

# Teaching by Residents

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**This paper stresses the importance to students and residents of committed and competent teaching by residents who nationwide provide 20% to 70% of the clinical teaching for medical students. The obstacles to teaching effectiveness by residents are the lack of: (1) sufficient role modeling by faculty; (2) time (and money); (3) knowledge of the principles of adult learning and teaching techniques; (4) service-specific learning objectives; (5) recognition of teaching efforts; and (6) resident interest in teaching. Overcoming these obstacles will require increased faculty commitment to teaching, compensation for structured educational activities, more effective use of potential teaching moments, teaching workshops for residents, development of service-specific educational objectives, and recognition of exemplary teaching by residents and faculty.**

Reports of the role of residents as teachers have appeared in the medical literature for more than 30 years citing improvement in knowledge and interactive skills of the residents, in addition to benefits to students.<sup>1,2,15</sup> It has been estimated that at any given time, approximately 100,000 residents are working alongside half the nation's medical students. The medical students will obtain 20% to 70% of their clinical teaching from these residents.<sup>3,10,11,13</sup> Being frontline clinical contacts for students, residents must be committed and competent teachers.

It also is clear medical students exposed to highly rated instructors (faculty and residents) during a clinical rotation are more likely to pursue that discipline. In one study, nine of 29 medical students who had worked with a "best" clinical instructor chose that field for residency, whereas none of 23 equally well-qualified medical students who worked with a "worst" instructor did so.<sup>4</sup>

Teaching by residents traditionally complements that of attending physicians: clinical principles taught by faculty in lecture formats are applied in the context of patient care, where resident–student interaction is common. Residents are effective teachers in these settings because they focus on practical aspects of care and understand the needs of students. They often are better suited, for example, to teaching of basic technical skills than staff members who have become less conscious of the individual steps needed by the novice to master a given procedure. Being closer in age, the near peer status of residents makes them more approachable for "stupid questions" than members of the faculty. Because teaching by residents is crucial to the education of the student and teacher, the issue is not whether residents should teach, but how they can do it more effectively. There are at least six impediments to more proficient teaching by residents.

In an earlier paper, I described the impediments to residents serving as teachers and suggested means by which this important and necessary function could be improved.<sup>15</sup> The current report considers these issues in a reorganized format, with revisions and expanded references.

## **Insufficient Role Modeling**

Lack of faculty commitment to the teaching enterprise is perhaps the major obstacle to improving the enthusiasm, effort, and teaching skills of the residents. Too often, teaching, especially of medical students, is an elective rather than a required faculty responsibility. Teaching medical students must be a requirement by the school for promotion with the participation of all departmental members. A strong argument can be made that teaching students is the most important obligation for medical school faculty; if they are not enthusiastic, competent, and accessible teachers of medical students, it is unrealistic to expect or require those qualities in residents. Quantifiable means of measuring teaching effectiveness, such as the Relative Value Metrics System developed by the Association of American Medical Colleges, should be available to promotions committees, and predefined salary adjustments made for exceptional teaching.<sup>7</sup>

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### Time and Monetary Constraints

As the influence of the marketplace on healthcare has increased, teaching hospitals, whose mission includes a heavy educational component, have become disadvantaged.<sup>9</sup> With medical school budgets more dependent on clinical revenue, and reimbursement decreasing for each unit of service, clinical faculty have been compelled to spend more time in patient care, often at the expense of teaching time.

The compression of teaching time has created a need for greater efficiency; the separation of work and teaching rounds, for example, may be less feasible, but by simply thinking aloud as decisions are made during work rounds, residents can make education a valuable by-product. Additional teaching time may be found during night and weekend call activities when residents are working one-on-one with students. Coffee breaks and down time between patients and/or operating room cases provide other “teachable moments” which, being out of the earshot of patients, are also useful occasions for feedback to students. Every encounter involving a resident and a student should be viewed as an opportunity to teach, by delivering information and, more importantly, by demonstrating nonverbal professional attitudes and behaviors.

We can and should make more efficient use of teaching opportunities but, given the strong link between time and money, we also must confront the more formidable task of providing salary support for faculty time dedicated to teaching. The scientific community has risen to the challenge of protecting the biomedical research agenda. In similar fashion, we must make clear to institutional and national funding sources the critical importance of strong support for medical education in maintaining the best healthcare system in the world.

As a related thought, because teaching time is often at the expense of research time, why not direct some of our research into reports of innovative educational efforts?

### Lack of Instruction in the Principles of Adult Education and Techniques of Teaching

Because it defines us as professionals and as individuals, teaching is too important to be delegated to residents without guidance, but there are few studies evaluating the effect of resident training on their skills as medical educators. Morrison et al<sup>6</sup> showed a considerable difference in teaching effectiveness between medical residents who had a 13-hour interventional program to improve their teaching skills and a control group. Residents were required to attend. Evaluation/feedback, teacher behavior, and discussion leader skills were the topics receiving greatest curricular emphasis. The intervention residents also manifested greater enthusiasm for teaching, more learner-centered approaches, and a fuller understanding of

teaching principles and skills. Another study evaluated the effect of a 6-hour course on resident teaching and leadership skills.<sup>16</sup> The authors analyzed 3 years of resident teaching evaluations before and after the introduction of a teaching skills course using a standardized teaching assessment form. Mean ratings showed continuous and statistically significant improvement each year after the introduction of the course.

In a survey of internal medicine programs in 1990, 20% had programs to improve resident teaching skills.<sup>2</sup> The mean instructional time was 9 hours, with a range of 1 to 24 hours. Half of the programs required resident attendance. The curriculum was not standardized; however, the use of evaluation/feedback as a teaching tool was the topic most commonly covered in the teaching sessions.

A teacher-training program for residents must prepare them to teach the essential skills of history taking, physical examination, and basic technical procedures. In the study by Bing-You and Harvey,<sup>1</sup> the three major factors that correlated with teaching effectiveness were: active involvement of the students, accessibility, and demonstration of clinical skills and procedures. Residents also must be prepared to help students in their assessment of the medical literature so that students may ground their practice decisions in evidence-based data. They must understand the importance of an empathetic attitude, constructive, nonthreatening feedback, and time management. Successful residents provide constructive feedback and create an educational environment that encourages learning, coupling knowledge with enthusiasm and personal commitment.

Valid instruments are available to assess the effectiveness of resident teaching, including objective structured teaching examinations and rating scales, which include narrative feedback from the medical students. Written feedback is more valuable than oral for improving resident performance and increasing resident satisfaction and interest in teaching.<sup>5</sup>

For motivated adults, the principal determinants of learning are active involvement of the learner and problem-centered teaching; nonjudgmental feedback and the opportunity for repetition are critical adjuncts.<sup>14</sup> Surgical residents, whose time for patient interaction with students, is limited by the demands of the operating room, are understandably prone to an authoritative approach emphasizing recall and delivery of facts, sometimes forgetting that too much information can obfuscate the learning process. Although an assertive style sometimes is useful, teaching only by force-feeding information—by faculty or residents—like the proverbial Strasbourg goose, produces a pâté that contains too much of the formulaic and too little of the ethos of medicine. Why do we persist in teaching facts when learning based on understanding and reflection

is more likely stored in long-term memory? Probably because it is easier to impart information than to teach students how to think.

Even experienced instructors sometimes forget teaching does not insure learning. It is a mistake to consider teachers the active and students the passive participants in education. Students must realize the primary responsibility for their education rests with them. Both parties must be active for learning to occur, so interactive teaching and independent learning should increase as the trainee moves through the educational continuum.

Teaching techniques vary with content, venue, and group size. Small group teaching differs from the lecture format in that, in the former, content is delivered in small bites based on data generated from the patient, and opportunities to display collaborative, motor, and attitudinal behaviors are more frequent.

Clinic and bedside teaching are important because they enable students to perceive the role of a humanistic dimension in increasingly technologic methods of care. The importance of role modeling in these contacts is important in the provision of competent patient care, and in demonstration of an attitude that reflects caring and concern. By coming quickly to the essence of a problem, the resident can show how efficient time management can coexist with respect and empathy. In their preoccupation with knowing and doing, inexperienced instructors often do not understand the importance of these attitudes, and of the character and heart that drive head and hands. Videotapes that show the strengths and weaknesses of different teaching styles may be useful in enabling residents to develop a manner that resonates with students.

In general, presentations on rounds should be brief—2 minutes or less—and include the diagnosis, an update on the patient's condition, pertinent physical findings, and a statement of what is planned and why. When the diagnosis is known, as with most orthopaedic admissions, discussion centers on management and supporting data. Resident comment should be limited to one or two key points, with emphasis on relevance rather than completeness.

Teaching in the operating room is focused on applied anatomy and provides students with a unique opportunity for correlation of pathologic, clinical, laboratory, and radiographic findings. Open-ended questions, such as the importance of a particular finding, the options and rationale for management of a given problem, and the correlation of clinical with laboratory findings are useful means to deepen discussion in all arenas.

Whatever the venue, the medical student should be made to feel he or she is an integral and essential member of the healthcare team with roles and responsibilities commensurate with his or her knowledge and skill.

### **Limited Awareness of Service-specific Learning Objectives for Clinical Clerks**

Before their appearance on the floors or in the clinics, students and residents should be made aware of the learning objectives for that rotation. When stated in behavioral and measurable terms, objectives guide teaching and evaluation. In addition to the requirements for possession, comprehension, and application of requisite knowledge, objectives should include skills (motor and interactive) and attitudes. The latter are more difficult to construct and to teach, other than by example, but are ultimately of greater importance.

### **Minimal School and/or Departmental Recognition for Quality or Quantity of Student Teaching by Residents**

Resident teaching seldom is monitored, supervised, or evaluated, which does not encourage resident effort in this area. The departmental commitment to resident teaching can be made evident by workshops staffed by an appropriate faculty member and an education specialist to improve the teaching skills and confidence of residents.<sup>12</sup>

The value placed on teaching should be further emphasized by including on global rating forms a category that rates the resident's effectiveness as a teacher, with special recognition for those who achieve high ratings.

### **Lack of Interest in Teaching**

Residents who like to teach are rated favorably on teaching ability, although the extent to which an interest in teaching is innate as opposed to acquired is unclear.<sup>1</sup> Most people, however, enjoy doing things they do well, which justifies our efforts to make even uninterested residents into better teachers—as we continue to search in the selection process for ways to identify applicants with a genuine desire to teach. House officers who relish working with students will be more likely to involve them and to make themselves accessible, attributes that garner high marks from learners.<sup>1</sup>

What, then, must we do to improve the teaching effectiveness and commitment of residents? First, the residents must see clear evidence of faculty commitment to education, which, in one form or another, should be manifest in all activities of the department. Second, we must develop clearly stated behavioral objectives for the musculoskeletal education of medical students. For those doing clinical rotations on Orthopaedics, these objectives should include the skills we expect them to master in the clinic, in the operating room, and at the bedside, and the knowledge accumulated from study. Third, residents should be instructed in the principles of adult learning and teaching strategies in formal, structured workshops. Fourth, a rating

scale should be developed and used by medical students to evaluate the teaching effectiveness of residents. Fifth, faculty ratings of residents should include a category for teaching effectiveness based on student evaluations and personal observations. Sixth, year-end rewards for excellence in teaching should be given to faculty and to residents. Finally, we must stress to deans and educational policy committees in our institutions the need for mission-based fiscal support of faculty with defined educational responsibilities. National organizations, such as the Academy and The American Orthopaedic Association, should petition congress for strong and continuous support of graduate medical education.

There is perhaps no better conclusion to this topic than the statement of Sir William Osler who, almost 100 years ago, said, "I desire no other epitaph . . . than the statement that I taught medical students on the wards, as I regard this as by far the most useful and important work I have been called upon to do."<sup>8</sup>

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