Resident Teaching Skills
Courses: What is the Evidence for Effective Instruction?

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Residents are expected to teach in didactic, outpatient/ambulatory clinic, and bedside settings. They are important teachers of medical students and more junior residents and often serve as medical students' primary supervisors, especially in these settings. It is in their clinical teaching role that residents often have greater student contact than the attending physicians. Yet programs often find it difficult to instruct residents in "how to teach" in a time-efficient and cost-effective manner.

The early medical education literature indicates that residents spend 20% to 25% of their time supervising, teaching, and evaluating others. In addition, students claim that residents are responsible for a significant portion of their knowledge derived during clerkship and other learning experiences. However, only half of residency programs offer any guidance in how to teach or have formal teaching instruction. Furthermore, accreditation and policy groups (i.e., Association of American Medical Colleges; the Liaison Committee on Medical Education; and the Accreditation Council for Graduate Medical Education) advocate for improved teaching competencies and teaching skills assessments for residents.

Likewise, the Alliance for Academic Internal Medicine Education Redesign Task Force believes that the educational needs are based on several recommendations. One relevant recommendation is using a 'core faculty' model in fostering education and professional development of residents. However, implementation of duty-hour restrictions may impede the residents' role in teaching, especially in the most common settings for medical student education (e.g., clinic, operating room, and ward rounds).

While residents desire to improve their teaching role, there are few reliable instructional methods and learning outcomes that demonstrate compelling evidence to resident effectiveness when facilitating knowledge, skills, and attitude improvements. Residents play an important role as teachers but are afforded little formal instruction. Thus, it is imperative that we discover the most effective methods to prepare them for their teaching role. A systematic review of the literature offers guidance in describing effective models for resident teaching. We augment these models with our experience to provide some practical methods for designing resident teaching skills curricula.

Systematic Reviews
A review of the pertinent literature sheds light on resident teaching methods for improvement and effectiveness. Wansley and colleagues offer the most comprehensive and intensive review of residents-as-teacher curricula. They included PubMed medical subject headings (MeSH) for "internship and residency" and "teaching." Inclusion criteria (e.g., learner evaluation of residents, objective structured teaching examination and/or rated videotape reviews, intervention and controls, postpost cohort studies, nonrandomized controlled trials, etc.) were considered to narrow results of the search to 14 articles.

The comprehensive review by Gill and Frank examined the literature for improved neurology resident teaching ability. They used similar medical subject headings in PubMed and the Educational Resources Information Center (ERIC) database (e.g., "internship and residency" and "medical education").

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Their search identified eight randomized prospective studies where students rated the residents. We offer a more recent review, based upon a March 2005 PubMed, search using the same MeSH headings. While numerous published guidelines exist for teaching methods, few illustrate evidence of resident teaching effectiveness. Moreover, there are limited quantitative studies and only a single qualitative study that best measure resident teaching effectiveness. A critical appraisal of published findings may offer guidelines helpful to graduate medical education leaders seeking quality improvements in resident teaching skills.

Our review of the pertinent medical education literature is based upon the two systematic literature reviews discussed above as well as one published in 2004 by Morrison and colleagues on the subject of on resident teaching effectiveness. Systematic reviews offer a thorough examination of a body of evidence-based knowledge where findings are predicated on established criteria, compiled and interpreted. In this way, a broadened understanding of a phenomenon, such as resident instructional methods and teaching effectiveness, is better understood through the lens of the medical education literature.

Instructional Delivery Models
The pertinent literature illustrates the challenges and constraints brought about when implementing teaching skill programs for residents. Competing schedules, time constraints, limited interest, and limited models of effectiveness contribute to many
of these challenges in resident and fellow education. With residents becoming increasingly vital to the teaching mission of academic health centers, there is a growing need to implement effective strategies and formats for their role in this important mission. Just as improved instructional effectiveness may arise when faculty are reacquainted with their dedication to enhanced teaching and role-modeling, residents learn best when they also teach while similarly gaining an appreciation and motivation for teaching and role-modeling. Teaching adds to one’s self-concept as a physician. Interestingly, Busari and Scherpier\textsuperscript{11} found no evidence to suggest that residents who possessed good teaching skills became more competent physicians. This illustrates the importance of measuring the impact of resident education to enhance teaching skills on practice outcomes.

Improving teaching to enhance residents’ skills for instruction and assessment needs to be ingrained into the residency curriculum along with faculty development that reinforces resident competencies for effective teaching and supervision, along with those for patient care.

**Suggested Designs for a Teaching Skills Program**

**Organization**

*Instructional structure – Implementation of instructional strategies needs to consider the learning environment and the unique needs of residents. Approaches may include adapting teaching to different levels of learners (e.g., interns and upper level residents). Instruction needs to reflect actual practice experiences*

### Table 1: Designing Resident Teaching Workshops

<table>
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<th>Resident Level</th>
<th>Topic/Content</th>
<th>Format</th>
<th>Outcome Evaluation</th>
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| First-Year Residents | • Orientation to Teaching  
                     | • Feedback Strategies  
                     | • Role-modeling and Professionalism | 1–2 hours at 4 times per year | • Self-assessment*  
                     |  
| Junior Residents     | • Small Group Teaching  
                     | • Clinical Teaching  
                     | • Leading the Team  
                     | • Dealing with Stress and Conflict  
                     | • Oral and Written Feedback  
                     | • Assessing Performance | 1–2 hours bi-monthly  
                     |  
|                      | Periodic 1 hour refresher sessions                                           |                            | • Self-assessment*  
                     |  
| Senior Residents     | • Large Group and Lecture Teaching  
                     | • Leadership and Team Management  
                     | • Negotiation Skills  
                     | • Professionalism  
                     | • Writing Abstracts and Case Reports  
                     | • Conducting Educational Research | 1–2 hours bi-monthly  
                     |  
|                      | Periodic 1 hour refresher sessions                                           |                            | • Self-assessment*  
                     |  

*Pre- and post-participation assessment of workshop satisfaction and learning outcomes*
(e.g., clinical settings; student assessment opportunities; etc.) that are problem-based rather than content-oriented so that knowledge, skills and appropriate attitudes become long-lasting. These positive learning environments stimulate learner participation in understanding patient cases especially when integrated into teaching patient care.13, 14

When designing instruction (Table 1) for each teaching session, module or unit, learning objectives must be stated in measurable terms that articulate the intended instructional goals. Stated learning objectives communicate to the learner what is important. Likewise, learning objectives can assist in organizing instructional materials while providing a means of evaluation.15

Instructional formats – A systematic review of the literature provides evidence for a wide array of length and frequency for instruction during the academic year. Instruction may range from 36 hour multi-disciplinary primary care resident participation in a longitudinal teaching skills fellowship16; to a 2.5 day session with six-month follow-up17; to a 13 hour session14; to 8 hour sessions18, 19; to 4–6.5 hour sessions with attendance16, 20, 21, 22, 23 It is recommended that the teaching skills series needs to be of sufficient frequency and length (i.e., 2 hours each session, on a monthly basis) to meet important needs of the residency program and its learners during the academic year.

Learning groups – Several teaching strategies may be utilized that enhance learning across different developmental levels. It is suggested that teaching skills sessions meet different developmental levels for interns and residents.24 The early residency needs of interns often differ from upper level residents. Motivation for active participation may be predicated on whether these sessions are offered on a voluntary or mandatory attendance basis. However, attendance in didactic teaching conferences may be directly affected by cost and scheduling challenges, especially for lunchtime sessions.25

Delivery

Content and recommended topics – Appropriate topics may be additive in nature to include those for interns (orientation to teaching, role-modeling, teaching procedures, and feedback), as well as, junior residents (small group teaching, bedside/clinical teaching, and feedback), and upper level residents (case-based teaching, large group/lecture teaching, and feedback).25, 26

Workshops to improve teaching skills held during the academic year need to include active participation with case-based content. It is further suggested that instruction is both cost- and resource-efficient when facilitated by a professional medical educator in an interactive, hands-on learning environment. In addition, sessions should be at least two hours in length with at least six to eight residents in attendance. Instructional topics may include: teaching preparation; large group/lecture presentation skills; small group teaching; questioning strategies; feedback and evaluation; leadership; professionalism and writing abstracts. Short “refresher” sessions to provide periodic reinforcement of these topics, along with six-month or annually videotaped assessment of teaching performance evaluated by a trained rater, may add effectiveness and improvement to resident teaching competencies.

Instruction facilitators – Consider potential teaching facilitators from among experienced faculty and non-physician medical educators. The literature suggests that didactic and self-directed learning opportunities (e.g., web-based, self-paced teaching modules, etc.) offer additional potential as an alternative instructional method for resident teaching skills. Differing perspectives enrich the content and delivery. Prepare senior residents for this role by having them co-facilitate teaching sessions to allow them to develop the confidence to lead future sessions.

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Evaluation

Several strategies may establish effective outcomes when determining appropriate instructional methods. While no single model for teaching effectiveness is offered, there are salient aspects from the reviewed articles to suggest a potential strategy. Evaluation begins with the end in mind (e.g., what changes you seek to achieve). Moreover, periodic self-assessment and reflection may provide added motivation when implementing instructional practices among peers, students and patients or assessing resident competencies. Evaluation of resident teaching skills improvement needs to assess the knowledge and skills acquired and residents’ perceptions of the program. Some of the reported studies point to specific results when assessing resident teaching effectiveness using an OSTE (objective structured teaching examination) to assess teaching skills. Valid instructional content (e.g., One-minute Preceptor micro-skills) may accurately measure teaching effectiveness. Reliability is further enhanced when trained raters analyzed videotaped teaching encounters. Self-assessments at the beginning and end of instruction show improved teaching skills, particularly when they are integrated with assessments from the learner’s point-of-view (e.g., teaching self-efficacy, satisfaction, interest in teaching, etc.). Such methods may strengthen the knowledge, skills and attitudinal outcomes and help determine the magnitude of learning change and the overall teaching performance.25 Physicians who possess essential teaching skills may be perceived by their patients as being truly competent physicians.
Experience is a great source of knowledge, especially when we reflect on our teaching activities. Eliciting feedback on what we thought was particularly effective and what could be improved upon is another strategy for improvement. This practice supports a deeper understanding of instructional content and processes. In this way, we can help assure that subsequent teaching activities are designed to meet the needs of our learners and co-facilitators.

Finally, the current literature is bereft of qualitative studies on resident teaching effectiveness, with the exception of published work on residents' self-perceptions as clinical teachers. The use of focus groups or participants-observers may yield a broader understanding of how residents teach, especially in clinical contexts and in the patient care setting. Thus, a richer description of teaching qualities and impacts may be attained.

Following the references we offer several web-based teaching skills resources that support resident teaching methods. They provide instructional resources that assist in organizing, delivering and assessing teaching skill improvements.

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Summary

No single set of instruction or assessment methods meet the needs of each residency program. A core set of instructional modules may increase resident confidence in teaching and leadership among varied learners with outcomes that demonstrate effectiveness and improvement. Resident teaching activities, quality of instruction and outcomes remain areas for further study. If residents' teaching role is to be regarded as a vital aspect of graduate medical education, then adequate preparation in teaching effectiveness is warranted. It is imperative that residents acquire the knowledge, skills and attitudes necessary to be competent physicians as well as role-model teachers. This is best accomplished when education is supported, curriculum is improved and the educational culture in residency programs is appropriately changed. Assessment of teaching skills should be a required component of the residency curriculum in order to determine the value of this educational intervention to the residents who teach and to their students. Established educational criteria will further strengthen resident quality improvement, collaborative leadership and teaching outcomes, especially in the clinical performance of residents and medical students. Dedicated leadership by program directors that creates and sustains a teaching skills course adds value in resident education for the benefit of our patients, faculty, residents and fellows and institutions.

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