

# The New Clinical Skills Suite at the Warren Alpert Medical School: Integrating Technology, Medical Education and Patient Care

*Paul George, MD, Julie Scott Taylor, MD, MSc, Peter L. Holden, and Richard Dollase, EdD*

As the Warren Alpert Medical School (AMS) moves into its new home at 222 Richmond Street in the summer of 2011, AMS students and faculty will now be able to access instructional technology for medical education not previously available at Brown. Recent consensus guidelines<sup>1</sup> recommend that in preparing for the changing role of instructional technology in medical education, technology be used to:

- Provide experiences for learners that are not otherwise possible;
- Focus on fundamental principles of teaching and learning rather than learning specific-technologies in isolation;
- Allocate a variety of resources to support the appropriate use of instructional technologies;
- Support faculty members as they adopt new technologies, and provide funding and leadership to enhance electronic infrastructure.

## STATE OF THE ART CLINICAL SKILLS SUITE

At AMS, our goal of integrating instructional technology into medical education will be greatly enhanced with the availability of a clinical skills suite. The new facility, which will be located on the third floor of the new medical school building ([http://med.brown.edu/newbuilding/building\\_layout/thirdfloor](http://med.brown.edu/newbuilding/building_layout/thirdfloor)), will be a key contributor to the integration of medicine, education, and technology. The suite, composed of a 16-exam room, state-of-the-art simulated physician's office, will be home to the medical students' virtual clinical practice. Each room is equipped with an examination table, required examination equipment such as blood pressure cuffs and otoscopes, and a physician's desk (Figure 1). The examination

rooms will also be equipped with a computer for the use of faculty or standardized patients (actors, trained to portray a patient with a specific disease presentation) for the rating students' clinical performance, and with video recording capability (two closed circuit television cameras per room). The latter will allow students to view their own encounters, and faculty to critique students' clinical performances. Outside each clinical suite will be another computer station that students will use to document their notes or complete a written exercise related to the patient they had just seen. The suite will be fully automated with sophisticated software capable of scheduling students for examinations, recording assessment data, and analyzing results, allowing faculty to provide immediate feedback to both students and faculty.

Each examination room within the suite is designed to look and function like a primary care physician's office. In fact, the design is based on Alpert's family medicine residency outpatient practice site. Each room in the suite is large enough to hold six people (standardized patients, the student learner, student colleagues, and faculty). Two of the rooms are larger than the others. These rooms are "simulation ready"

should AMS decides to integrate simulation manikins on site in the future. There are two doors in every exam room so that standardized patients can come in to the rooms from "backstage"—that is, from a central area—adding an even more realistic element to patient encounters. There is a central control room for video and audio monitoring. Finally, during various simulation exercises in the clinical suite, students will use iPads or other electronic devices to take notes or look up treatment protocols. Students will also learn to use **electronic medical records (EMR)** applications on the iPads, preparing them for their clinical work in their clinical rotations.

## THE DOCTORING COURSE

The technologic capabilities of the clinical skills suite will enhance a number of components of the curriculum at AMS, including the Doctoring course. Doctoring, currently a two-year clinical skills course in Years 1 and 2, is designed to teach the knowledge, skills, attitudes, and behaviors of the competent, ethical, and compassionate 21st-century physician. Beginning in 2012, Doctoring will be a required course for all students from the first year through the fourth year of medical school.



Figure 1. An architectural rendering of one of the examination rooms in the clinical skills suite (Courtesy Ellenzweig Associates).

Doctoring combines instruction and assessment in medical interviewing, physical examination, medical ethics, cultural competence and professional development. It does so using an educational paradigm that emphasizes interdisciplinary teaching, collaboration, patient-centered care, student reflection, teamwork, and teacher-learner partnerships. Across the entirety of the first two years, students spend one half day each week in the classroom setting and one half day in a clinical setting working with an individual attending physician mentor. In the classroom, students work longitudinally throughout the academic year in groups of eight students with a physician and a social/behavioral scientist co-teaching pair. Small groups often work with standardized patients to develop or refine their clinical skills. At the conclusion of each of the first four semesters of Doctoring, students are evaluated by both faculty and standardized patients on their clinical skills, including medical interviewing, physical examination, oral presentations, written documentation, and professionalism. Thus, the clinical skills suite will not only be used for instruction but also for assessment.

In the past, students practiced their medical interviewing and physical examination skills in make-shift seminar/study/examination rooms in the lower level of the Biomedical Center on Brown University's campus. The clinical skills suite will allow students the opportunity to acquire and hone their skills in a clinical environment very similar to where they eventually will practice medicine. Case scenarios that students will encounter will be more realistically rendered because of the new physical facilities. Students and standardized patients will be video recorded from two angles, allowing faculty to view both students' and the standardized patients' facial expressions and other nonverbal behaviors. Students will receive feedback from faculty members who review patient encounters, typically from either within the exam room or from a remote seminar room in the medical education building. In addition, faculty will be able to view student encounters from their own clinical practices or homes via an internet connection. Students will be better able to reflect on and improve their clinical skills after reviewing their own patient interac-

---

**The clinical skills suite will allow students the opportunity to acquire and hone their skills in a clinical environment very similar to where they eventually will practice medicine.**

---

tions. In summary, the clinical skills suite will provide well designed simulation and feedback exercises for preclinical medical students not possible at our current facilities.

#### **THE NEW CLINICAL SKILLS CLERKSHIP**

In 2009, AMS embarked on a curriculum redesign of Years 3-4. A central objective of this curriculum redesign, as articulated by the medical admissions committee, is that "a professional, patient-centered approach to patient care should be instituted. Informed perspectives related to potential conflicts of interest and cultural diversity should be instilled and internalized in a manner that influences future behavior throughout student careers." In order to achieve this objective, beginning in the spring of 2012, students will be required to complete a Clinical Skills Clerkship, a three-week introduction and orientation to the clinical years of medical school. It will take place after the USLME Step 1 board exam and before core clinical clerkships begin. Research studies suggest a course such as the Clinical Skills Clerkship, a version of which is offered at many medical schools nationally, increases students' self-reported preparedness for the clinical years of medical school.<sup>2</sup>

As a central component of the Clinical Skills Clerkship, students will follow a panel of virtual patients in an outpatient setting during week one, in an inpatient setting in week two, and in a longitudinal care setting during week three. The clinical skills suite will serve

as a home for this clerkship and will be transformed from outpatient office to inpatient hospital room to long-term care facility. One recent study found, "The intent of transition courses is to prepare students for workplace learning, but the most common approaches provide limited exposure to real clinical settings. Transition courses could better prepare students for workplace learning by increasing exposure to the routines, norms, and professionals that students encounter in clinical settings."<sup>3</sup> Our new clinical skills suite will do just that, allowing students to focus on learning how to be a clinician before actually being given responsibility for patient care on the inpatient wards or in the office.

#### **CORE CLERKSHIPS**

The clinical skills suite will also be used within specialty-specific core clerkships at AMS. At present, core clerkships in Internal Medicine, Obstetrics and Gynecology, and Pediatrics run an individual Objective Structured Clinical Examination (OSCE) at the conclusion of their rotations. Space and other resources necessary to conduct these OSCEs have often been difficult to arrange in the hospitals. In the new clinical skills suite, clerkship faculty (with the assistance of medical education administrators at Brown) will have the use of consistent state of the art facilities and resources to assess students' clinical performance in their own familiar clinical setting at the end of a clerkship. It is also planned that procedural training will become an integrated part of all core clerkships, facilitated in part by the availability of the new clinical skills suites.

#### **FOURTH-YEAR OSCE**

At AMS, the fourth-year OSCE is a required, summative examination held every fall to assess student competency using standardized patients. Clinical cases are drawn from multiple specialties and capture the essence of a typical day in an outpatient office, in the emergency room, or on the hospital wards. Students can be evaluated on their medical knowledge as well as their communication and physical diagnosis skills. Most recently the role of the OSCE has been expanded both nationally<sup>4</sup> and at AMS to assess professionalism, quality improvement, and written documentation.

The clinical skills suite will improve the way this important clinical exam is administered and graded. In the past, students and standardized patients were scheduled using a time consuming and complex algorithm. AMS has now invested in software to efficiently schedule students and standardized patients for the OSCE. The software also allows standardized patients to score students electronically. It is capable of performing statistical analysis of the exam, allowing medical educators to provide more immediate feedback and comparative data to both students and clerkship directors on student performance. Because of the video recording capability, students who do not pass the initial OSCE can review their own performance, and reflect on their strengths and deficiencies before remediating the examination. This feature is quite important. One recent study showed that “OSCE remediation combining review, reflection, and self-assessment has a salutary effect on (subsequent) performance and self-assessment of performance.”<sup>5</sup>

### INTERPROFESSIONAL EDUCATION

The clinical skills suite will enhance interprofessional medical education within Rhode Island. An expert panel recently recommended that health professional students be trained to **work in cooperation with those who receive care, those who provide care, and others who contribute to or support the delivery of prevention and health services.**<sup>6</sup> Each year, second-year medical students, fourth-year nursing students, and fifth-year pharmacy students are brought together for a half-day workshop where

team building and problem solving skills are formally taught. Students function as a 3-person team of one medical student, one nursing student, and one pharmacy student to take a history, perform a physical examination, interpret laboratory data, and counsel a standardized patient. The clinical skills suite will allow this and other interprofessional workshops, as well as other collaborative educational opportunities, to occur. This will provide medical students with important structured opportunities to collaborate with other health professional students early on and throughout their undergraduate medical education. In addition, in the future students from other health professions will be able to use the clinical skills suite for their independent clinical training purposes.

### CONCLUSION

As Alpert Medical School moves into its new building, the new clinical skills suite will help transform the curriculum for students, clinical faculty and medical education researchers. The physical space will provide key educational opportunities for our medical students that have not been available previously. Faculty will be able to teach holistic patient care in an enriching environment, allowing them to better focus on the fundamental principles of teaching. Medical education researchers will be able to analyze the impact of the medical school building and its clinical skills suite on student performance. And most importantly, we believe patient care will improve as students are exposed to high fidelity patient care settings earlier and more frequently in their medical training.

### REFERENCES

1. Robin B, McNeil SG, Cook DA, Agarwal KL and Singhal GR. Preparing for the changing role of instructional technologies in medical education. *Acad Med.* 2011; 86(4): 435-39.
2. Chumley H, Olney C, Usatine R and Dobbie A. A short transitional course can help medical students prepare for clinical learning. *Fam Med.* 2005; 37(7): 496-501.
3. O'Brien BC and Poncelet AN. Transition to clerkship courses: preparing students to enter the workplace. *Acad Med.* 2010; 85(12): 1862-69.
4. Casey PM, Geopfert AR, Espey EL, Hammoud MM, Kaczmarczyk JM, Katz NT, Neutens JJ, Nuthalapaty FS and Peskin E. To the point: reviews in medical education—the objective structured clinical examination. *Am J Obstet Gyn.* 2009; 25-34.
5. White CB, Ross PT and Gruppen, LD. Remediating students' failed OSCE performances at one school: The effects of self-assessment, reflection, and feedback. *Acad Med.* 2009; 84:651-54.
6. Interprofessional Education Collaborative Expert Panel. (2011). Core competencies for interprofessional collaborative practice: Report of an expert panel. Washington, D.C.: Interprofessional Education Collaborative.

*Paul George, MD is an Assistant Professor of Family Medicine and Associate Director of Preclinical Curriculum at the Warren Alpert Medical School of Brown University.*

*Julie Scott Taylor, MD, MSc is an Associate Professor of Family Medicine and Director of Clinical Curriculum at the Warren Alpert Medical School of Brown University.*

*Peter Holden is Director, Facilities Planning & Operations for the Brown University Division of Biology and Medicine.*

*Richard Dollase, EdD is the Director of Curriculum Affairs at the Warren Alpert Medical School of Brown University.*

### Disclosure of Financial Interest

The authors and/or their spouses/significant others have no financial interests to disclose.

### CORRESPONDENCE

Paul George, MD  
Memorial Hospital of Rhode Island  
111 Brewster Street  
Pawtucket, RI 02860  
phone: 401-729-2235  
fax: 401-729-2923

