

## The University Clinical Skills and Simulation Center: A Jefferson Gem

### Part I Interview with Dale Berg, MD and Katherine Berg, MD

#### Co-Directors of the University Clinical Skills and Simulation Center (UCSSC)

##### What is the primary mission of the Clinical Skills Center?

**DB:** The Center's goal is to produce enthusiastic, empathetic, caring, scientific-minded physicians who work with others to the benefit of their patients, colleagues and students. Using the *7 Principles of Simulation* (Table 1) that we have developed, we've created what we believe is an optimal learning environment that will allow learners to efficiently and effectively learn the skills necessary to practice and teach medicine. We want them to think critically about the skill sets that we teach them, to ask questions on the evidence behind the physical examination skills that are taught. We think that teaching and evaluating in the Simulation Center will help to translate these skills to the bedside. Finally, we want to inspire our students to become teachers themselves and to serve as role models for future generations. We hope that, through its combination of curriculum and faculty, the Center can help our graduates model the ideal Oslerian physician: "Equal parts doctor, teacher and priest."

##### How did you first start to become interested in this field?

**DB:** We started in 1990 because we, and many of our teaching and academic colleagues, felt that the student and resident physicians had significant deficits in physical diagnosis and examination skills which are so important to the provision of high quality (and cost effective) health care. With several mentors at the Milwaukee VA and the Medical College of Wisconsin, we developed a unique elective course for senior medical students that allowed them to learn an advanced version of physical examination during their clinical years. This course served as a paradigm for all of our future teaching endeavors. The evidence-based curriculum used checklists to make certain that everyone

received the same teaching. Patients with real findings were examined by the students in a reproducible standardized method. And, we developed an evaluation and assessment tool that was a primitive Objective Structured Clinical Exam (OSCE). Finally, we conducted research on this curriculum and, most importantly, translated it to the bedside.

Over 1000 students have participated in this course, which continues to be our paradigm for all clinical skills teaching and is the backdrop to our development of the *7 Principles of Simulation* in teaching and evaluation. The Standardized Patient (SP) program that began with that course evolved and expanded to be used in many other venues: in Boston, at Harvard Medical School; in Minneapolis, at the University of Minnesota; and then we brought it to Jefferson when we were recruited here in 2001.

**KB:** The Step 2 Clinical Skills of the Boards, an examination that graduate medical students need to pass in order to receive a license to practice medicine, affirmed the need for simulation teaching and assessment in a standardized way. This led to using simulation to teach skills in physical examination, history-taking, and communication skills. There has been a kind of renaissance in physical examination skills and, as it evolved, we began incorporating other types of simulation (i.e. manikins) into the curriculum. Today's manikins are much more sophisticated and durable, and the sound quality has markedly improved in the last few years.

##### When you were students did you have exposure to this?

**KB:** No, none. The reason I got involved in physical exam was because I felt the training I had did not give me enough to be able to do what I need to as a physician. It was a deficiency in education that motivated us to do this.

**DB:** The things we teach in the Simulation Center—the cases we present and the checklists we have written—are items that we wish that we had seen, learned and experienced in our medical training. We never had a chance to practice with standardized patients, we never had a chance to hear classic murmurs in a minimal-stress environment.

We practiced medicine for a while in rural Nepal, where there was no electricity, no imaging, no lab tests. There you must depend on the fundamentals of clinical skills—history and physical examination to diagnose and follow patients. We had to put in practice what we had been teaching. To practice medicine with no modern ancillary tools was a challenge, but a delicious challenge.

If, God forbid, you are somewhere without electricity and thus without radiographs, you can still assess the patient in a professional and scientific fashion with the skills of exam and history. That is being a physician—using your senses and your knowledge to determine a clinical diagnosis.

**KB:** Health care delivery has changed. Hospital stays are shorter, and more is done in outpatient visits. When I was a student, I could observe the natural history of the acute or sub-acute disorder of a patient over the course of their entire stay of 1, 2, or even 3 weeks. In a relatively unstructured fashion, I could examine these patients and learn and practice clinical skills there. By simulating the hospital environment in a standardized fashion, we allow the student to learn clinical skills and provide opportunity for structured practice. The SP allows the students to learn and practice the skills in safe, structured environment. The Center does not, however, supplant bedside teaching. We allow the students to practice invasive procedures on plastic models first, instead of working on a live patient.

**DB:** We can state that the students know how to perform the steps in the skills and even how to effectively interpret and document these skills. Because it is a simulated environment, we cannot state that they are clinically competent; that will always require observation and assessment at the bedside. We need to be able to translate what we do to the bedside. Clearly, simulation centers allow for the effective introduction to the teaching of skill sets, as well as the experience of structured practice. Their power is to more effectively prepare the student with the tools to learn better, under the tutelage of faculty, at the bedside. Simulation cannot replace bedside teaching or assessment. It makes it more efficient, more standardized, and more reproducible across learner groups.

**KB:** We have been in other institutions with manikins and other sophisticated equipment that sits unused in the corner. Without

faculty who are trained to use it, it is really not valuable. One of the challenges we face nationally is that everyone gets money to put up the centers, but the operational costs of faculty are not factored in. At Jefferson we have a very dedicated faculty to support the learning environment.

**DB:** Jefferson is the first place that we have worked as teachers where the mission of education is not the weak sibling relative to other center missions. The model here has been to build the classrooms and teaching venues and to fill them with quality and innovative teachers and faculty leaders in simulation. Jefferson has built a sustainable model for the present and the future, and we are proud to be a part of it.

**KB:** We have incorporated simulation into all levels of the curriculum throughout medical school. During the first and second years we have simulation sessions

on a regular basis to teach them the skills of history taking and recording and physical examination.

The history and physical examination is embedded into and in parallel with their classroom work. When they learn cardiovascular diseases in classroom, they do skills sessions using Harvey®, the cardiopulmonary patient simulator, and SPs who are trained for cardiac physical exam and history. What they learn in class is translated into actions in the skills that are learned at the Center. ■

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*Part II of this interview will appear in the June 2009 issue of the Health Policy Newsletter.*

## The 7 Principles in Simulation Teaching and Simulation Centers

**1 Simulation programs must be developed in a context that is useful to the learner.** The programs should be based upon real cases that are contextually appropriate to the level of training. The leaders of a simulation center must know the overall medical school curriculum in order to create reproducible simulation teaching modules. Simulation teaching and evaluation is built into the curriculum in a longitudinal basis, starting from week one and going on through each year of undergraduate education. Graduate education and faculty development are increasingly becoming involved.

**2 Simulation programs need to have a robust Standardized Actor/Patient (SP) program.** One of the pivotal components of a Center is a robust and active SP program. Standardized patients are actors paid to provide a history, feign certain physical examination findings, provide feedback, and evaluate—using a checklist—the skills of students. They are of great use in evaluation and skills assessment, but perhaps are best used in structured practice and skills attainment. They are also used as standardized residents, attending, and family members so that teaching and evaluation programs can be diverse.

**3 The experiences must be standardized.** All students at a certain level of training need to have a reproducible, standardized paradigm to learn the same skill set. This allows for a fairer and more competency-driven assessment of the learner's skill set. The faculty leaders of a center must be able to develop checklists that are appropriate and credible to the skills set.

**4 The simulation experience must be credible.** The learner must be able to suspend disbelief during the encounter so that the educational and assessment value is optimized. This requires context, as described above, but also requires some “magic” and “stagecraft” and innovation. The SP must be trained and directed

in acting the case in a specific and appropriate manner. In addition, appropriate tubes, furniture, smells and even simulated fluids should be in the room as needed to optimize credibility. The plastic and electromechanical simulators need to be vetted and used by teachers who perform the procedures on real patients. Finally, the faculty leaders need to be able to combine the standardized patient simulation with the plastic models. This hybrid or chimera approach is the next level of simulation.

**5 There must be a method for effective debriefing after the encounter.** Debriefing is one of the most powerful tools we have to teach in the simulation environment. A faculty may watch the encounter in one of 3 ways: direct observation from behind a one-way mirror, or watch a live video-feed watch the encounter on a previously recorded video disc. The faculty can work with the learner/s to learn from and build upon what was performed correctly and remediate what was performed incorrectly.

**6 The simulation curricula must itself be critically evaluated and researched.** A fundamental aspect of simulation in medical education is that it must be studied in a prospective and scientific manner. Simulation is an expensive innovation and in order for it to positively evolve, we must be able to study it and ascertain what does and does not work.

**7 Simulation must be translated to the bedside.** This is the overarching and most fundamental of principles. Simulation may make teaching more efficient, but it will never supplant the need to learn from the patient under the direct mentoring of an accomplished teacher. Faculty from the center must be able to go from simulation to the bedside. Bedside rounds must be a component of any simulation curriculum.

*Developed by Dale Berg, MD and Katherine Berg, MD.*