Medical Student Teaching: A Peer-to-Peer Toolbox for Time-Constrained Resident Educators

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It is not yet dawn as you, the senior surgical resident, arrive at the intensive care unit for morning rounds. Despite the early hour, your mind is already consumed with anticipated responsibilities of the day ahead:

"Why is Mr. Smith's white count rising?"

"Will the new intern make it out under 30 hours this morning?"

"When will I find time to prepare for conference tomorrow?"

"How will this morning's lap splenectomy go? The attending is very particular and it's my first."

"We have to fly through rounds to meet the first OR patient in preop!"

In the intensive care unit, you are met with the shy but eager stares of the 3 new third-year medical students joining the team. You heard they were starting their month-long rotation today, but you had forgotten about it. They stand stiffly, energetic but unsure what to say or do to start the day.

"Welcome to the service," you say with a smile. In the back of your mind, another ball enters your juggling act, and you wonder how you will manage to integrate them in the team and find time to teach.

KEY WORDS: education, resident, surgery, duty hours, time restriction, medical student, core competencies, technique

COMPETENCY: Medical Knowledge, Professionalism, Interpersonal and Communication Skills, Practice Based Learning and Improvement

INTRODUCTION

Medical education in the United States is undergoing reinvention and adaptation, and residents are at the front lines of this process.[1-4] Medical students spend much more time with residents than they do with attending physicians, and students estimate that most of their clinical knowledge comes from residents.[5] Although didactic learning in most student clerkships occurs through attending surgeon lectures (and increasingly from on-line modules), residents practically apply this knowledge at the bedside. Studies have repeatedly shown the tremendous impact of effective resident teaching and mentoring on student learning and career choices.[6-9]

However, residents encounter numerous practical challenges in their efforts to teach medical students. To identify those challenges at the University of California, San Francisco (UCSF), from 2004 to 2006, an annual, anonymous, free-response survey was administered to all surgical interns during their weekly departmental didactic conference. A portion of the survey asked interns to rank the greatest challenges to teaching as a resident. Survey response rate was roughly 50% (45% in 2004, 45% in 2005, and 55% in 2006), totaling 60 responses. Many challenges to resident-led teaching were listed, but unanimous agreement occurred each year—and in aggregate—that the greatest obstacle to teaching was the perception of insufficient time.

The prominence of time restrictions is no surprise—the introductory vignette above highlights the constant competing priorities in the hectic life of a surgical resident. Enthusiasm has been identified as the most important trait of effective teachers, but even the most enthusiastic of resident educators cannot escape time constraints.[10,11] Evidence also exists that the feelings expressed by residents in our program are shared by trainees at other institutions.[12-15] Such time pressures have always been present in surgical residency, but the implementation of duty-hour restrictions has magnified the issue.

Although many studies have evaluated the impact of duty-hours restrictions on case volume, resident well-being, and medical errors, much less consideration has been given to the effect on medical student education.[16-20] The limited evidence is mixed, but some reports suggest a negative impact on medical student education.[13,21] With fewer hours in the hospital and greater reliance on shift work and nightfloat teams, the already limited time with the medical students becomes strained even further. Nonetheless, among faculty and trainees alike, general interest exists in preserving the crucial role of residents as edu-

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Toolbox for Time-Constrained Educators

- Use teachable moments
- Demonstrate model behavior
- Think aloud
- Enhance the OR experience
- Make the student the teacher
- Pre-arrange teaching time
- Provide orientation to expectations

FIGURE 1. Toolbox for educators.

cators rather than delegating this responsibility to other staff in the duty-hour restricted era.[22] We must continue to preserve this role, as teaching medical students is a critical component of the preparation of future professors of surgery.[15,3] The role of resident as educator can be linked to each of the 6 core competencies of the Accreditation Council of Graduate Medical Education (ACGME), and it is explicit in 3 of them: practice-based learning and improvement, interpersonal and communication skills, and medical knowledge.[23]

APPROACHES TO OVERCOMING TIME CONSTRAINTS AS A RESIDENT

We are working on a programmatic level to address the major obstacles to teaching by residents. However, for the purposes of this commentary, we wish to focus on time constraints because this was the greatest obstacle identified by residents in our program. In the following segment we describe some practical concepts, skills, and techniques residents may use to tackle time constraints (Fig. 1). The techniques are developed from our own experiences as students, as residents, and as educators of medical students and other residents; we have also adapted some concepts from the UCSF Resident Teaching Fellowship to the unique pace, acuity, cultural, and technical aspects of surgery.[24] With these techniques, the authors have been fortunate to enjoy rewarding and productive relationships with medical students.

Teachable Moments

Instruction does not require reserved time on a calendar, a podium, or a series of PowerPoint (Microsoft Corporation, Redmond, Washington) slides. Over the course of a "surgical day," many moments pass that form the substrate for impromptu teaching. For a junior clerkship student, the various routine tasks of a surgeon's day are replete with unique teachable moments: discussing patients with consultants, troubleshooting tubes, catheters, and drains; adjusting fluids; interpreting laboratory data; evaluating wounds; sharing physical examination findings; reviewing imaging studies; evaluating postoperative patients who are "off-track"; obtaining consent for operations; and holding family discussions regarding goals of care, to name a few. Even seemingly mundane clerical tasks, (writing orders, completing requisitions for radiographic studies, and calling consultants) furnish opportunities to share clinical pearls with students and challenge their understanding.

Modeling

Often, teaching takes no extra time at all; it can be accomplished simply by extending an invitation to observe. Many of the teachable moments listed above do not even require discussion; observing a resident discussing a critically ill patient's condition with their family or reviewing a series of patients with the ward's charge nurse can be of tremendous benefit for students and requires no extra time. It may not occur to us as residents that these are "exciting" things to watch, but in fact it is through such observation that students may learn to emulate professional physician behavior and humanistic care. As residents, we must remember that modeling behavior in compassion and communication is a critical part of our role as teachers and a well-recognized central component of developing clinical skills.[25]

Thinking Aloud

A variety of clinical decisions are made without explanation, and this can leave medical students confused. Simply verbalizing one's thoughts can be of tremendous value to the learners by allowing them to follow the resident's trail of logic. This process requires minimal time and effort, and yet it provides the student with insight into the resident's plans and makes them feel included. This very versatile and effective technique can be employed during routine morning rounds as well as while managing care for a patient who is acutely decompensating.

Enhancement of the Operating Room Experience

The operating room is replete with teachable moments despite its reputation among some educators in nonsurgical disciplines as a low-yield educational experience. Likely this perception has developed because students are assumed to be passive observers mindlessly retracting tissue for hours. Even within our field, few studies have examined the effectiveness of varied teaching methods in the operating room.[10,26] However, students can become active learners in the operating room with several simple modifications to the regular routine:

- Preassign students to elective operations so that they can prepare.
- Preview the operation with students while scrubbing.
- Think aloud during the operation, essentially narrating the case. This process conveniently also allows residents to demonstrate knowledge and leadership to the attending or chief resident.
- Encourage students to palpate and describe notable anatomy or pathology and commit this to their "tactile memory."