series for developing first year medical students' lifelong learning skills, assessing the products (research paper and oral presentation) using a criterion-based rubric.² This approach gave little insight into the skills, attitudes and behaviors employed to derive new knowledge, nor how well, if at all, new knowledge had been learned. Attempting to gain this insight, we assessed the process by requiring an outcomes-based justification of the self-selected learning issue, description and printouts of search strategies, criterion-based annotated bibliography of resources used, and written notes for the oral PowerPoint presentation. Unlike the research paper requirement, students did not view this assessment approach as "busy work", with the exception of the search strategy printouts. They want clearer expectations, which can best be given by showing examples of work that "does not meet", "meets", and "exceeds" expectations from this year's projects. They also suggested the addition of bonus questions from the presentations be added to the final exam. The process and products of both assessment approaches will be described and compared.

¹ "A Practical Guide for Medical Teachers", John A. Dent and Ronald M. Harden, eds. , publ. Churchill Livingstone, NY (2001).

² "Genetics in Undergraduate Medical Education: A Pilot Project in a Competency-Based Education Approach to Lifelong Learning Outcomes", Pamela Derstine, CGEA Spring Conference Innovations Poster Abstract, March 14-17, 2002, Chicago, IL

Difficult Conversations: Third Year Clerks Practicing Advanced Communication skills with "Patient Instructors"

Marsha E. Kaye RN, MSN

Renee Martinez

Gregory Makoul PhD

Northwestern University Feinberg School of Medicine

Third year clerks at Northwestern University's Feinberg School of Medicine are participating in a newly developed program on advanced communication skills. The focus of this program – known as Difficult Conversations – is to give students an opportunity to practice dealing with difficult topics and situations in a simulated clinical environment. In the process, the program helps students identify individual strengths and weaknesses in advanced communication with patients and their families.

To select appropriate and relevant topics for the patient instructor scenarios, we asked clerkship directors to list difficult conversations that students either observe or participate in while on the wards. Thirteen topics were selected from faculty suggestions, and scenarios were created after interviewing clinicians and patients with relevant experience. Examples of the difficult conversation scenarios include: talking with a wheelchair-bound patient, obtaining a geriatric sexual history, dealing with intimate partner violence, dealing with a patient who asks personal questions, and having a third person in the room.

Each month, one-third of the class participates in Difficult Conversations groups, each of which is composed of six students and one patient instructor. Two students per group interact one-on-one with the patient instructor, while the other students observe. Immediately after each interaction, the student who worked with the patient instructor receives specific feedback from peers and the patient instructor. All encounters are videotaped for the practicing students and faculty members to review. Funding for the patient instructors employed in Difficult Conversations is provided by grant to Dr. Makoul from the Kenneth B. Schwartz Center.

Developing a Workable System of Computer-Based Testing for the Basic Sciences

Richard G Hoffman PhD

Bradley J Ingersoll

University of Minnesota School of Medicine Duluth

Objective: Computer-based examinations offer rapid scoring and the potential for immediate feedback of student performance. Although the USMLE Step examinations have been administered in a computer-based (CBT) format since 1999, many medical schools have not followed suit with course examinations due to concerns about test security, as well as limitations of available testing software, prohibitive costs of computer hardware, and concerns about testing platform instability. We have successfully used a commercially available software package for all medical student examinations in 17 Basic Science courses in Year 1 and 2.

Method: We identified a CBT testing platform that is commercially available from ClearLearning that could be configured to the look and feel of the Step exams, including password protected log-in, the display of one question per screen, the opportunity to mark items for later review, and a screen appearance that matches the Step Exam screen layout, including an elapsed time counter. Digitized photos or micrographs can accompany questions, and QuickTime movies can also be used. This CBT software is web-based and platform independent, and operates from a central server for data security.

Results: This year, a total of 39 course exams at our medical school will be in computer-based format. We have had no known breaches of test security in the 24 months that we have used this software. We have configured this software so that each student response to each question is immediately saved on the central server, so that no data is lost in the event of a browser crash or Internet connection drop. Second year students that have taken our course exams with this software have reported that the testing experience of the Step exams was nearly identical.

Conclusions: Commercially available CBT testing software can be successfully adapted to the medical school testing environment. This software is stable, secure and cost-effective and allows for multiple media, immediate feedback of performance, and question banking with a minimum of staff and faculty training and tech support.

Development and Administration of a Web-Based Graduate Questionnaire

Heather Hageman MBA

Donna Jeffe PhD

Dorothy Andriole MD

Charles Wallace MMA

Alison Whelan MD

Washington University School of Medicine

Objective: Low response rates for graduate questionnaires may reflect difficulties in establishing contact with graduates and in developing questionnaires which they can efficiently complete and return. We anticipated that development of a web-based questionnaire would facilitate timely responses and increase response rates.

Methods: The PGY-1 questionnaire included items paralleling the American Association of Medical Colleges' Graduation Questionnaire, our PGY-1 program directors' evaluation questionnaire and our medical school objectives. We utilized Dillman's 5-step contact system; the questionnaire was posted on-line at a secure password-protected website and all e-mail communications were sent through a database created in the name of our Associate Dean for Medical Education. Responses were automatically transferred electronically into a pre-established database for analysis.

Results: E-mail addresses were confirmed for 122/125 (98%) class of 2001 graduates; none indicated a preference to receive a traditionally mailed questionnaire. 98/122 graduates (80%) returned completed questionnaires electronically within the established time-frame; program director questionnaires were also returned by mail for 96 of these 98 graduates (98%). Data analysis is underway, including a comparison of program director responses with graduate responses for parallel items regarding each graduate's preparedness for PGY-1 training.

Conclusions: Utilization of a web-based questionnaire and a systematic approach to prompting and rewarding survey completion resulted in a high return rate, cost less than traditionally mailed surveys and facilitated data entry of questionnaire responses into a pre-established database for analysis. We anticipate that annual administration of this web-based PGY-1 questionnaire will provide important outcomes information regarding our graduates.

Residents as Teachers: A Middle School Health Science Curriculum Experience

Sharon Coleman MS

Mark Gennis MD

Karla Hemesath PhD

University of Wisconsin

With the implementation of the new ACGME core competencies, graduate medical education programs are faced with providing experiences to develop resident competence in "systems-based practice" (ACGME, 2002). To address this issue and to promote interest of young people in health careers, we have begun an innovative pilot program in which residents of the Internal Medicine Residency teach health science modules to middle school students. This project is a collaborative effort between the Health Professions Partnership Initiative (HPPI) of the University of Wisconsin Medical School and the Milwaukee Public School system. Medicine residents and faculty serve as "guest lecturers" and lab proctors in various organ-system modules in the science curriculum of a local middle school. This service-learning experience not only provides the students with hands-on exposure to topics in health sciences, but also provides the residents with exposure to community health issues, cultural diversity, and health education strategies. The role modeling of health careers is critical for the students and the partnership is well received by the parties involved.

We will describe our partnership and feature examples of the curricula used. Our efforts provide a practical model for the involvement of medical students and residents in other middle and secondary school settings. This is also a method that can be used to stimulate student interest in health careers and strengthen the "pipeline" of students from disadvantaged backgrounds and underserved areas into health professions education programs.

The Relationship between Measures of Learning Style, Type, and Medical Student Self-Reported Approaches to Learning

Richard G Hoffman PhD

Phyllis Lindberg MA

University of Minnesota School of Medicine Duluth

Objective: This study sought to determine the relationship between the *MBTI*, *ASSIST*, and the *Index of Learning Styles*. These three instruments have been reported to be in use either in isolation or in combination by multiple medical schools, but to date it is unclear whether these instruments are measuring different constructs.

Method: The Success Types Learning Style Type Indicator, the Approaches & Study Skills Inventory for Students (*ASSIST*), and the Index of Learning Styles were administered to 55 first year medical students. The *ASSIST* includes items used to assess conceptions of learning, approaches to studying and preferences of different types of courses and teaching. It assesses three main approaches to studying: Deep Approach, Strategic Approach, and Surface Apathetic Approach. The Meyers-Briggs Type Inventory is a psychological preference Inventory used to identify preferences in thinking and communication. The Soloman & Felder Index of Learning Styles is used to identify learning style preferences. It focuses on four categories (active/reflective, sensing/intuitive, visual/verbal, and sequential/global).

Results:

- 93% (N = 51) response rate for completion of all three assessments
- No statistically significant relationship between student responses on the *MBTI* and either the *ASSIST* or the *ILS*
- One statistically significant relationship between the *ASSIST* “Deep Approach” subscale and the *IVS* (intuitive/visual) scale of the *ILS*. The *IVS* (intuitive/visual) learner approaches the world much like the “Deep Approach” student.

Conclusions: This study suggests that the *MBTI*, *ILS*, and the *ASSIST* are three separate but complementary assessments and each may offer significant insight into student learning. Together they may be used to create a more complete profile when assessing medical student learning preferences. A composite assessment using all three instruments may be especially useful for at-risk students.

Gerisims - Web-based Patient Care Simulations for Active Learning on Common Geriatric Syndromes

Eric Orton MS

Gary Rosenthal MD

Linda Seydel MS

Sean Kelley MFA

Bill Easton

Bryan Sheeley

University of Iowa Carver College of Medicine

The purpose of the Gerisims web-based patient care simulations is to educate third and fourth year medical students, Family Medicine and Internal Medicine residents, and community physicians about caring for elderly persons. Each simulation will employ active learning strategies to provide an overview of the important issues related to a particular common geriatric syndrome, and multidisciplinary strategies for diagnosing, evaluating, and treating or managing the syndrome.

Each Gerisims module will involve the learner in collecting information, solving problems, and making care decisions regarding one or more simulated patients. The problems and decisions presented are designed to facilitate the achievement of specific learning objectives. As the learner engages in the simulated experience, he or she can review the patient's chart, question the patient and the patient's caregivers, perform a virtual physical exam, order tests, consult with other practitioners as part of a multidisciplinary team, and express diagnoses, care plans, and other decisions. A simulated mentor geriatrician provides guidance and information about the syndrome to the learner on request, and gives feedback about the learner's decisions. Each of these features uses multimedia to enhance interactivity and more fully engage the learner.

This poster session will present the format of the Gerisims patient care simulation modules, explain the adult learning theories that have guided their development, and review the accomplishments, lessons learned, and future directions. It will also demonstrate one module prototype. Other attendees should leave with ideas for improving their own interactive online educational offerings.

Recruitment and Development of Faculty for CPX Feedback

Kris Slawinski

Sandy Cook PhD

University of Chicago Pritzker School of Medicine

Purpose. The purpose of this poster is to discuss the development and assessment of a faculty recruitment and training strategy for one-on-one clinical skills feedback to 95 third year medical students completing a clinical performance experience (CPX).

Methods. Faculty were recruited by phone calls and group emails, group and individual trainings acquainted recruits with the machinations of the CPX and type of critical and constructive feedback to be given, and dates of availability were solicited to facilitate scheduling feedback sessions.

Faculty development sessions utilized videotapes (with student permission) from the previous year's CPX, standardized patient case descriptions, examples of materials generated during the CPX, with discussion and video examples of how to base feedback on clinical performance using these materials.

In addition, surveys were administered to students and faculty to assess the experience.

Results. These sessions resulted in recruitment and training of 23 faculty members, and participation of 20 faculty who provided one-on-one feedback to 94 of the 95 students. While most faculty and students enjoyed and appreciated the feedback and training sessions, faculty were not as standardized as hoped in providing feedback, resulting in variations in sessions between some students. This was reported as less than satisfactory experiences for some students and faculty in the survey assessments.

Conclusions. We believe our experience can help provide a plan for other schools to follow in tackling this seemingly daunting task, identify and circumvent some of the problems we experienced, and encourage discussions about enhancements and improvements for next year.

Integrative Medicine: A Venue for Addressing the Competencies

Wilhelmine Wiese MD

Susan Eggly PhD

Angela Tzelepis PhD

Wayne State University

Purpose: To provide the foundation for teaching and documenting competencies early in training.

Methods: During the intern year of internal medicine training, interns participate in Integrative Medicine, a one-month, non-patient care rotation. Through lectures, field trips, projects, web-based courses, interactive workshops, and a retreat, this rotation addresses all six general competencies. Some highlights follow.

* *Professionalism:* After reading a series of definitions of physician professional behavior, interns write a reflective narrative, describing their personal definition, with examples of professionalism and breaches of professionalism from their experience. A workshop explores their responses, emphasizing factors that contribute to unprofessional behavior. The narratives are placed in interns' evaluation file.

* *Communication Skills:* Interactive lectures, videos, and role-plays address basic communication skills and many sensitive issues. Skills are assessed with an OSCE.

* *Practice-Based Learning and Improvement:* Lectures, on-line readings and quizzes address 1) introduction to EBM and Continuous Quality Improvement (CQI); 2) appraisal of articles involving diagnostic tests, and 3) treatment studies. Interns conduct and present a CQI project on Power Point, providing background information and references. The quizzes and CQI presentations are placed in interns' files.

* *Systems-Based Practice:* A workshop on medical errors provides a safe environment to explore the role of the individual and the system, emphasizing emotional response, disclosure of the error, lessons learned, and ways to prevent recurrence of the mistake.

Conclusion: Although meeting the competency requirements is an ongoing process, implementation and documentation of learning opportunities should commence early. "Integrative Medicine" provides a forum to begin this process.

Establishing Outcomes-based Competency Curriculum for Fourth Year Elective Courses
Pamela Derstine PhD
Paul Hering MD
Loyola University Chicago Stritch School of Medicine

A basic principle of assessment is that what is assessed and which methods are used will significantly affect what is learned.¹ Lifelong learning is a skill that consists of identifying and refining a learning issue, finding and selecting appropriate resources, and the critical study, practice and integration of new knowledge, skills, attitudes and behaviors into an existing framework. We have previously reported on the use of the Frontiers in Clinical Genetics online lecture series for developing first year medical students' lifelong learning skills, assessing the products (research paper and oral presentation) using a criterion-based rubric.² This approach gave little insight into the skills, attitudes and behaviors employed to derive new knowledge, nor how well, if at all, new knowledge had been learned. Attempting to gain this insight, we assessed the process by requiring an outcomes-based justification of the self-selected learning issue, description and printouts of search strategies, criterion-based annotated bibliography of resources used, and written notes for the oral PowerPoint presentation. Unlike the research paper requirement, students did not view this assessment approach as "busy work", with the exception of the search strategy printouts. They want clearer expectations, which can best be given by showing examples of work that "does not meet", "meets", and "exceeds" expectations from this year's projects. They also suggested the addition of bonus questions from the presentations be added to the final exam. The process and products of both assessment approaches will be described and compared.

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² "Genetics in Undergraduate Medical Education: A Pilot Project in a Competency-Based Education Approach to Lifelong Learning Outcomes", Pamela Derstine, CGEA Spring Conference Innovations Poster Abstract, March 14-17, 2002, Chicago, I

Using a website to improve learning and communication in the gross anatomy dissection lab.

Mary Niedringhaus

Glenn Conroy PhD

Jane Phillips-Conroy PhD

Robert Engeszer MLS

Washington University School of Medicine

Objective: In a typical setting for a Gross Anatomy dissection lab, medical students are organized into small groups that work with a single cadaver. Promoting discussion and information sharing between each group is a continuing challenge to the course instructors as it is through this process that students learn about human biological variation and common pathological findings. A better mechanism was needed to promote discussions and information sharing.

Methods: A website was created to house cadaver findings and other course communication including areas for posting dissection tips, faculty comments and a Question of the week. Each student group was provided with an area on the site to record answers to weekly questions, announce and discuss cadaver findings, and record personal contemplations. Integration with email allowed students to receive instant notification when new findings were posted.

Results: Because the web site allows students to post images, links to other sites, and file attachments as part of their cadaver findings, the depth and variety of information that is being shared in class has been greatly enhanced. Using a central repository for answering questions and sharing findings has also improved the cooperation and communication between groups of students.

Conclusion: The Gross Anatomy web site has fulfilled the initial goals of improving communication among students and the faculty is encouraged about its usefulness, particularly in educating students about the breadth of normal anatomic variation. A student survey is currently underway to gather feedback and suggestions for improvement that will be incorporated into future classes.

Through Their Own Eyes: Student Reflections on Three Experiential Exercises Designed to Increase Communication Competence and Self-Awareness

Darci Graves MA

Louise Arnold PhD

University of Missouri-Kansas City School of Medicine

In response to student requests for “real life” communication skills practice, the University of Missouri - Kansas City School of Medicine is expanding upon previous active learning efforts by incorporating three separate experiential exercises into a higher level communication skills course. The experiential exercise already in use has received high praise from students for increasing their awareness of how critical communication skills are in patient care. Expanding the variety of exercises will increase the student’s ability to observe specific communication skills in real time. Thereby they may be more successful and comfortable utilizing those skills in the future.

The exercises entail taking call with a hospital chaplain, participating in hospice visits, as well as working with community organizations which serve diverse populations. Community organizations will include non-profits dedicated to serving children with visual and mobility disabilities as well as organizations which promote medical literacy or that serve populations other than those which the students regularly see. Upon completion of the experiential exercises, students will write a reflective essay and respond to a brief questionnaire about their experience. The poster will describe the experiences in greater detail as well as provide the initial responses from the student participants.

Strategies to Increase Resident Research Activity: Experience with Productivity, Cost and Resident Attitudes

Jacqueline Fischer MD

Lannie Cation MD

University of Illinois College of Medicine at Peoria

Objective: Scholarly activity is required of internal medicine (IM) residents training in accredited programs. Strategies implemented to increase resident research activity at a community based IM training program and outcomes pertaining to productivity, cost and resident attitudes are reported.

Methods: In January 2000 a faculty resident research director (RRD) was appointed. In July 2001, a requirement for the submission of at least one abstract to a scientific meeting was made mandatory prior to graduation. Since July 2001, financial reimbursement has been made for travel, materials preparation and meeting fees. Residents were surveyed in June 2002 as to whether they felt the research requirement reasonable. Research activity as quantified by number of abstracts submitted and presented is known between July 1999 and November 2002.

Results: Resident research activity increased substantially during the time period studied. (See Table) After the RRD was appointed, the number of presented abstracts more than doubled in one academic year. After the abstract submission requirement was enacted, average annual abstract submission rates rose from 8 to 24 and faculty involvement nearly doubled. Resident attitudes have been positive with 85 percent (n=17) agreeing that the research requirement is reasonable and 90 percent (n=18) agreeing that research activity is beneficial to the resident. The average cost incurred per abstract presentation has been \$724.00.

	1999-00	2000-01	2001-02	2002-03
# Submitted	5	11	21	27
# Presented	3	8	9	14
# Residents	2	4	5	6
# Topics	2	4	6	7
# Faculty	2	5	4	8

Conclusions: The introduction of a RRD, an abstract submission requirement and the financial reimbursement of costs has had a positive impact upon resident research activity, resident attitude toward research and faculty involvement. A lack of faculty involvement, resident interest and cost constraints are commonly encountered barriers to resident research activity at many institutions.¹ Our study shows that a concerted effort to minimize these common barriers can significantly increase resident research activity in a short period of time.

1. Alguire P. et al. Resident Research in Internal Medicine Training Programs. *Annals of Internal Medicine* 1996;124(3):321-28.

Tobacco Smoking: Coverage in the Basic Science Courses of Medical Education

Diane Brown

Curtis Black

Kristen Black

Deborah Simpson PhD

Medical College of Wisconsin

Background: Cigarette smoking has been identified as the most important source of preventable morbidity and premature mortality in the United States claiming an estimated 430,700 American lives each year. However, the degree to which tobacco and smoking cessation as they relate to the M1/M2 curriculum have not been reported. The purpose of this project is to perform a curriculum audit is to assess the degree to which tobacco/smoking cessation is referenced in M1-2 basic science courses.

Method: A M2 student was recruited as the student liaison and recruited 5 more students (total: 3 M1 and 3 M2 students) who attended class regularly. Each participant was provided with a Palm-OS PDA to be used as the data collection tool. Using the Pendragon™ software, a form was designed (data collection/ mobile database) and loaded onto each of the PDAs. Students completed one form per class session focusing on inclusion of tobacco topics, course links, session format, and faculty demographics.

Results: A total of 592 entries were recorded between March - May 2002. Of those collected, 36% of class sessions agree that tobacco/smoking cessation are taught during daily sessions. Tobacco smoking is discussed most frequently in the Physiology, Pathology, and Pharmacology with links to other disciplines including Human Anatomy and Pathology.

Conclusion: Although evidence shows that tobacco and smoking cessation are taught, there continues to be the need for greater emphasis of these subjects in the basic science curriculum.

Development and Administration of an Online Student-run Course Evaluation System

Heather Hageman MBA

Kate Carlson

Ron Heller

Kelly Noll

Alison Whelan MD

Washington University School of Medicine

Objective: Many schools have struggled with placing course materials on-line. Faculty buy-in is critical but significant barriers exist including limited faculty time for entering material and a substantial learning curve regarding technology use. In order to overcome these barriers, Washington University School of Medicine developed a support team comprised of leaders from the offices of curriculum and instructional technologies.

Methods: The first- and second-year course masters meet with members of the support team prior to the start of their courses to discuss individual course needs, available resources, services and technological innovations, and provide one-on-one instruction.

The support team also provides a central resource for converting 35 mm slides into PowerPoint, transferring and formatting Word documents to the data base, producing a hard-copy syllabus, and provides one-on-one training and help-desk services to course masters and their support staff on using and managing the data base.

Results: 100% of first- and second-year course masters and students are now utilizing electronic curriculum resources in some way. 90% of first- and second-year course masters use the electronic course management system to store all or the majority of their course materials for review by students, course masters and other lecturers. A custom-designed search engine allows for a sophisticated analysis of what content is covered where within the required curriculum.

Conclusion: The success of the on-line course management system was due in large part to the support offered to course masters. These services have increased faculty technical knowledge/independence and demonstrated practical benefits of incorporating technology into traditional teaching methods. With large volumes of course information now available on-line, the school is better equipped to focus on vertical and horizontal integration and course masters on high-level course planning, course improvements, and additional recruitment and training of instructors.

Pre-Clinical Rotation Skills Implementation

Stephen Laird DO, MHPE

David Patterson

Dena Higbee

Kirksville College of Osteopathic Medicine

The rapidly changing face of medicine dictates that medical schools be proactive in the on-going process of curriculum construction and revision. An issue that is receiving attention throughout the medical field is training physicians in the development of clinical skills. To better prepare second year medical students for their clinical rotations, the Kirksville College of Osteopathic Medicine implemented the use of mannequin models and pig's feet in its quarter-eight surgery lab curriculum. The implementation of mannequins replaced the use of live animal models (dogs). The students were instructed and asked to demonstrate proficiency on a pass/pass basis (i.e. inability to meet the assessment criteria resulted in additional "hands-on" work with lab mentors followed by reassessment) at the following stations: surgical scrub, gown and glove, excision of a skin lesion with local anesthesia injection, closure of skin lesion while demonstrating one-hand tie, two-hand tie, instrument tie and staple insertion and removal, endotracheal and nasogastric tube insertion, insertion of Foley catheter (male and female), IV catheter insertion, internal jugular and subclavian central line placement, ABG collection, spinal needle insertion and thoracentesis tube insertion for pneumothorax. The performance feedback of the students who received this pre-rotation preparation is very positive as compared to the students that preceded this curricular change. This finding is also substantiated by faculty responses.

How One School Succeeded in Getting Faculty Buy-In for their Electronic Course Management System

Kelly Noll

Robert Engeszer

Mary Niedringhaus

Heather Hageman MBA

Amy Meyer

Alison Whelan MD

Washington University School of Medicine

Objective: Student feedback is an integral part of the curriculum improvement process but is less effective when incomplete or markedly delayed. We developed a Course Survey and reporting application that automates and outlines the process step by step for student representatives in order to facilitate timely and complete reports.

Methods: An application was designed in 1998 in which student representatives were able to design online surveys for each course which was then electronically disseminated to students. The results were automatically analyzed and comments aggregated. Summaries of the analysis were then created and distributed to course masters. As the curriculum evaluation process was expanded to share summary information among all students and course masters this academic year, this system was enhanced to publish the reports and to serve as a guide for those writing the summaries.

Results: Using the electronically tabulated student feedback, course liaisons complete a course summary form which helps them focus on key areas of feedback. After course reports are approved by the Office of Medical Student Education, they are electronically sent within four weeks to the appropriate course masters and administration, and after approval disseminated electronically for all students to review. A follow-up meeting between the student liaison(s) and course master is held within a week following report dissemination.

Conclusion: Utilization of the Course Survey and Reporting application has enabled the student liaisons instant survey results, promoted standard report writing, facilitated timely survey-report cycle completion and supported effective changes to the curriculum. Additional benefits are strengthened student professionalism and feedback skills.

Who's Buying Lunch? Physician Interactions with the Pharmaceutical Industry

Erin Bakanas MD

H. Douglas Walden MD

St. Louis University

Objectives: Medical students have little opportunity to evaluate their personal formation as professionals. Interacting with the pharmaceutical industry is a common scenario most students will experience throughout their careers. This elective is designed to help students develop an understanding of the ethical principles underlying the relationship between physicians and the pharmaceutical industry.

Methods: The course is a two-week elective offered throughout the fourth year curriculum. Students work independently to complete six projects, with faculty guidance available according to individual need. A variety of approaches are used. All students are required to participate in structured case analyses with a faculty member. Each participant must also write a personal position statement that describes and justifies a plan for future interactions with the pharmaceutical industry.

Results: The students find the opportunity for critical thinking to be a valuable experience. The students consistently identify four considerations in their assessment of interactions with the industry:

- a) What would my patients think about this behavior?
- b) What impact on patient costs does the proposed interaction make?
- c) Are my prescribing practices being influenced by something other than a best medical practice assessment?
- d) Is the interaction I am considering educational or not?

Conclusions: (1) Medical students have the skills to identify key ethical principles and obligations that underlie their relationship with the pharmaceutical industry. (2) The course format would easily translate to other medical schools. The independent study format allows for availability to students throughout the calendar year with limited demand on faculty time.

Managing Patients in Routine clinical practice and the community: A New
Family Practice Subinternship

Carole Keefe PhD

Mary Noel PhD, RD

Margaret Thompson MD

Michigan State University College of Human Medicine

Objective: We will describe the development of a family practice subinternship that provides fourth-year students with the opportunity to be involved in the care and management of patients in a primary preceptor's office or other outpatient clinical setting. The final evaluation will be an oral presentation on population-based approaches to meeting the health care needs of a defined group of patients within the practice that the student identifies as part of the clinical experience. The specific clinical settings for the subinternship experience will be those that serve underserved populations and other high risk groups including the elderly.

Methods: We are developing teaching relationships with federally qualified health centers across the state as well as a major comprehensive geriatric services center. Fourth year medical students will select a four-week family medicine subinternship with a family medicine preceptor and be integrated into the clinical activities of the practice setting for seven half-days per week. The remaining three half-days will be used for a complementary, mentored scholarly project (using distance learning technology) where the student will be looking at opportunities to better meet the needs of individual patients by concentrating on groups of patients. The guidance for the scholarly project will be based on the new AMA/DHHS series "Roadmaps for Clinical Practice: A Primer on Population-Based Medicine".

Results: The subinternship will allow senior students to focus on evaluating the undifferentiated health problem and patient management as well as the community-based integration and coordination of care under the supervision of exemplary preceptors.

Creating Scripts and Training Standardized Students for Faculty Development Workshops

Rachel Yudkowsky MD, MHPE

Mark Gelula PhD

University of Illinois Chicago

Purpose: Standardized students are actual health professions students who are trained to portray a prototypical teaching challenge consistently across many encounters with different faculty participants. We describe the use of standardized students in interdisciplinary faculty development programs to improve clinical teaching skills.

Methods: Faculty development programs at UIC focus on the skills of providing feedback and brief clinical teaching. At the beginning of each session, each participant is videotaped in encounters with two different standardized students. Using microteaching, each group of participants and instructors review the tapes and reflect on the encounters, providing immediate feedback to participants and modeling different approaches to the same teaching problem. Standardized students are trained with scripts that describe and define the particular teaching challenge to be simulated by the student. There are two versions of each script: the faculty participant received orienting instructions including a brief description of the teaching context, while the standardized student is given a more detailed description of the personality and behavior of the student to be simulated. The students rehearse the encounter with the instructors who role-plays different approaches that participants might take. Specific faculty questions are anticipated and the students are coached to answer in a manner consistent with their rehearsed character.

Summary: Standardized students provide a high fidelity, low-risk simulated environment in which faculty can reflect on and experiment with new teaching behaviors. Such encounters can enhance the effectiveness and impact of faculty development programs to improve clinical teaching skills.

M3 IDC: A New Interdisciplinary Curriculum for Third-Year Medical Students

Douglas Reifler MD

Robert Golub MB

Northwestern University

Purpose: Northwestern's preclinical curriculum includes medical decision-making, communication skills, ethics, medical humanities, and other interdisciplinary topics. Until now this curriculum has formally ended after two years. We aimed to create a continuum by expanding and integrating coverage of interdisciplinary topics into the clinical years.

Methods: Beginning in '02-'03, we implemented a new M3 Interdisciplinary Curriculum that includes Medical Decision-Making (MDM); Nutrition Skills; Difficult Conversations/Communication Skills; Ethical, Legal, and Social Implications of Medicine (ELSI) Conference; Bench-to-Bedside Conference (BBC); and Patient, Physician & Society III (PPS III--Professional Perspectives, Geriatrics, Complementary and Alternative Medicine, Palliative Care, and Teaching Skills). Students meet for four hours on Friday afternoons once a month. Attendance is required, and on any given Friday each student attends three classes. Sessions emphasize student leadership and participation. Content focuses on application to patients students take care of. For example, in MDM students prepare an evidence-based review to answer a patient-related clinical question. Students meet in groups by clerkship, except in PPS III, where they meet in colleges formed at the beginning of medical school.

Results: Students rated components from 1 (poor) to 5 (excellent). Mean scores after 3 months: MDM, 3.21; Nutrition, 3.41; ELSI, 3.5; Communication Skills, 3.0; BBC, 3.0; and PPS III, 3.6. Students struggle with leaving clerkships to attend class, but attendance has been excellent. Faculty evaluations have been very positive.

Conclusions: We successfully created a third-year interdisciplinary curriculum that integrates topics emphasized in the preclinical curriculum with clinical learning. Current plans are to expand this curriculum.

Evaluation of research-based theater for teaching medical students about empathic communication

Loreen Herwaldt MD

Marcy Rosenbaum PhD

Kristi Ferguson PhD

University of Iowa Carver College of Medicine

Purpose: Evaluate the efficacy of a research-based performance piece for teaching medical students about empathy and clinician-patient communication.

Methodology: The first author interviewed patients about their experience of getting healthcare and then developed a performance piece based on these stories. For the past three years, students and faculty members have performed this piece for the first year course, Foundations of Clinical Practice.* Students (N = 465) evaluated the piece by completing lecture evaluations, answering reflection questions immediately after the performance, and describing on the final exam specific lessons they learned from the piece. A qualitative analysis was conducted on responses from the evaluations and examination.

Results: Several themes emerged in the students' statements regarding the lessons they learned from the performance piece including: 1) patients must be viewed as people not as diseases; 2) providers must address both physical and emotional needs; 3) the provider's words and gestures profoundly affect patients; 4) information and conditions that are routine for clinicians may be very distressing for patients. Students felt that the performance piece was an innovative and very effective method for teaching them to see and feel the patients' perspectives on illness and health care.

Conclusions: A research-based performance piece is a unique way to teach empathy and clinician-patient communication to undergraduate medical students. This approach helps students understand the patients' experience of medical encounters and "experience" factors that determine the quality of patient-clinician interactions.

* The performance piece is being presented during the Saturday lunch session of the CGEA meeting.

A Regional Approach to Faculty Development Needs Assessment: Synergies and Challenges

Brian Mavis PhD, *Michigan State University College of Human Medicine*

Peter Coggan MD, *Henry Ford Health System*

David Pieper PhD, *Wayne State University*

Joseph Brocato PhD, *OHEP Center for Medical Education*

Linda Roth PhD, *Michigan State University*

Urban communities are characterized by their diverse resources and needs. In large urban communities, a plurality of undergraduate and graduate medical education programs coexist, sponsored by different organizations. Typically, each organization independently implements faculty development needs assessments and programs. In reality, there are many similar faculty development needs across these organizations. What might differ is the institutional mission and relative emphasis placed on faculty development initiatives.

This presentation describes a regional approach to faculty development planning, based on strong inter-organizational cooperation. Representatives from each organization met to develop a common needs assessment instrument related to faculty development. The instrument was implemented at each institution; each made choices as to which medical school, hospital and community faculty to include. Both web-based and mail surveys were used.

Survey questions were organized under nine major content areas: Research and Scholarly Activity, Curriculum, Teaching, Personal and Professional Development, Leadership, Professionalism, Medical Informatics, Evaluation, and Administration. Three of the top four top rated issues were in the area of Leadership, regardless of academic status or venue.

To the extent that similar needs are identified across institutions, joint resources can be used for program development and implementation. The survey results also illustrate the faculty development needs unique to each institution. Similarly, the results can be aggregated by specialty, years of experience, department among others to compare specific subgroups with the aggregate data.

The final section of the presentation focuses on the perceived challenges and benefits from the perspectives of participants from each institution.