MEDICAL EDUCATION
DISCOVERY PATHWAY

Track Leader: Lou Ann Cooper, PhD
What is Medical Education Research?

- Research that seeks to evaluate existing knowledge and contribute new knowledge to the field of medical education.

- Overall aim of educational research is to provide teachers and learners with systematically obtained information that helps to improve the quality of the learning process.

- Effects of an intervention are seen and assessed on the educators or their students, rather than on the outcomes of patients.

Broad range of topics

- Curriculum development
- Teaching methods
- Student assessment
- Evaluation of instruction (courses and faculty)
- Faculty development
- Admission and preparation of candidates for medical training
- Factors influencing career choice
- Research methodology
- Use of technology in education
in Medical Education

- Simulation
  - CSSALT
    - http://simulation.health.ufl.edu

- Interprofessional Education and Collaborative Care

- Virtual Experiences Research Group
  - http://verg.cise.ufl.edu

- Educational Technology and Enhanced Learning
HOT TOPIC in Medical Education

- Adult learning theory
  - Self-directed learning
- Instructional Methods
  - Flipped classroom
  - Blended learning
- Assessment
  - Learner-centered assessment
  - Script concordance
  - Progress testing
Learning Objectives for the Medical Education Track:

- Demonstrate foundational understanding of social science and educational research methods and the statistical/data analysis methods necessary to support a scholarly approach to the study of education in medicine and the health professions.

- Formulate a research question or problem statement and use appropriate and rigorous methods to conduct a final project that will be reviewed by faculty and peers for public dissemination.

- Know the IRB policies put in place to ensure the protection of human research subjects and apply this knowledge to develop a protocol to be submitted to IRB-02 (Behavioral/NonMedical IRB).
Learning Objectives for the Medical Education Track:

- Read and critically analyze articles published in medical education journals, e.g. Academic Medicine; Teaching and Learning in Medicine; Simulation in Healthcare.

- Learn and apply instructional methods in one or more of the contexts in which medical education takes place. Options include:
  - Senior Elective – Becoming an Effective Resident Teacher
  - Teaching Assistant in first or second year course
  - Teaching patients in the community
  - Service on one of the COM’s educational committees is encouraged, e.g. Admissions, Evaluation, LCME Self-Study subgroups
Requirements

- A typical student will identify an area of interest during the first year, participate in the Medical Student Research Program (MSRP) during the summer between first and second years, and expand on this experience during Years 2 – 4.

- Develop an individual planned program (IPP) in collaboration with a faculty mentor and the course director that includes project objectives, action/research plan with timeline, anticipated outcomes, and assessment/evaluation criteria.

- Mentorship can be provided by faculty who have completed the Master Educator Fellowship, other faculty engaged in educational scholarship, and UF faculty in other colleges and departments both within and outside of the Academic Health Sciences Center.
Requirements

- Complete additional curricular requirements as agreed upon in your IPP.
- Attendance at all required seminars and meetings.
- Submit and present final project. The final project will be judged according to Glassick’s criteria for scholarship (Scholarship Assessed, 2000):
  - Clear goals
  - Adequate preparation
  - Appropriate methods
  - Significant (meaningful) results
  - Effective presentation
  - Reflective critique
The Research and Discovery Foundations of Medicine, a required course in the fall semester is part of the core curriculum and provides foundational material for those students who elect to conduct a formal educational research study.

Medical Student Research Program (MSRP)
Timeline and Core Components – MS2

- Attend introductory track meeting to discuss course objectives
- Identify faculty mentor
- Develop individualized planned program with faculty mentor and course director
- Meet with mentor monthly to review progress
- Track specific learning activities include at least one Thursday afternoon seminar per semester and independent completion of agreed upon modules or other professional learning activities.
Some Examples of Track Learning Activities

- Medical Education Journal Club
- Educational Grand Rounds sponsored by individual departments
- Seminars in the Educational Development Certificate series sponsored by the Office for Faculty Development
- Seminars in the Professional development series sponsored by the Office for Faculty Development (frequency: once a month with archived video presentations)
- Attendance at Medical Education Week presentations
- Educational Scholarship Learning Community (in person attendance or viewing of videos and PowerPoint presentations)
- Webinars available on the International Association of Medical Science Educators (IAMSE) site
Timeline and Core Components – MS3

- Meet once each semester with your faculty mentor and the course director.
- Attend two group seminar meetings with other track members.
Timeline and Core Components – MS4

- Elective in Medical Education Research
- If your project is not a research study must choose from among 4th year electives or experiences to demonstrate acquisition of knowledge and skills relative to teaching to include:
  - Becoming an Effective Resident Teacher MDT 7530
  - Teaching Assistant in a First or Second Year course, e.g., Teaching Assistant in Anatomy MDT 7520
  - Serving as a Physical Exam Teaching Assistant (PETA) in the Harrell Assessment Center
  - Attendance at the one-day Residents as Teachers program
- Capstone project.
Examples of Student Projects

Medical Education Scholarship
Research and Curriculum Development
According to the well-recognized publication on health disparities, Unequal Treatment, even when controlling for socioeconomic factors and health conditions, there is still an element of inconsistency in physician decision-making that leads to disparities in outcomes. 1 The AAMC and LCME have both emphasized the need to incorporate and integrate cultural competence training into medical school curricula in efforts to combat physician contribution to health disparities.

**Methods**

- Using a variety of quasi-random sampling methods, 50 students from each medical school class were asked to complete both the TACCT and the adapted CCCQ.
- Course and clerkship directors were asked to complete both TACCT Domains Grid and the Specific Components Grid.
- For each course and clerkship, the proportion of “yes” responses to each TACCT item was computed. The agreement between students and the course director was then calculated using the point biserial correlation.
- Responses to the 13 items selected from the CCCQ were subjected to exploratory factory analysis to verify dimensionality and create subscales corresponding to TACCT domains (cultural knowledge, skills, and attitudes).
- Student self-assessment scores were compared to the respective TACCT responses in the areas of cultural competence knowledge and skills to assess for strength of correlation.

**Results**

**Table 1. Cultural Competency Self-Assessment Rotated Factor Pattern**

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledgeable about sociocultural characteristics of diverse racial</td>
<td>0.01</td>
<td>0.01</td>
<td>0.60</td>
</tr>
<tr>
<td>and ethnic groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledgeable about health risks experienced by diverse racial and</td>
<td>0.03</td>
<td>0.02</td>
<td>0.62</td>
</tr>
<tr>
<td>ethnic groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledgeable about health disparities experienced by diverse racial</td>
<td>0.00</td>
<td>0.06</td>
<td>0.79</td>
</tr>
<tr>
<td>and ethnic groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dealing with patient perspective about health and illness</td>
<td>0.09</td>
<td>0.63</td>
<td>0.00</td>
</tr>
<tr>
<td>Performing a culturally sensitive physical exam</td>
<td>0.05</td>
<td>0.77</td>
<td>0.00</td>
</tr>
<tr>
<td>Perceiving/relaying a culturally sensitive treatment plan</td>
<td>0.02</td>
<td>0.88</td>
<td>0.00</td>
</tr>
<tr>
<td>Dealing with cross-cultural conflicts related to diagnosis and treatment</td>
<td>0.07</td>
<td>0.89</td>
<td>0.00</td>
</tr>
<tr>
<td>Importance of sociocultural issues in interactions with patients</td>
<td>0.75</td>
<td>0.64</td>
<td>0.00</td>
</tr>
<tr>
<td>Importance of sociocultural issues in interactions with classmates</td>
<td>0.84</td>
<td>0.06</td>
<td>0.01</td>
</tr>
<tr>
<td>Importance of sociocultural issues in interactions with residents</td>
<td>0.56</td>
<td>0.01</td>
<td>0.09</td>
</tr>
<tr>
<td>Importance of sociocultural issues in interactions with staff</td>
<td>0.54</td>
<td>0.06</td>
<td>0.01</td>
</tr>
<tr>
<td>Importance of training in cultural diversity and multicultural health</td>
<td>0.56</td>
<td>0.01</td>
<td>0.09</td>
</tr>
</tbody>
</table>

**Table 2. Cultural Competency Self-Assessment - Factor Scores by Level of Training**

<table>
<thead>
<tr>
<th>Factor</th>
<th>MS1</th>
<th>MS2</th>
<th>MS3</th>
<th>MS4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>40.41</td>
<td>8.98</td>
<td>4.07</td>
<td>0.82</td>
</tr>
<tr>
<td>Skills</td>
<td>40.81</td>
<td>1.07</td>
<td>0.04</td>
<td>0.78</td>
</tr>
<tr>
<td>Attitudes</td>
<td>40.12</td>
<td>1.87</td>
<td>3.57</td>
<td>0.89</td>
</tr>
</tbody>
</table>

**Table 3. TACCT Agreement Between Students and Course Directors**

<table>
<thead>
<tr>
<th>Course</th>
<th>Point Biserial Correlation</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1 (All courses)</td>
<td>0.40</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Course</td>
<td>0.09</td>
<td>0.09</td>
</tr>
<tr>
<td>Year 2 (All courses)</td>
<td>0.34</td>
<td>0.001</td>
</tr>
<tr>
<td>Year 3 (All courses)</td>
<td>0.09</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Year 4 (All courses)</td>
<td>0.40</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Obstetrics &amp; Gynecology</td>
<td>0.71</td>
<td>0.0002</td>
</tr>
<tr>
<td>Obstetrics &amp; Gynecology (Jacksonville)</td>
<td>0.48</td>
<td>0.02</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>0.27</td>
<td>0.22</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>0.69</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Year 4 (All courses)</td>
<td>0.40</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Family Medicine Subspecialty</td>
<td>0.51</td>
<td>0.02</td>
</tr>
<tr>
<td>Geriatrics</td>
<td>0.80</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Pediatrics Subspecialty</td>
<td>0.43</td>
<td>0.004</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>0.54</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

**Implications**

- In traditional curricular models that split pre-clinical and clinical training, student self-assessment does not increase in a step-wise manner. Fourth year students may have decreased confidence in the realms of knowledge and skills as well as in the importance of cultural competence education due to a decrease in the amount of structured patient care and didactic activities.
- Student perception of cultural competence content may be more robust in courses that pair structured patient encounters with corresponding didactic sessions.

**Conclusions**

- Self Assessment: Third year students rated their knowledge about cultural issues higher than both first and second year students and fourth year students scored significantly higher than first year students. Third year students rated their skills higher than first and second year students; fourth year students, on average, rated their skills higher than second year students. There was no significant difference in attitudes among the four classes.
- TACCT Year 1: There was moderate level of agreement in the first year mostly due to both groups indicating that cultural competence content was not taught. Courses that pair structured patient interactions with didactic sessions such as EPC I & II showed a high level of agreement as well as a high percentage of “Yes” responses.
- TACCT Year 2: There was a moderate level of agreement also due to both groups stating that content was not taught. Courses such as Ethics and Pharmacology had low levels of agreement because course directors indicated “Yes” responses when the majority of students indicated “No” responses.
- TACCT Year 3: There was a high level of agreement with increased percentage of “Yes” responses mostly in the Skills section of the TACCT corresponding to the increase in patient care during the third year.
- TACCT Year 4: Moderate level of agreement with both groups mostly indicating “No” responses. The decrease in structured clinical activity and didactic sessions during the fourth year may play a role in the lower percentage of “Yes” responses.
- There was very poor correlation between student self-assessment and TACCT responses.
The Effects of Post-discharge Phone calls on Patients and medical Students: A pilot Project
Matrone C, Cooper LA, Harrell HE
University of Florida, Gainesville, FL

BACKGROUND
In the weeks following hospital discharge, patients have heightened vulnerability to health problems. A number of studies explored the role of post-discharge phone calls in patient safety during that transition. Most reported inconclusive results and none incorporated medical students. Students rotating on the Internal Medicine Clerkship were required to attempt to call each of their patients after discharge and submit a brief activity log summary. Written reflection on the experience was optional.

SPECIFIC AIMS
1. Determine feasibility of students performing post-discharge phone calls
2. Describe issues identified through these calls
3. Determine whether preventable post-discharge problems were identified
4. Assess students’ reactions

PROGRAM DESCRIPTION
Students were required to call each patient they cared for during the inpatient rotation 2-3 days after discharge. Three attempts were recommended.

METHODS
Phone call logs between 2009-2011 were analyzed descriptively, using the following categories:
- No Contact
- No Concerns
- Question(s) Resolved
- Counseling Provided
- Near Miss/Adverse incident (N/MAE) identified
- Problem Identified
- Miscellaneous

Reflections were analyzed for themes using open coding. All reflections coded to ensure theme saturation and triangulation used for theme concordance.

* N/MAE or problems were subcategorized according to intervention.

RESULTS

Categorization of Call Attempts

Completed Calls

Questions Resolved

Interventions With Patients

MAJOR THEMES
N=132 (98.4% submitted optional reflection)

Patient Reaction
“It was especially rewarding to hear how grateful many of the patients were for the care they received. Overall, the patients were very surprised and very appreciative about the phone calls.”

Student Reaction
“Knowing that I had made a connection with my patient that extended beyond medicine was extremely gratifying.”

“I found that the experience was rewarding, but also fairly frustrating. One conversation with a patient’s wife was one of the most sad, but also joyous and spiritual, talks I have had in my life. Other conversations were unusual and made me wish I was somewhere else at that moment.”

Patient Care
“Oftentimes these post-discharge phone calls gave me the chance to clarify confusion over medications or remind the patients of upcoming outpatient appointments that we had set up while they were in the hospital.”

Impact on Future Practice
“By talking to them on the phone, I realized that I may actually be more interested in taking care of chronic medical problems and following their progress rather than just see them in an acute setting.”

“I hope to implement post-discharge phone calls into my daily practice in the future.”

Patient Context
“If they live by themselves, they may have nobody at all to help ensure they go to all their appointments, fill their prescriptions, and take their meds appropriately.”

“It was interesting to have this experience as we healthcare workers only get a glimpse of people’s lives while they are at the hospital.”

Systems-based Practice
“The pharmacists and the case managers are so essential to a successful discharge but it doesn’t seem like we have extensive interaction with them.”

“Experiencing the struggle first hand gives me a greater appreciation of the role of social workers and case managers in quality healthcare for hospital patients once they return home.”

LIMITATIONS
- Single-institution study
- Students who chose to submit a written reflection may be different than students who did not
- Patients who could not be contacted may differ from those who were successfully contacted
- Effect on changing students’ behavior is unknown
- Effect on patient outcomes is unknown

CONCLUSIONS
- Students are able to contact most patients following discharge, though barriers do exist.
- One-fifth (23.9%) of completed calls led to students providing additional service to the patient.
- A minority (2.6%) of completed calls identified N/MAE or P and students intervened in 90% of cases.
- Student reflections indicate that systems-based practice issues are a major theme of the calls.
- Student reflections revealed additional value to these calls (both for students and patients).

REFERENCES
Enhancing Medical Student Education Through Low Cost Simulation.

Christiania Shaw, MD; Zachary Stone, BS; Sanda Tan*, MD, PhD
Department of Surgery, University of Florida, Gainesville, FL

Abstract

Simulation: The purpose of the study was to evaluate the effectiveness of low-cost laparoscopic and open surgical skills lab in a newly implemented third year medical student curriculum.

Methods: Third year medical students participated in open and laparoscopic surgical skills lab during their surgery clerkship. The open surgical skills lab consisted of performing a bowel anastomosis on a practice small bowel. A surgical anger was used as a trainer bowel, and students were taught several methods of hand-sewn anastomosis techniques to sew bowel both in a circular form. The laparoscopic simulation lab consisted of multiple stations similar to those utilized for Fundamentals of Laparoscopic Surgery (FLS) training. Students were trained in the skills of tape tying and peg transfer prior to intervention and practice. For the open 30 stations, students completed all 5. Following practice the students were exposed to tasks on suturing, and suturing. Students were given a questionnaire after each lab to evaluate the lab experience.

Results: Medical students demonstrated statistically significant [F = 24.48] improvement in tasks of peg transfer and tape tying. Average time to completion of tasks was 96 and 296 seconds prior to intervention. Post-intervention, times decreased to 30 and 164 seconds, respectively. A 10-point Likert scale survey following exercise evaluated among student satisfaction.

Conclusions: With minimal cost, a laparoscopic and open surgical skills laboratory can improve surgical skills and increase overall student satisfaction with third year surgery clerkship experience. Both low-cost simulations and the introduction early in medical student curriculum.

Background

In November 2012, a surgical simulation curriculum was established for the third year medical students as surgery clerkship. The primary and secondary goals were to improve educational experience and expose students to technical skills not experienced in Operating Room. Additionally, many medical students choose their life-long career based on third year experiences. An additional aim of this project was to influence more students to enter a surgical field by enriching their experience during those eight weeks.

Methods

- Prospective, IRB waived, started November 2012.
- N=127 students, ongoing.
- Proctor included 2 board certified general surgeons.
- Laboratories included open surgical skills lab (bowel anastomosis) and laparoscopic surgical skills lab.
- Percutaneous small bowel was used for open lab with injection on both simple interrupted and continuous stitches.
- Laparoscopic lab consisted of following tasks: running the bowel (rope running), precision cutting, threading needle through block pin, intracorporeal suturing and knot tying, and peg transfer.
- Technical skill was evaluated with pre and post instruction timing on rope running and peg transfer.
- Student satisfaction was evaluated with 12 question Likert Scale survey.

Results

<table>
<thead>
<tr>
<th>Department of Surgery Skills Lab Evaluation of Programming</th>
<th>Peg Transfer Pre and Post Practice Times</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Instruction Average: 99.1 (seconds)</td>
</tr>
<tr>
<td></td>
<td>Pre-Instruction Average: 109</td>
</tr>
<tr>
<td>Difference</td>
<td>44.19%</td>
</tr>
</tbody>
</table>

Table I. Average percentage post instruction, difference, and percent improvement for all students completing tape tying and peg transfer activity.

Conclusions

These results indicate that with minimal cost the following can be achieved:
- Statistically significant improvement in manual dexterity
- Increase in student satisfaction with third year surgery clerkship
- Improved overall medical education
- Early introduction of simulation labs to medical school curriculum

Acknowledgement

COMCEC Faculty Educational Research Grant
Peer Academic Enrichment Program (PAEP)

Through peer-leading academic support, the goal of the Peer Academic Enrichment Program is to ease the transition to medical school by providing incoming students with academic/social/emotional support, encouragement, and guidance. This program is optional and available to all first-year students of the UF COM.

Students participating in the program will attend three general sessions throughout their first year. The topics of these sessions range from study skills and learning styles to preparation and tips for each first-year course.

Through the Peer Academic Enrichment Program, incoming students are also given the opportunity of joining an academic peer-mentoring/support group of their choice. Each group is led by a team of upperclassmen (MS2, MS3, MD/PHD and MS4 students) and will meet twice per semester. Discussion topics include adjustment to medical school, difficulty with coursework, and balancing school and personal life.

Feel free to contact us if you have any questions about the program.

Ella Uwaibi
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PAEP Developer and Coordinator
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Resources to check out:

- Medical education journals
  - Academic Medicine
  - Medical Education
  - Teaching and Learning in Medicine
  - Medical Teacher
  - Simulation in Healthcare
- Specialty journals, e.g. Academic Emergency Medicine
- Conference proceedings, e.g. Society for the Teaching of Family Medicine
- DR-ED listserve  http://omerad.msu.edu/DR-ED/
- Med student sites