

Residents' Teaching Skills

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Biographies

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Janine C. Edwards, PhD

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Robert Bing-You, MD, MEd, FACP, Editors

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We dedicate this book to all medical residents in the United States who work as patient caregivers, learners, and teachers during a difficult time in medical history.

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Contents

<i>Contributors</i>	<i>xi</i>
<i>Preface</i>	<i>xiii</i>
<i>Foreword</i>	<i>xix</i>
<i>Acknowledgments</i>	<i>xxi</i>

Part I Information and Ideas

1 Our Physician Forebear Sir William Osler as Teacher to Emulate	3
<i>James A. Knight</i>	
2 Social Learning Theory and the Development of Clinical Performance	18
<i>Joan A. Friedland</i>	
3 Clinical Teaching Techniques for Residents	38
<i>Janine C. Edwards, Robert L. Marier, and Robert G. Bing-You</i>	
4 Observing, Developing, and Reflecting on Residents' Teaching Strategies	66
<i>Janet Palmer Hafler</i>	
5 Planning and Implementing a Teaching-Skills Improvement Program for Residents	81
<i>Linda Snell</i>	
6 Residents as Teachers: Evaluating Programs and Performance	100
<i>Debra A. DaRosa</i>	
7 Interpretation and Projections	115
<i>Robert G. Bing-You, Janine C. Edwards, and Joan A. Friedland</i>	

Part II Materials for Teaching-Skills Programs

A The Role of the Senior Resident: Team Manager, Leader, and Teacher	129
<i>Joyce E. Wipf</i>	
Acknowledgments	129
Introduction	130
Course Background and Evaluation	130
Course Description	131
Development of a Resident Teaching Skills Course	132
Teaching Course Manual for Residents	133
Management of a Team	133
Resident as Manager of a Team	133
Fundamentals of Management	134
Supervising Patient Care	137
Work Rounds	137
Team Problems	141
Attending Interactions	143
Attending Rounds	143
Negotiation Skills	146
Work Rounds with the Attending	149
Resident as Teacher	150
Resident Has a Key Role as Teacher	151
Determinants of Learning	151
Microskills of Teaching	154
Teacher Reasoning and Action	154
The Five Microskills of Teaching	154
Microskills Demonstration Case	161
Microskills Practice Cases	162
Feedback and Evaluation	163
Feedback Versus Evaluation	163
Feedback	164
Evaluation	168
Criteria for Grading	170
Problem Behaviors in Residents	171
Team Morale and Conflicts	171
Strategies to Reduce Residency Stress	175

Mental Health Consultation for Residents and Medical Students	175
Substance Use	175
Substance Abuse	176
Impaired Physicians	177
Warning Signs of Impairment	178
Getting Help	179
Sexual Harassment and Gender Discrimination	180
Annotated Bibliography	181
B Teaching Materials for Pediatric Residents: Three Modules	187
<i>Janet Palmer Hafler and Elizabeth A. Rider</i>	
Module I: The Student-Teacher Relationship	189
Goals	190
Facilitator Guide	191
Handouts for the Session	
Listening in the Relationship—An Exercise	193
Characteristics of an Effective Student-Teacher Relationship	194
Alternative Exercise	195
References	197
Module II: Teaching in Small Groups	198
Goals	198
Facilitator Guide	199
Agenda for the Exercise	200
Handouts	
Stages of Group Process and Dynamics	202
Group Process—Effective Group Member Behaviors	204
Group Process Behavior Analysis	205
Teaching Tips for a Case Discussion	206
References	208
Module III: Giving and Receiving Feedback	210
Facilitator Guide	211
1. Feedback (as transparency)	213
2. Evaluation (as transparency)	214
Reflective Exercise	215
Characteristics of Constructive Feedback	216
Case: “You’ve got Something to Say.”	217
Tips on Planning Individual Feedback Sessions	220
References	221

C Teaching Skills Modules	222
Introduction to Teaching Clinical Procedures	223
What do you do on Work Rounds?	227
Role Play for 1:1 Teaching with a Patient	230
<i>Joan A. Friedland</i>	
D Forms for Evaluation of Resident Teaching-Skills Programs and Resident Performance	235
<i>Debra A. DaRosa</i>	
<i>Index</i>	247

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Preface

Teaching by residents has had a very brief history in relative terms. Understanding the historical context may help the reader grasp the purpose and usefulness of this book.

Recognition of the tremendous impact that residents have on student learning in the clinical setting began over 30 years ago with Mark Barrow's paper (1966) on students' perceptions of resident teachers. In 1978 David Irby published characteristics of effective clinical teachers. Early observational work by Kelley Skeff (1983) focused on both faculty and resident teaching behaviors.

Another decade passed with few published articles on resident teaching. In 1988, an important landmark was established with the publication of *Clinical Teaching for Medical Residents: Roles, Techniques, and Programs* by the Springer Series on Medical Education. This book described some of the seminal research and developments in resident teaching, and its goal was to promote and support the role of teaching by residents.

Since then, residents' teaching responsibilities have increased, especially in the patient-care team setting, and the importance of residents' teaching has reached a new level of recognition. The increased focus is due in part to accreditation requirements by the Liaison Committee on Medical Education (LCME) and by the Accreditation Council for Graduate Medical Education (ACGME). In 1994, a special interest group for residents' teaching skills was formed within the Association of American Medical Colleges (AAMC) Group on Educational Affairs. Recently, the AAMC convened a working group on graduate medical education core curriculum, charging the members with describing goals for resident competencies. The physician as teacher and communicator is one of the competency domains.

Because most medical educators would now agree that residents play an important role as teachers, there is need for materials for teaching-skills programs. This book is intended to provide practical guidance and materials for the 1,000 sponsoring institutions that are training 98,000 current residents. We based this book on sound educational principles, and want this

information to be used as a primary textbook for brief courses, workshops, seminars, and conferences on resident teaching skills. It can also be used as a practical tool for residency program directors and chief residents who are just beginning to develop a program as well as for ongoing programs.

This book opens with the historical role model Sir William Osler, who exemplifies the clinical teacher. This first chapter remains the most inspirational and enduring part of *Clinical Teaching for Medical Residents* (1988). Osler's attitudes toward reading and learning from patients, his collegiality with students, and his great humanism can continue to influence us positively nearly 100 hundred years after his death.

Chapter 2 explains the importance of social learning theory for medical residents and students. Clinical education is accomplished to a large degree through observation of role models. Role models, historical and living, can be powerful influences on the professional socialization of trainees. (The material about Sir William Osler is an example of such a positive influence.) The "hidden curriculum" of residency can deter residents and students from becoming altruistic, knowledgeable, skillful, and dutiful. Residents need to engage in self-reflection to promote their own professional growth. Faculty members need to learn the education process so they can model it, and educational institutions need to support the teaching role of faculty members and residents.

By observing and reflecting on teaching, residents can develop themselves as teachers. Chapter 4 provides information that can help residents broaden their view of teaching and learn how to identify and emulate effective teaching. These ideas are in harmony with social learning theory (chapter 2) and sociocultural concepts that have been gaining interest in recent years.

Mentioning various theories may confuse readers who are accustomed to more precise definitions of theory. For example, there is an equation that defines the theory of relativity, but there is no one theory of human learning; there are only fragments of theories. So social learning theory does not completely account for all of human learning nor does cognitive science theory. Therefore, the term *theory* is used rather loosely in social science.

In chapter 3, techniques for teaching in clinical settings are explained and illustrated with examples. The techniques presented in Table 3.1 cover a broad spectrum, from management techniques to questioning. Brief explanations of cognitive science theory are provided to help the reader understand why each technique is recommended. Questioning strategies based upon observation of effective clinical teachers and experiments are explained in detail and made easy to use through illustrations, tables, and a checklist. Evidence-based Medicine (EBM), the practice of using the best available external clinical evidence from systematic research, is presented in this chapter. The EBM movement has the potential to significantly improve the prac-

tice of medicine through the collaborative work of people systematically reviewing the clinical literature and through the use of computers to access the reviews quickly.

The goal of chapter 5 is to assist interested individuals in planning, organizing, and running a teaching-skills program for residents. The author, a seasoned clinician educator, offers practical advice and tips that will make it relatively easy for program directors and chief residents to establish programs in their own institutions. The wealth of practical information in this chapter will make it a reference that both newcomers and experienced program planners will want to use frequently.

Evaluation of teaching-skills programs and evaluation of residents' performance as teachers are included in chapter 6. All residency programs need to evaluate the teaching performance of the residents. Examinations, including Objective Structured Teaching Examinations (OSTE), self-assessment surveys, learner feedback, and observation by educators, peers, and faculty members are presented as methods to evaluate teaching performance. Five steps are explained for a systematic method to evaluate programs, and the following innovative outcome measures of program effectiveness are suggested: evidence of an enhanced student clerkship, new educational initiatives, and an enhanced learning environment, as well as enhanced learning and patient education. The time has come to evaluate outcomes of educational programs just as outcomes of health care are now regarded as essential measures. The clear, simple style of describing each step in the evaluation process and the number of practical tips make this chapter easy and worthwhile reading. In part II, the author also shares several evaluation forms for use by readers.

In the final chapter of part I, we review the external environment surrounding the role of residents as teachers and the requirements for instruction in teaching skills for residents. We project the need to improve the assessment of residents' performance as teachers and the types of dilemmas that might result. We advocate for Best Evidence in Resident Education (BERE) and then critically review the research to date on resident teaching skills. The evidence demonstrates effectiveness; more studies are needed to define in practical terms the most effective methods, content, and timing of teaching-skills programs. New approaches to develop teaching-skills programs are presented, including Objective Structured Teaching Examinations with standardized students and families, ward teams and computer simulations. Longitudinal programs are encouraged; that is, programs with instructional and practice sessions throughout the duration of the residency program. Giving instruction to medical students about teaching, especially 4th-year students, may be beneficial. Finally, we explore ideas from sociocultural theory that might provide new direction for research and development.

Part II provides materials that have been used in teaching-skills programs

for residents of various specialties. These materials have undergone formative evaluation and have demonstrated effectiveness. Readers who want to copy the materials should request copyright permission, which will be granted readily, from Springer Publishing Company.

Section A provides materials for a course for 2nd- and 3rd-year residents developed by Joyce Wipf and her colleagues at the University of Washington. The goals of this course are to improve resident communication with other team members, including the attending physician, and to increase residents' ability to clarify expectations and goals and to evaluate performance. In addition to topics such as managing a team and microskills for teaching, these valuable materials include topics such as residency stress, problem behaviors in residents, substance abuse, and sexual and gender discrimination. Case scenarios, handouts, and an extensive annotated bibliography are included.

In section B, Janet Palmer Hafler and Elizabeth A. Rider share three modules they have developed and used with pediatric residents: the student-teacher relationship, teaching in small groups, and giving and receiving feedback. The practical suggestions for use of these materials and the background information about each teaching skill foster understanding of the education process and development of teaching skills.

Joan Friedland has provided materials for three sessions in section C of part II. These materials, which include teaching clinical procedures, work rounds, and role play for one-on-one teaching with a patient, have been used and improved over several years with internal medicine residents. Debra A. DaRosa has contributed several evaluation forms, which are included in section D, part II. There are forms to evaluate workshops on teaching skills, a form to evaluate short-term follow-up of a workshop, and two forms to evaluate resident performance as teachers. These can be used as they are written or can be customized to a particular program.

We hope this book will provide residency program directors, residents, and medical student leaders with enough information and materials to mount or improve their own teaching skills programs. This book will have fulfilled its goal when all residency programs consciously and systematically instruct residents in being better teachers. One hopes that the first 10 years of the millennium will see additional research that supports efficient and effective methods to accomplish the goal of developing residents' competency as teachers.

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Foreword

After a 2-year stint as a research fellow in nephrology, I returned to Boston City Hospital in order to complete my 3rd year of internal medicine residency. During the course of my fellowship, I'd done research on acid-base disorders—an area that most medical students and residents find very confusing. Because of my research experience, the faculty and attendings assumed that I could teach this arcane subject to my peers and to our medical students. With no training whatsoever in teaching (yes, even as a 3rd-year resident!), I was assigned the task of putting together a lecture/seminar series. To this day, I'm not sure whom the experience was worse for: the anxious, utterly unprepared “instructor” (me), or the learners, who probably got very little satisfactory instruction from the seminar despite my most earnest efforts.

Does this sound familiar? It's an experience that nearly all of us have had at some point during our residency: the sudden, sickening realization that we're going to be expected not only to care for patients, but to teach the medical students that we all too recently were ourselves. And we have absolutely no idea what to do. For more than a few residents, a crashing patient in the emergency room may be a lot less daunting than a clutch of earnest medical students following in their wake and waiting for their wisdom.

Traditionally, medical residents have not received the formal preparation that is essential to the transition from full-time learner to at least part-time teacher. Although many residents make that transition successfully through a sort of osmosis, many more do not, and they remain ineffective teachers throughout their residencies. With some estimates indicating that residents are responsible for as much as 80% of student teaching, this is clearly an untenable situation for medical education. Nor is it permissible according to the standards of the Liaison Committee on Medical Education, which state that “Residents must be fully informed about the educational objectives of the clerkships and be prepared for their roles as teachers and evaluators of medical students.”

Teaching is a skill, and as essential a part of clinical competency for residents as any other element of their armamentarium. A medical resident must know how to conduct a physical examination and take a history; by the same token, he or she should have practice in basic pedagogical skills such as teaching in small groups, facilitating discussions, and giving constructive feedback to a learner. They must learn to recognize the “teachable moment” and use it to its best effectiveness with their medical students. But how can we expect them to do that if we in medical education don’t teach them how? As the old question goes, “Who will teach the teachers?”

Without a doubt we’ve come a long way since the days when, as a 3rd-year resident, I floundered in front of the medical students and residents as I tried to share what I’d learned about acid-base disorders. Awareness of the importance of residents’ teaching responsibilities has increased, thanks largely to the success of the original volume of this book, published in 1988. (Indeed, the development of the Liaison Committee on Medical Education clinical teaching standard was spurred in no small part by that volume.) I’m pleased to note that the Association of American Medical Colleges has also played an important part in this evolutionary process—for example, by forming the Special Interest Group for Residents’ Teaching Skills within the association’s Group on Educational Affairs.

This new volume, *Residents’ Teaching Skills*, is the next step in the evolution of medical education’s approach to resident teaching. Drs. Edwards, Friedland, and Bing-You have collected an impressive array of practical material that will guide any academic medical center in the development of a more focused approach to “teaching the teachers.” From learning theory and program development to teaching performance evaluation and specialty-specific materials, *Residents’ Teaching Skills* covers all the bases. I commend this volume to the attention of medical educators everywhere and to residency program directors in particular. Your residents will thank you for it, and so will the medical students they teach.

Jordan J. Cohen, MD
President, Association of American Medical Colleges

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Joan A. Friedland acknowledges the commitment to medical education of Cliff Pilz, Nelda Wray, Harold Haley, Carl Slater, and Don Wesson, which enabled her work with residents' teaching skills to become a wider reality.

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PART I

Information and Ideas

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CHAPTER 1

Our Physician Forebear Sir William Osler as Teacher to Emulate*

JAMES A. KNIGHT

When our physician forebear Sir William Osler (1849–1919) was asked what his most important contribution to medicine was, Osler stated simply: “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” (Osler, 1905). In using the term *student*, Osler generally was referring to all trainees in medicine—interns and residents as well as students. They were all his junior colleagues, as he described them.

Osler blended effectively student and residency teaching on the hospital wards. He was familiar with the English system of clinical clerks and surgical dressers, a method of bedside clinical teaching, and referred to this system as the source of his inspiration for introducing the clinical clerkships at Johns Hopkins Medical School (Osler, 1945, pp. 318–325). To this, Osler added the German residency system for graduate physicians and the use of hospital laboratories for teaching and diagnostic purposes, thereby creating the most effective system of clinical instruction ever known in America

*This chapter originally appeared in *Clinical Teaching for Medical Residents*, Janine C. Edwards & Robert L. Marier (Eds.), 1988, Springer Publishing Company, pp. 35-49. Reprinted with permission.

(Ludmerer, 1985, p. 61). Osler emphasized that his method of teaching was not the ward class, in which a few cases were demonstrated, but that his approach was ward-work, where the students, interns, residents, and attending physicians all did their share of the work of the hospital. At times, the terms *house pupil*, *intern*, and *resident* were used interchangeably to describe the medical school graduate who received intensive, clinical training at the bedside in the endeavor that Osler described as wardwork.

During Osler's years at Hopkins (1889–1905), residency training was being developed similar to that conducted today. As Osler resident Campbell Howard reported, the medical residency provided the opportunity for "the Chief" to tutor neophytes in the art, skills, science, and general humanities related to medicine. Along with caring for patients and working in the clinical laboratories, Osler urged and stimulated the residents to study and to write (Howard, 1983).

CHARACTERISTICS OF A TEACHER

Osler's influence on students was profound, and many of the great physicians in American medicine acknowledged this influence. Physicians such as Wilder Penfield, Campbell Howard, Maude Abbott, William S. Thayer, Harvey Cushing, Emile Holman, and Wilbert C. Davison, among many others, spoke often of their debt to Osler. A large company of these accomplished students effectively changed the face of North American medicine during the first half of this century, and their influence continues to this day. In Osler's students one can see incarnate something of the essence of their teacher (McGovern, 1985). He was the acknowledged master teacher of his generation.

One of these students, Harvey Cushing, began working closely with Osler when Osler was professor of medicine at Hopkins and Cushing was William Halsted's assistant resident in surgery. Cushing often referred to Osler's profound influence on him, ranging from Osler's guidance in writing for publication to the acquisition of a library, both current and historical. For example, an early recollection of Cushing was how Osler had kindly admonished him not to neglect to mention juniors connected with recorded cases when Cushing was a young surgical house officer at Hopkins and first trying his "feeble literary wings" (Barondess, 1985). Osler taught by being a great model for Cushing and the other house officers. Osler touched many aspects of their growth and development and could be quite direct in his guidance or counsel, as Cushing's recollections show. Osler had a strong orientation toward young colleagues, and with them his charismatic effect was greatest.

In his book *The Art of Teaching*, Gilbert Highet (1950), in discussing 19th and early 20th century teachers, wrote that the good teachers liked most of their students and most of the rest of the world, and showed it. He went on

to say that teachers like Osler “were jolly high-spirited fellows, always cracking jokes and bringing students out as the sun brings out zinnias.” Osler’s proudest honor was the unwritten title of “student’s friend.”

Osler spared no effort in preparing himself for his students. Dr. Emile Holman (1969), a former student, remembers him as “delightfully informal, erudite beyond comparison, entertaining but surprisingly effective, Sir William Osler enjoyed teaching. So interestingly and compactly were his presentations arranged, it took little effort to remember them.”

Even in Osler’s day, the phenomenal strides in every branch of scientific medicine tended to overload it with detail. Osler identified the task of the teacher as the winnowing of the wheat from the chaff and in preparing the material in a digestible form. Osler stated further that devotion to a subject coupled with enthusiasm and energy enabled a teacher to keep abreast of new developments but, at the same time, could lead the teacher into pedagogic excesses. Osler spoke of the Reverend John Ward, Vicar of Stratford-on-Avon, who, shortly after Shakespeare’s day, made a classification of doctors that has since become well known: “first those that can talk but do nothing; secondly, some that can do but not talk; third, some that can both do and talk; fourthly, some that can neither do nor talk—and these get most monie.” Osler himself classified professors into four groups. First, there is the person who can think but has neither tongue nor technique. A second type is the phonographic professor who can talk but who can neither think nor work. A third is the person who has technique but who can neither think nor talk. The fourth type is the professor who can do all three— think, talk, and work. As with most teachers, ideal and not so ideal, Osler was deeply concerned with what kind of balance should be maintained between the didactic or theoretical and the practical “hands-on” learning in doing. While acknowledging the hospital and the laboratory as the proper place for most teaching, Osler emphasized that the old-fashioned lecture had its place and, although railed against, it should not be eliminated, for there would always be teachers who could present a subject in a more lucid and attractive manner than could be given in a book (Osler, 1899).

In writings that discuss educational or teaching approaches, the argument is often between the right methods or the right teachers, and which approach is more fruitful in attaining one’s goal. D. C. Sinclair (1953), writing in *Lancet*, speaks on behalf of the teacher and states that when good teachers and good students are brought together the product will also be good. Osler would surely have met Sinclair’s description of a good teacher, but the method or approach in teaching was also of major concern to Osler. The teacher as model was for Osler almost inseparable from the method. While he was acutely conscious of communicating to the student a sense of enthusiasm, a devotion to knowledge, a zest for learning why, and a compassion in the care of patients, he was also acutely conscious of the teacher as model. Osler

emphasized this in a letter to one of his former residents, C. N. B. Camac (1906), in granting him permission to bring together in a book selected passages from Osler's published writings. The letter began with these words: "In the teacher I have always valued the message of the life above the message of the pen." Possibly Osler was saying that there must be no contradiction between precept and practice, no discordant note between the message and the messenger, or else the goal will not be reached.

Osler was a person of many talents, and his skills in teaching, in the care of patients, in writing, and in radiating a genuine humanity have left a mark on medicine that time will never erase. As Stewart G. Wolf has said, although Osler had gained prominence as a pathologist in his earlier professional years, he was first and last a bedside clinician and teacher (McGovern & Roland, 1969, pp. 53–57).

The bedside of the patient became for Osler, early in his career, the setting for his finest teaching. Here his two loves met in a unique fashion—his clinical care of patients and the teaching of his "junior colleagues." Osler summarized the real problem facing medical teachers as "not so much what to teach, but how to teach . . . and how the practical shall take the place of didactic teaching" (Osler, 1899). Further, the practical setting in which he liked to teach offered the opportunity to teach his trainees how to acquire knowledge. In a sense, the sick patient became the medium for teaching and furnished the trainee the medium through which knowledge was obtained. Thus, how to teach and how to learn met in the patient.

RELATING TO STUDENTS

When Osler addressed students, he used the words "fellow students." With such a salutation, a sense of community was formed immediately with those who searched with him into the mysteries of health and disease. Brown has expressed well the charismatic and continuing influence of Osler on his students:

The more we learned, the more wonderful his boundless knowledge seemed; the wider our vision, the more limitless his appeared. . . . Because of him our lives have been better, our successes more real, our failures less hard to bear, for through the tangled skein that spells life each of us knows that in him he has, and will always have, a teacher, a friend, and a true fellow student to the end of the chapter. (Brown, 1920)

Osler saw no appreciable interval between the teacher and the one being taught, only that one was a little more advanced than the other. In such a learning atmosphere, Osler contended that a student would then feel that he had joined a family whose honor was his honor and whose welfare was his

own (Osler, 1945, p. 400). Further, Osler believed that every student or trainee, at whatever rank, should be involved in teaching. This, of course, lessened the distance between professor and student and made family membership more of a reality (Osler, 1911a).

Students and trainees in the hospital setting attest to how Osler in working with them acted as a fellow student in guiding them in the examination of the patient, causing them to see what they had not previously noted, and demonstrating how findings should be carefully and clearly recorded (Steiner, 1935).

Further, in these encounters with students, Osler had a way of helping the student present himself in a good light. For example, E. H. Richardson, a former student of Osler and later professor of gynecology at Hopkins, tells of presenting cases to Osler in conferences in the hospital amphitheater. Although one would anticipate with dread a devastating barrage of questions that would serve only to humiliate the student and reveal the student's meager knowledge, this never happened with Osler. Instead, in presenting to Osler, the student gradually relaxed and confidence returned under the hypnotic warmth and glow of a profoundly sympathetic counselor who could be relied on to exhibit the student only in a positive manner that strengthened the student's self-esteem (Richardson, 1959, p. 114).

Osler made education relevant for his students or trainees by integrating compassionate study and informed conduct, by demonstrating a care and concern for what they could become, and by giving them a profound motivation for learning—the hope of becoming better persons. He brought them together through the genius of his friendship and by the way in which he lived his ideals and induced others to share these ideals with him. In his teaching, care of patients, writings, and entertainment in his home, those in training always occupied a place of honor and royal friendship. Osler said repeatedly that students were the inspiration of his life. His ability to inform, instruct, and inspire them was conveyed by both the spoken and written word.

INDEPENDENCE OF LEARNERS

He encouraged his students in their studies to ask "What do I need to know?" and not "What do you want me to know?" He coveted for the students not the role of a puppet in the hands of others but rather a self-relying and reflecting human being. The proliferation of examinations and rigid scheduling of all of the student's time offended Osler's educational sense.

Osler's educational philosophy was built on learning by doing, as self-education under guidance. He taught how to acquire and interpret information. His students and house officers would never see their education as complete, but rather that they must go on studying and investigating as long

as they lived. Medical knowledge was not something that was fixed, but something that grew and evolved and was ever changing through the onslaught of new information. When contradicted by empirical discoveries, traditional medical concepts are to be abandoned. Thus, old “truths” could and should be challenged. Knowledge gained by doing and experiencing was to be valued more highly than that learned from traditional authorities, such as lectures and textbooks. “The whole art of medicine is in observation,” Osler wrote, “to educate the eye to see, the ear to hear, and the finger to feel” (1945, p. 315). Further, the acquisition of principles should take precedence over the acquisition of facts, for the principles would become the doctor’s road map, as well as helping discern between essentials and non-essentials, between wheat and chaff (Osler, 1899). Such an educational approach, according to Osler, helps the doctors in caring for patients to avoid “the-nickel-in-the slot” attitude of mind that has been the curse of the physician in the treatment of disease (Osler, 1905).

A major segment of Osler’s life was his constant preoccupation with what we now call continuing medical education (Houle, 1969). Throughout one’s life the doctor must genuinely believe that one’s education “is not a college course, not a medical course, but a life course, for which the work of a few years under teachers is but a preparation” (Osler, 1945, p. 400).

Osler urged each of his trainees to keep records consistently of his observations and to reflect on them. He urged the carrying of a small notebook that fits into one’s pocket and never to ask a patient a question without notebook and pencil in hand. After the examination of a patient, 2 minutes will suffice to record the essentials in the daily progress of the patient. “Routine and system,” admonished Osler, “when once made a habit, facilitate work, and the busier you are the more time you will have to make observations after examining a patient” (1945, p. 412). Osler urged the study of the notes taken on one’s cases, observing rhythms and consistencies, looking deeply into puzzling observations, and seeing whether a group of cases teaches more than any single case. Through such an approach one could gain wisdom through experience. Only by collecting data and using them could one have sense or wisdom in treating one’s patients. Osler made a distinction between knowledge and wisdom and never tired of quoting [William] Cowper:

Knowledge and wisdom, far from being one,
 Have oft-times no connexion. Knowledge dwells
 In heads replete with thoughts of other men;
 Wisdom in minds attentive to their own.
 Knowledge is proud that he has learned so much;
 Wisdom is humble that he knows no more.

In his teaching, Osler did not hesitate to confront his students. Osler liked the face-to-face relationships with students and demonstrated his concern for

them both by support and judgment. He accepted the basic precept that it is the students who must do the learning and that true learning begins with not knowing the answer. Any student in hospital rounds with Osler who dropped a name such as Graves, Laennec, or Von Basedow, after whom diseases were named, was sure to be asked about the person named and not infrequently assigned the task of writing a brief paper on the person and his work (Bean, 1985; Pratt, 1949; Rogers, 1974).

BEDSIDE TEACHING

Osler had a deep interest in medical pedagogy and often commented on the ingredients for good teaching and a good teacher. He suggested a school of medical pedagogy in which able young persons aspiring to the position of teacher could be taught proper methods (Osler, 1907). Moreover, he encouraged his medical colleagues to be interested in becoming successful teachers and pointed out the rewards of teaching in spite of the allure and competition of other activities, such as medical research. At the opening of the new Pathological Institute of the Royal Infirmary in Glasgow he emphasized that point:

In the hurly-burly of today, when the competition is so keen, and there are so many seeking the bubble reputation at the eyepiece and the test-tube, it is well for young men to remember that no bubble is so iridescent or floats longer than that blown by the successful teacher. A man who is not fond of students and who does not suffer their foibles gladly, misses the greatest zest in life; and the teacher who wraps himself in the cloak of his researches, and lives apart from the bright spirits of the coming generation is very apt to find his garment the shirt of Nessus. (Osler, 1911b)

Osler was imaginative and innovative in his teaching. He made of the hospital a college and did his finest teaching there. He insisted that the wards be thrown open to students. He assigned his students to the wards and remained there with them. Bedside teaching represented a radically different method of pedagogy to what had been practiced in most medical training centers in the United States up to that time. Dr. Hezekiah Saiki of Kyoto, Japan, told of being a house officer with Osler in Philadelphia from 1885 to 1888. He said that Osler spent most of his time at the Blockley Hospital with students and house officers, using his methods of careful history taking, painstaking physical examination, systematic recording of progress notes, the regular use of the laboratory in the study of the patient, and the introduction of students and house officers into the wards and outpatient departments (Davison, 1973). In such a learning milieu, the role of the trainee changed from passive observer to that of active participant in the learning process.

Under the clerkship system, trainees would become an active part of the hospital machinery by spending most of their time on the hospital wards

carrying out duties related to their patients' care. Osler noted that all other forms of clinical instruction, including the systematic lecture, the amphitheater clinic, ward or dispensary classes, were but "bastard substitutes" for a system that makes the medical student help in the hospital as part of its human machinery (Osler, 1945, p. 389).

One of Osler's former students states that after a lapse of 52 years, his recollection of Osler is just as vivid as if he had but momentarily emerged from one of Osler's unforgettable hospital clinics or ward rounds. In describing ward rounds with Osler, this student reveals Osler as master teacher and what was to this student "the personification of the ideal professor":

At ward rounds, as Dr. Osler moved from one patient to another and sat in turn by the bedside of each one, he listened attentively while the responsible student presented a synopsis of the history, a summary of his examination and ventured a diagnosis. Then, "the Chief," as he was affectionately called, with a bedside manner that I have never seen equaled in dignity, simplicity, and reassurance to the patient, would proceed with his own examination, during which he utilized with exceptional skill as perfectly fashioned and capable a pair of hands as I have ever seen possessed by any man. Next, after resuming his seat, he would analyze the story and findings with astonishing brevity and clarity, discarding unessentials, and reconstructing the pattern of the disease under consideration with such faultless logic and precision that each and every such presentation provided his listeners with a word picture that was well-nigh unforgettable. If time permitted, he rarely failed further to adorn these clinical gems with their appropriate historical setting, paying worthy tribute to those by whose labors our knowledge of each specific malady had been enriched, and frequently concluded by casually assigning one or more of the most conspicuous original contributions, often available only in French or German, to the clinical clerk for a synoptic review to be presented at ward rounds one week hence. (Richardson, 1959, p. 106)

Osler emphasized the blending of the old art of medicine with the new science. In this commitment, he had a worthy example in a famous predecessor about whom he often spoke—Herman Boerhaave. When Boerhaave joined the faculty of the medical school in Leyden in 1693, medical practice throughout the world was chaotic and confused by new concepts of chemistry, physics, anatomy, and pathology. Boerhaave organized, distilled, and delivered the useful information from all the rapidly accumulating scientific knowledge of his day and balanced and mixed it with the ancient and traditional art of medicine. Rather than lecture on theory alone, he showed students and his colleagues what to do at the bedside of sick patients. He selected what was useful from an almost overwhelming mass of discovery and rejected an even greater mass of nonsense that was masquerading as discovery (Cushing, 1940). Osler surpassed Boerhaave in separating sense from nonsense by

giving the world a book, *The Principles and Practice of Medicine* (Osler, 1892), which remained the pattern of textbooks of internal medicine for a half century. Both Boerhaave and Osler chose the most illuminating setting available for their teaching—the bedside of the patient.

CONCERN FOR AND RELATING TO PATIENTS

Treating and learning were never separated in the care of patients. Osler taught that the doctor must focus on each patient as both a problem of treatment and an exercise in learning. The doctor also would grow and actually be renewed in observing and caring for the sick and the broken. Osler described the interaction with patients in these words: “Amid an eternal heritage of sorrow and suffering our work is laid, and this eternal note of sadness would be insupportable if the daily tragedies were not relieved by the spectacle of the heroism and devotion displayed by the actors.” Osler went on to say that nothing sustains you more potently than to recognize in your work the true poetry of life—the poetry of the commonplace, of the ordinary man, of the toil-worn woman, with their loves and their joys, their sorrows and their griefs. And he spoke of the comedy of life spread before doctor and patient and their ability to laugh together at this comedy (Osler, 1945, pp. 404–405).

Osler’s sense of humanity shone in the care of the patients. He inspired his students to emulate him in his care of the lowly and downtrodden. He seemed to be guided by two great Biblical admonitions: “Thou shalt love thy neighbor as thyself” and “Whatsoever ye would that others should do to you, do ye even so to them.” Osler urged his students never to forget the rights of patients or their needs. A. D. Gardner recalls one of Osler’s clinical lectures to junior students at the Radcliffe Infirmary in which he mentioned, “In my behavior to my patients I make no difference whatever between the high and the low, between a duchess and a cook.” Gardner comments that in England, at that time, there was a considerable difference between cooks and duchesses, and most people were inclined to treat them quite differently. Osler’s principle in practice struck the students as excitingly enlightened and humane. His radiant humanity emerged as a source of extraordinary clinical success (Gardner, 1969).

A psychological dimension or awareness was very much a part of Osler’s bedside care and teaching. Instinctively he knew the right phrase, reassuring gesture, look, or gentle touch. He used suggestion, and he emphasized the therapeutic value of large measures of hope, merrily quoting a Philadelphia colleague who once jokingly defined Osler’s practice at the Johns Hopkins Hospital as a “mixture of hope and nux vomica,” adding that “the grain of truth in this statement lies in the fact that with many hospital patients once

we gain their confidence and inspire them with hope the battle is won” (Osler, 1909).

In the teaching and patient care situation at the bedside, Osler has described what should be there in the person of the doctor: imperturbability. Osler defined imperturbability as “coolness and presence of mind under all circumstances, calmness amid storm, clearness of judgment in moments of grave peril, immobility, impassiveness . . .” (1945, pp. 3–4). A patient has described what was there and how profoundly the patient was touched:

In a room full of discordant elements he entered and saw only his patient and only his patient’s greatest need, and instantly the atmosphere was charged with kindly vitality, everyone felt that the situation was under control, and all were attention. . . . The moment Sir William gave you was yours . . . with the easy sweep of a great artist’s line, beginning in your necessity and ending in your necessity, the precious moment was yours, becoming wholly and entirely a part of the fabric of your life. (Cushing, 1940, 1, pp. 420–421)

ECONOMY OF WORDS

Osler practiced a reasonable economy of words, especially in his teaching. Students marveled at the clarity and preciseness of his words on hospital rounds and in case conferences. In developing such a skill, Osler may well have learned something from an older medical colleague who once confronted him. Osler remembered the experience and liked to tell others about it in order to illustrate the virtues of brevity, relevance, and appropriateness in the use of language. In his early days in Montreal, Osler was called in consultation by an older physician for whom he had done autopsies. It may well have been the first time he had acted as a consultant, and he was pleased indeed with the opportunity. After the examination, Osler was asked to speak to the family. This he did, detailing at great length the symptomatology, diagnosis, and prognosis of the case. After they had left the patient’s house, the old doctor turned to him and said, “Young man, you talk too much. For forty years I have practiced medicine with only a nod of the head” (Pratt, 1949).

Another area in which Osler practiced great economy of words was in his letters. He was usually brief but enormously informative and to the point. His humanity, however, managed to shine through these words in spite of their brevity.

PRIORITIES AND PASSIONS

There were priorities and passions in the life of Osler, and most of these had a profound relevance in his teaching and in the educational development of the students, interns, and residents around him.

Osler had the rare ability to place priorities in a proper order. He had such a remarkable sense of what is important and what should be emphasized that many of his judgments have stood the test of time. As Martin Cummings has noted, "With the exception of areas such as clinical therapeutics, which change rapidly, his philosophic and educational views are strengthened rather than weakened by the passage of time" (McGovern & Roland, 1969).

Osler had strong reservations about full-time clinical professors, out of fear that these physicians would become cut off from the way medicine was practiced in the community outside of the university hospital. They then would be less effective in training their students and resident assistants for the real world of medical practice. He advocated strong ties with the medical practitioners who served the public at large in a "ministry of health." He also advocated that each professor be involved in the practice of medicine both inside and outside of the hospital. He knew that the research laboratory could be seductive for fulltime professors and that before long there would evolve a set of "clinical prigs, the boundary of whose horizon would be the laboratory, and whose only interest was research, forgetful of the wider claims of a clinical professor as a trainer of the young, a leader in the multifarious activities of the profession, an interpreter of science to one's generation, and a counselor in public and in private of the people" (Osler, 1962).

One of Osler's strongest dislikes was the practice of frequent examinations for students, instead of an occasional one. He was convinced that examinations quenched the all-precious investigating spirit of students and made the end and object of study the meeting of certain tests. The examinations were not tests of the capacity to do or to think but how far the student had made himself a phonograph or monotype on which an examiner might play (Osler, 1907). Osler felt that there were methods more effective and more personal than the written examination in assessing student progress, and he strongly recommended and used other methods in evaluating the level of competence of those in training with him.

Living in "day-tight compartments" represented a philosophy of life of which Osler spoke to students and practitioners alike. He had made the discovery of day-tight compartments early in his life and urged it as a way to prevent what we would today call burnout. A sentence he had discovered in one of [Thomas] Carlyle's essays made a lasting impression on him: "Our duty is not to see what lies dimly at a distance, but to do what lies clearly at hand." Let the day's work suffice with no thought of tomorrow, for absorption in the duties and tasks of the hour is in itself the best guarantee of ultimate success, he proclaimed repeatedly. In his famous Yale address of April 20, 1913, "A Way of Life," he offered this counsel:

The load of tomorrow, added to that of yesterday, carried today makes the strongest falter. Shut off the future as tightly as the past. . . . The life of the

present, of today, lived earnestly, intently . . . is the only insurance for the future. Let the limit of your horizon be a twenty-four hour circle. (Osler, 1969, pp. 19–20)

The speed and proliferation today of new developments in scientific medicine tax the physician in keeping abreast of these changes. Would Osler's style of teaching and practice have led him quickly to be out-of-date? Not at all! Osler was a fine example of how one should enter the profession only when well prepared, and that preparation must be continued throughout life. From his early years in medicine to old age, in practice as in precept, he bore witness to the physician's urgent need to continue to learn. It represented no idle use of words when at the age of 63 he began an address before the student body at Yale with the words, "Fellow students." Continuing education represented a high priority for him, and at every opportunity he tried to point out to students and colleagues the necessity of this approach in medicine. The central focus of medical education as Osler shaped and reshaped it in his four professorships (McGill, Pennsylvania, Hopkins, and Oxford) was that from the beginning the physician must consider study a lifelong task. He frequently pointed to examples of the consequences of doctors in general practice, in specialty consulting, and in teaching who had failed to improve themselves, to keep up with new advances. He emphasized that medical professors themselves were not immune to a relentless intellectual staleness. In reviewing a medical textbook, Osler pointed out that the book illustrated the difficulty a teacher has in escaping from the bonds in which a routine course, delivered year after year, tends to encircle the teacher with the thoughts and professional opinions of 30 years ago.

Osler felt that doctors in training and in practice should spend some time each day, if only a half hour, in reading great literature. He urged the starting of a bedside library. He emphasized that a liberal education could be had at only a slight cost of time and money. Rest not satisfied only with professional training, he urged, but try to get the education of a scholar. He proposed a way to work toward scholarly development: a half hour of reading each night before going to sleep and in the morning having a book open on one's dressing table. Long before the present-day stressing of the humanities in medicine, Osler was guiding those around him in the marriage of literature and medicine. Among his many recommendations of what to read were the works of two great physician-writers, Sir Thomas Browne and Oliver Wendell Holmes. Osler described the love of his life as given equally to books and to people (Osler, 1945, pp. 204–205, 366–368).

Students like to see in their teachers an emotional and intellectual commitment to something so strong that it resembles an addictive passion. Osler had several addictive passions, and two of these he shared generously with his young associates and students: his passion for medical history and his

love of great books. He blended these two passions and integrated them creatively in his medical teaching and practice. In a dedicatory address given for a new building of the Boston Medical Library, he spoke these memorable words: "To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all" (Osler, 1901). As for medical history and Osler's search through the literature of the past, he sought to offer his students an encounter with their ancestors whose experiences, hopes, achievements, and mistakes had made the human condition what it was. The path of our medical practice is illumined, he taught, by our standing on the shoulders of the doctors who have gone before us. At a time when medical knowledge and practice were changing almost daily, Osler manifested his reverence for the profession by his fascination with the history of medicine. He could caution doctors about how much remained to be learned, and this served as a useful check to the ebullient overconfidence of some of the medical scientists.

CONCLUSION

One can ask how Osler would fare in our era of scientific medicine and high technology. If he were alive today, would machines separate him from both patients and students? Would machines and other symbols of high technology change or distort the bedside setting where Osler did his finest teaching? Probably not, because of the way he embraced and integrated the scientific medicine of his day while maintaining the clinical acumen and spiritual and methodological values of an earlier era of great clinicians. It has been said that Osler was not unlike Henry Ford, Thomas Edison, Alexander Graham Bell, Luther Burbank, and other popular heroes of the early 20th century who represented and retained "old-fashioned values" even as they forged a technological society (Ludmerer, 1985, p. 135). Thus, Osler today would not let machines distance him from patients or students. His humanistic values would have kept him focused on patient and student, with high technology being always his servant and never his master. For Osler, medicine existed truly as medicine only when the science, technology, and craftsmanship of the physician were practiced with the deepest respect for the humanity of the patient.

With the new science in medicine ascending strongly, Osler recognized and taught that it did not encompass all critical aspects of diagnosis and treatment. There was much that was unique about each person's illness, and that uniqueness could be learned best by nontechnological inquiries based mainly on dialogue. Illness, among other things, was an experience by a patient that invested the illness with meaning. Thus, the doctor had to ask, "What does this illness tell us about this patient and about the family and community from which the patient comes?" A therapeutic regimen would be

successful only to the extent that it would meet the needs of the disease as well as the needs of the patient, who modified and felt the effects of the disease in a unique and individual way. Thus, Osler frequently stressed that it was as important to know as much about the person who had the disease as it was to know about the disease that had the person.

The misuse of technology leads medicine to become more institutionalized and its delivery depersonalized and exorbitantly expensive. Yet it must be remembered that doctors practice medicine the way they are taught. Whether doctors retain the personal and humanistic touch and carry this into their practice after they complete their training depends very much on the quality of their training. Osler's ideals of medical education permeated his life and work. These ideals are even more important today and have the capacity to influence profoundly the practice of medicine in spite of a technologically dominated medicine. Osler was one among a few of his physician associates who spent his career preaching and teaching that medical education should have a procedural rather than a substantive emphasis, thereby producing physicians who are thinkers rather than memorizers (Ludmerer, 1985, p. 280). Thinking physicians, as Osler perceived the term, are the ones who in the practice of medicine ask not "What is there to do?" but "Should it be done?" They realize that many techniques and procedures have limited applicability and that in most cases the most reliable information is still obtained from the patient. They are not deluded into believing that they have mastered technology because they are using it. On the other hand, they use fewer tests and procedures because they understand the uses and limitations of technology and are not seduced or mastered by it. Critical thinking, in the way Osler taught and demonstrated it, offers for us today the way to keep science and technology in the servant role. Thus, Osler's teaching techniques and ideals are as relevant today as in his time, and probably even more needed, although no easier to impart.

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CHAPTER 2

Social Learning Theory and the Development of Clinical Performance

JOAN A. FRIEDLAND

“The whole art of medicine is in observation.”

—Sir William Osler

“In the field of observation, chance favors only the prepared mind.”

—Louis Pasteur

BACKGROUND

Better understanding of the clinical learning process and the development of physician behaviors can lead to improvement in physicians' educational experience and subsequent performance. At any given moment, some 33,000 clinical medical students are spending up to 60% of their time with the nearly 100,000 graduate trainees in the clinical educational environment, a resident to student ratio of 3:1 (Barzansky, Jonas, & Etzel, 1999; Miller, Dunn, & Richter, 1999; O'Sullivan, Weinberg, Boll & Nelson, 1997). This intense student-to-resident exposure means that a large part of the clinical learning process is occurring in a complex environment where the primary mode of education is the incorporation by students and junior residents of the observed senior residents' clinical practices, attitudes, and behaviors. This observational (social) learning is pivotal for the students' and junior residents' developing clinical competence and for their future teaching roles. In this chapter we will look more closely at the

developing physicians' behaviors and the observational learning taking place in the clinical learning environment, for which such teaching techniques as demonstrating and assisting with refinement of data and information acquisition, patient interaction, cognitive processing and procedural work, are essential. (Chapter 3 of this volume describes specific techniques for accomplishing such clinical teaching goals for residents.)

SOCIAL LEARNING THEORY IN BRIEF

The organizing framework for this discussion of physician education is Bandura's social learning theory (Bandura, 1986), which combines concepts from various behavioral, emotional, and cognitive models of behavior development. Several of the theory's many concepts have particular relevance here. First is the concept that a person's behavior results from a continuous three-way interaction (Bandura's concept of reciprocal determinism) of cognitive and other personal factors (e.g., knowledge, emotions), environmental factors (e.g., other people's advice and behavior, physical and institutional arrangements that promote or impede action), and the person's behavior. Note that contextual and environmental factors are as important as personal factors. Additionally, according to social learning theory, important contributors to learning include beliefs about the probable results of action (expectations); confidence in one's ability to plan and perform action and to maintain it (self-efficacy); and responses to the learner's behavior that increase or decrease the chance that the behavior will be repeated (reinforcement). One of the theory's special contributions has been to highlight the importance of observational learning, which means learning what to expect and what to do through the experience of others. The process involves a behavior model (role model), perhaps unknowingly, and a learner who assimilates and adapts the behavior that the model demonstrates. A teacher who deliberately uses modeling may combine it with guided practice, in which the student repeats the observed behavior and receives suggestions for improvement from the teacher. Finally, with experience the learner may incorporate aspects of the teacher's role by developing skill in self-monitoring, self-evaluation, self-motivation, and self-control. You will encounter these concepts from social learning theory as we explore how to help trainees develop clinical performance.

THE NATURE OF CLINICAL PERFORMANCE AND MODE OF DEVELOPMENT

Clinical Performance as Complex Human Behavior

Physician performance is a highly specialized group of human behaviors that develop through a complex learning process. The faculty and residents serve

as role models, knowingly or unknowingly, but generally they are not analyzing their actions or those of their trainees, nor are they using detailed observation and study to form conscious, well-founded educational practices. In other words, the scientific method is not usually applied to the educational process itself.

The Observational Learning Model

To understand physician performance behaviors more clearly, we will view them as being acquired through a social learning process that is primarily based on observing others. This chapter applies the established principles of social learning theory (Bandura, 1977, 1986; Rosenthal & Zimmerman, 1978) to the development of physician performance.

Figure 2.1 outlines the observational learning process in brief, providing some understanding of the dynamics during the development of physician performance. Such learning processes begin long before formal professional education and are essentially continuous throughout life.

Example: Children demonstrate the observational learning process constantly. When gifted with a new doctor kit, the 4-year-old immediately postures and practice begins.

In the social learning paradigm, modeled behaviors are observed, then cognitively processed; a representation of the behavior is stored, modified, practiced, refined, and then modeled for others. This observational learning process incorporates cognitive processing that utilizes an appropriate knowledge base in a given discipline and provides a framework for understanding how knowledge is transformed into action. Faculty and trainees are not generally conscious of the dynamics of their behavior, their cognitive processes, or the various personal and environmental influences present. Yet all of these continuously and reciprocally interact during the formation of new patterns of behavior, influencing the resultant performance and, inextricably, the development of each unique new role model. Other important influences that are not generally recognized include the great variety of forms of modeled events upon which developing behavior is based, such as the different forms of attending physician approaches to the patient or to clinical reasoning and the highly detailed structure of complex behaviors (Bandura, 1986; Shuval & Adler, 1980).

Example: An intern on work rounds learns from the senior residents' approach to the onset of a new problem or a complication. Will the approach be careful inquiry and focused examination followed by questioning and thinking aloud, with the steps involving the interns and students present? Or will it be premature closure and giving orders for tests, negative behaviors for patient care and the learning process, as well as poor modeling?

Model of the Observational Learning Process During Medical Education

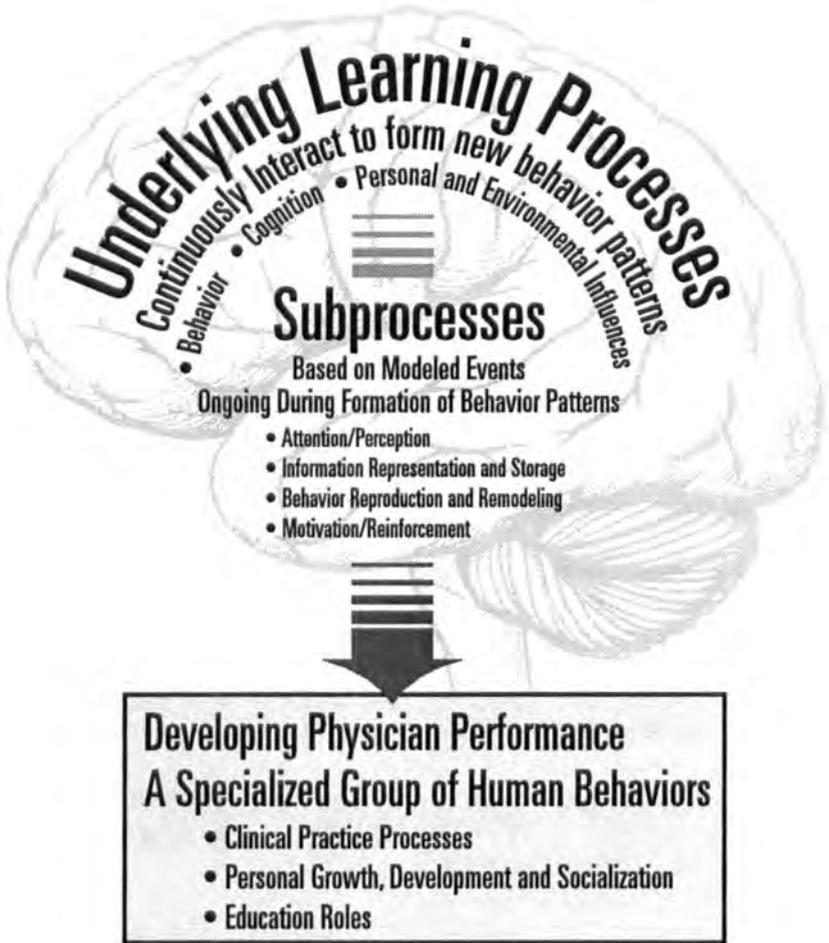


Figure 2.1 Model of the observational learning process during medical education. *Note:* Based on the Observational Learning Model of Albert Bandura, 1986.

The ongoing sequence of events during behavior formation includes the sub-processes of attention and perception, representation and storage of information, and reproduction and remodeling of behavior (Fig. 2.1). Motivation and reinforcement are active throughout the process.

Example: The attending or the senior resident suggests a team meeting with a patient's family in order to obtain additional history and establish a relationship. Trainees are motivated to incorporate this behavior into a consistent pattern of patient care, when its value is established by the team leadership model. Subsequent references to the useful additional information obtained and the newly established family support will reinforce the behavior.

Early Practice Development

The medical education process is a composite of experiences leading to the formative group of behaviors I have characterized as developing physician performance. By using the learning process and the developing behaviors (Figs. 2.1 and 2.2) as structural elements of clinical education, teachers can understand the wide variety of continuously interacting influences and use the best techniques to foster trainees' progress. This will also lead to a better understanding of the neophytes' attempts at clinical performance and a more structured educational approach to such areas as basic medical skills, interpersonal skills, clinical problem solving, attention to patient data and its appropriate use, and attention to details of ongoing management (Engel, 1976; Engel, 1987; Ludmerer, 1999, 2000; Wray & Friedland, 1983; Wray, Friedland, Ashton, Scheurich, & Zollo, 1986). A more realistic approach by both faculty and house staff to the actual state of these clinical process skills, both at the onset of undergraduate clinical work and even later after graduation, will lessen frustration and create a more positive learning environment. This is especially important for the busy resident teacher, whose obligations, as those of faculty, are now further aggravated by public expectations (Asch, Parker, McCall, Levinsky, & Glickman, 1988; Cohen, 1999; Eichna, 1983; Ludmerer, 1999; Yedidia, Schwartz, Hirschhorn, & Lipkin, 1995).

THE COMPONENTS OF DEVELOPING PHYSICIAN PERFORMANCE AND THE EFFECTS OF SOCIAL LEARNING PROCESSES

The broad objectives of the educational process for the new clinician can be viewed as composed of three groups of interrelated functions: *clinical practice processes*, the trainees' *personal growth, development and socialization*, and their *education roles*. Figure 2.2 outlines the elements of these three essential areas; in this section I discuss each area in turn.

Clinical Practice Processes

The development of clinical practice processes occurs in a distinctive pattern that is established during the undergraduate clinical years and reaches its

The Structure of Developing Physician Performance

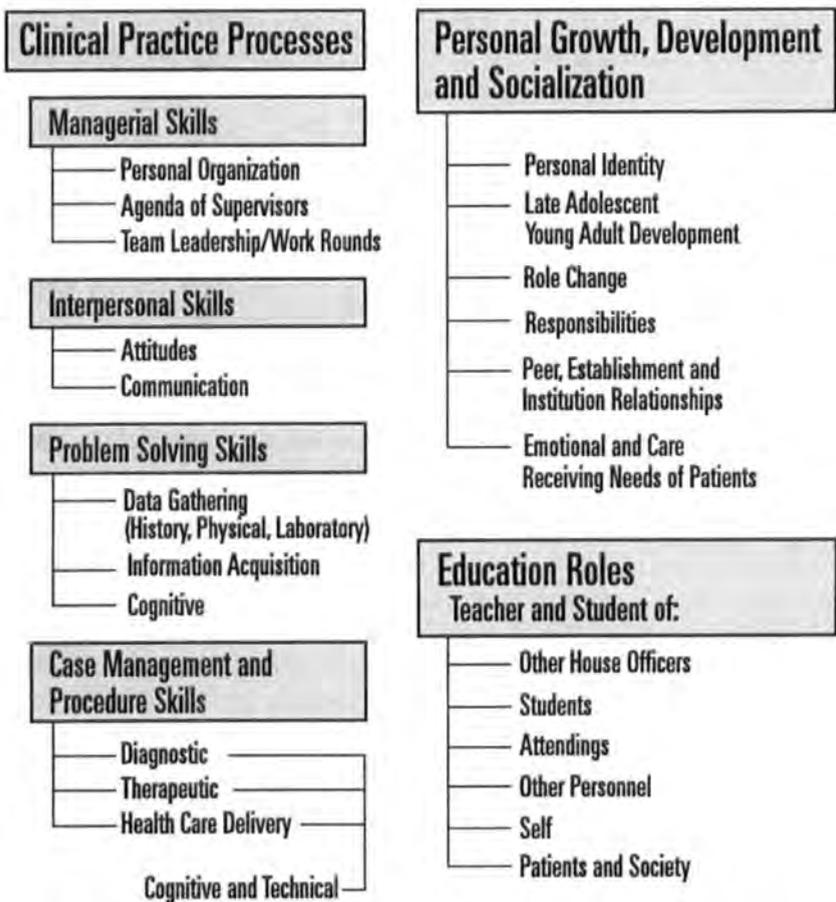


Figure 2.2 The structure of developing physician performance: Objectives of the clinical education process.

height during the internship. Direct and indirect patient care are the core educational activities, and didactic experiences are now limited (Gillanders & Heiman, 1971; O’Sullivan et al., 1997). A series of patient evaluations are performed, based on the observationally acquired skills of history taking and

physical examination. Each patient evaluation is followed by performance of related problem-solving, procedures, and management practices; these processes are also based on prior observations or experiences with similar cases, or on consultation or guided action in conjunction with others responsible for the patient. Approaches to case-based learning and methods for acquisition and application of knowledge are simultaneously being established. A myriad of administrative, technical, and interpersonal behaviors is being acquired by the same learning mechanisms (Harrell & Firestein, 1988; Schneiderman & Peixoto, 1997; Tumulty, 1973; Weiss, 1986). The following questions can be used to guide and stimulate teaching of the clinical practice processes:

1. Are data collection supervised, problem-solving developed, and self-directed learning fostered?
2. Is effective work organization modeled and taught, or are there constant reprimands for missing tests, unmade calls?
3. Is the first procedure an experience involving careful patient and trainee preparation, with demonstration and supervised practice?
4. During work rounds, are patients included in the discussion and their assent obtained for treatment changes or new studies?

The limitations of the haphazard nature of this often essentially apprenticeship pattern are well known (Eichna, 1980, 1983; Engel, 1976; Ludmerer, 1999; McLeod & Harden, 1985; Stillman, Swanson, & Swee, 1986; Wray & Friedland, 1983).

Historically not considered core to the discipline of medicine, courses in management, psychology of interpersonal relations, group dynamics, sociology, and education are rare in medical school curricula and graduate programs. Rather, skills in these areas are usually acquired through observational learning; sometimes by observing others; often only experientially; and, regrettably, frequently inadequately (Weiss, 1986).

Example: The concerned intern, fearful for her discharged patient with pneumonia, is demanding an appointment for him in three days. After complimenting her on the success with oxygen, fluids, and antibiotics, we talk about the discharge process, patient education, and establishing continuity of care.

Personal Growth, Development and Socialization

Educational needs during clinical training are very complex; yet time—which at present is equated with money—is less available in today's care setting. Moreover, a great deal of maturity is being demanded of very young adults. The tasks of personal identity and young-adult development and the task of establishing a professional identity, all crucial for maturation, are

negatively affected by the intensity of premedical and medical education. The scope of this problem and the effects on individual trainee's, their families, and their patients have been known for some time (Butterfield, 1988; Eichna, 1980, 1983; McCue, 1985a; Mizrahi, 1984; Reuben, 1985). The sudden role change and enormity of the level of responsibility of the new intern are not consistently dealt with by using mature coping mechanisms or guided by such role models. Rather, interns' responses are frequently modeled after the behavior of "stressed, defensive and often immature (if older) residents" (McCue, 1985b), observed either previously while students or now as new house staff. In addition, house staff are now also viewed as employees (Cohen, 2000).

The inclusion in medical education of material regarding personal growth, development, and socialization is uncommon (Quill & Williamson, 1990), yet as McCue stated in the "The Distress of Internship" (1985a), "all would benefit from creating a work environment that enhanced rather than undermined the attainment of maturity." The literature clearly recognizes these problems, such as the common difficulties of understanding and coping with ones' own feelings, which lead to an inability to understand and cope with the emotional and care needs of others, namely patients (Asch et al., 1988; Brundage, 1987; Eichna, 1983; Epstein, 1999; Groves, 1978; McCue, 1985b).

Example: The resident, new to ambulatory care, dropped into a chair in the attending's office and expressed amazement over how "nice" outpatients are compared to inpatients. The attending talks with him for a while about a hospitalized patient's fright and feelings of loss of control, and how it felt to be a new house officer and young adult as an intern.

The components of personal growth, development, and socialization are critical parts of the whole developing physician. The modeled behaviors, coping mechanisms, and attitudes of the resident teacher are also the basis for those of the next generation. A variety of useful educational and support mechanisms have been developed, but few attempts have been made to deal with these components as integral to physician development during medical education (Miller & Schmidt, 1999). A superb example of how this can be done to the great benefit of the entire spectrum of learners and their patients is the humanistically grounded program in internal medicine at Highland Hospital in Rochester, New York (Markakis, Beckman, Suchman, & Frankel, 2000).

Education Roles

A systematic role for educational principles and practices has not been integrated into most medical curricula, with the exception of including some

evaluation practices. We recognize increasingly the role of faculty members and house staff as educators who must use educational concepts and methods for improving the learning environment and subsequent physician performance. Systematic analysis and solution is as essential to education problems as it is for patient or research problems. With a general understanding of the underlying learning processes and broad physician performance objectives, we can now address the residents' needs for developing teaching skills.

What information and experience are required for the physician's teaching role? It is important for trainees and faculty to begin with an awareness and acceptance of the integral role of teaching in being a doctor (Bentsen, 1997; Bing-You & Harvey, 1991; Tacci, 1998). The word doctor means teacher, a literal translation from Latin. Next must come a clear understanding of how constantly we are teaching in the primarily observational learning setting of the clinical environment. In reality, we cannot *not* teach. Basic educational concepts and development of practices are needed for establishing a positive, safe learning environment; the specific techniques for teaching and assessing the skills of clinical practice and professional development; and for reflection on the nature of learning and behavior formation important for all in the clinical setting (see chapters 3 and 4). Self-reflection and self-efficacy beliefs (assessment of personal capability) are important motivators for the newest teachers, who must develop these teaching skills while negotiating their own learning needs, obligations, and uncertainties (Bandura, 1997; Yedidia et al., 1995).

Self-directed learning is an important technique, and self-motivation and control of learning are essential components of professional competence (Mann, 1999; Williams, Saizow, & Ryan, 1999). Residents are critical models for these skills; however, in one study evaluating teaching skills of residents and faculty, residents were perceived as less able than faculty in assisting students in developing self-directed learning skills (Vu, Marriott, Skeff, Stratos, & Litzelman, 1997). This is easily observed in the ward team setting. While students and house staff are generally motivated learners, medical school graduates still have extremely variable skills in directing their own development (Ende, 1995; Norman, 1999). Additionally, it is a complex set of challenges to continue developing self-directed learning skills while addressing sufficiently the reflection and examination of the cognitive steps necessary for teaching them to others. Therefore, residents need to develop a problem-based approach that can be taught and modeled, an understanding of the importance of using learning objectives and the steps to their achievement, and problem-solving skills (Barrows & Tamblyn, 1980; Bordage, 1994; Cohen, 1999; Irby, 1994; Kassirer & Kopelman, 1991; Schon, 1987).

SOME PRACTICAL APPLICATIONS OF SOCIAL LEARNING THEORY TO TEACHING TECHNIQUES FOR DEVELOPING PHYSICIAN PERFORMANCE

Below are some practical applications of social learning theory to clinical education:

- Bringing to consciousness (attention) the fact that a behavior is being learned based on modeled events and understanding the source of the models being used (environmental influence) improves learning (see chapter 4).
- Understanding stages of professional development clarifies learning and performance objectives at various levels of training (see chapter 4).
- Facilitating perception of the complex parts of a behavior improves learning (see “Role-play for 1:1 Teaching with a Patient” and “Introduction to Teaching Clinical Procedures” in part II, section C).
- Verbal modeling guides procedural skill development and develops problem-solving skills (see chapter 3).
- Teaching an agenda for work rounds helps establish a lifelong habit essential for excellence in the practice and subsequent teaching of medicine (see “Work Rounds” in part II, section C). Consistent data gathering on work rounds is associated with better patient care process and outcome (Ashton, Wray, Friedland, Zollo, & Scheurich, 1994).
- Errors can be prevented by establishing accurate, stepwise behavior patterns for basic skills and process-of-care tasks (Leape, 1994; Wray & Friedland, 1983) at which physicians can become “unconsciously competent” (Personnel Journal, cited in Schwenk & Whitman, 1997). (See “Introduction to Teaching Procedures” in part II, section C). The teachers’ own practices are also corrected and reinforced by the reflection and review provided through the opportunity to teach, which brings the steps again to consciousness in order to coach new trainees (remodeling). To motivate trainees, error prevention must be established as an educational goal within the framework of a pattern of nonjudgmental, available supervisory support (Asch et al., 1988) and must include rapid analysis and correction of errors should they occur (Wu, Folkman, McPhee, & Lo, 1991). Commitment to the use of accurate patient data, guidelines, and current information must be modeled, and unfounded belief systems challenged (e.g., in one’s ability to recall patients’ medications) (Feinstein, 1997; Willette, Wray, Friedland, Ashton, & Zollo, 1988).
- Time constraints and the intense nature of the clinical learning setting necessitate a limit to formal course scheduling. Supplementing programs for development of residents’ teaching skills with brief didactic and interactive

discussion sessions, careful modeling and consistent feedback, will further the development (reinforcement) of these skills (see chapter 5).

Such well-founded teaching techniques can help us reach the levels of achievement in all of the behavioral areas of developing physician performance that are critical for house staff, patients, teachers, and most especially for the students working and learning under the aegis of the newest graduate clinicians.

PROFESSIONAL SOCIALIZATION

While the specific competencies of the new clinician are becoming established, the teacher and learner are working in the midst of powerful, often competing forces from the complex personal and environmental influences of the professional milieu. The problems of socialization into a profession are intertwined with the need for acquiring skills in dealing with peers and establishing inter- and intra-institutional relationships, and such issues play major roles in the behavior of students and house officers and the resultant posttraining physician and person (Bosk, 1979; McCue, 1985a, 1985b; Mizrahi, 1986; Shuval & Adler, 1980). This increases the complexity and responsibilities of the teacher's role.

Basis in the Integration of Observationally Learned Patterns of Behavior

Power of Particular Role Models

The strong influences of group mores and peer role-modeling on behavior have not been widely appreciated (Bandura, 1986; Harvey, 1974; Kolb, Rubin, & McIntyre, 1971) nor has there been great understanding of group defense mechanisms as underlying factors in the poor house staff-patient relationship (Arluke, 1980; Caldicott & Stern, 1997; Mizrahi, 1986; Shuval, 1975).

To accomplish our goals as attending or resident physicians, our attitudes and our understanding of education principles must be of the highest priority. The centrality of the physician role model to observationally learned behavior development during clinical medical education is clear; however, the many factors that impinge on the resultant behavior must be understood (Bandura, 1986; Mann, 1999; Norman, 1999; Resnick, Levine, & Teasley, 1991; Shuval & Adler, 1980; Williams et al., 1999). Faculty members and residents who are comfortable with their own communication and self-directed learning skills demonstrate that the complexities of physician performance can be managed and the rewards can be worth the effort. High standards that are internalized become powerful intrinsic motivators (Bandura, 1997).

Role of the Clinical Learning Environment

Progress to the postgraduate state will occur—guided by faculty, but modeled by all—in the shadow of stresses, economic and patient volume constraints, and attitude problems (Dubovsky, 1986; Feinstein, 1997, Asch et al., 1988). For better or worse, the newest physician has already been in this primarily social (observational) learning milieu for 2 years before graduation, and many behaviors have been established. The historical role models and the information resources that must be in place when the patient “is admitted to the medical service at 2:00 AM” (as Libby Zion was) are very complex (Alpert & Coles, 1988a; Asch et al., 1988). Therefore, for improvements to occur in clinical education, in addition to the important issues of hours and workload, there must also be recognition of the learning environment itself as an important entity. The consistent use of the essential teaching skills of direct observation and feedback (Ende, 1983), verbalization of problem solving (Bandura, 1977; Ende, 1990; Kassirer, Kuipers & Gorry, 1982), and attention to consistent practice behaviors (Engel, 1976) must be established. Better modeling influences, attention to cognitive and mechanical details of observationally learned behavior, and attention to development of self-reinforcement influences are also key elements. Both as a general approach and when there are problems, clinical teachers must be able to evaluate educational situations for both content and process needs (Irby, 1994). The pursuit of learning objectives can then be facilitated, as can analysis and learning of the complex components of behaviors. Widespread faculty and resident development into better educators and role models will have a ripple effect in the educational environment.

Basis in Personal Developmental Influences

Accepting and attending to the objectives of personal growth, development, and socialization are essential to developing physician performance. Confronting and dealing positively with current house staff levels of work load/work time stresses, as well as the various personal, professional, and environmental stresses affecting both students and house staff requires pertinent knowledge and personal commitment from faculty (Aach, 1988; Alpert & Coles, 1988a, 1988b; Jellinek, 1986; Yedidia, Lipkin, Schwartz, & Hirschhorn, 1993). Physician responsibility for maintaining an atmosphere of mutual respect and consistently humane behavior among all persons involved is central to the care of patients and to medical education.

The Hidden Curriculum

Engaging residents in creating a positive learning environment is a key task. Negative attitudes and behaviors have enormous power, affecting those being

developed by peers and students (Bandura, 1986; Kay, 1990). In addition, the negative self-reinforcement that occurs when such behaviors are not checked has already played a major role in the “deprofessionalization” of medicine (Hundert, 1996; Hundert, Douglas-Steele, & Bickel, 1996). An understanding of the issues of intern and student disillusionment and struggles with ethical dilemmas, especially in the hierarchical team setting, is essential (Christakis & Feudtner, 1993). Most of the development of values and norms is occurring in informal settings or through a “hidden curriculum” (Hafferty, 1998; Ludmerer, 1999) between students and residents. Intervening in this “informal curriculum” (Stern, 1996, 1998) and realigning the goals of academic medicine’s organizational culture are essential tasks for achieving medical education’s goals of developing altruistic, knowledgeable, skillful, dutiful physicians (Anderson et al., 1999). There is no better place to start than with this central group in the continuum, the teaching residents.

THE RESULTANT RESIDENT TEACHER

Responsibilities, Conflicts and Expectations

Residents recognize their high degree of responsibility for management, patient care, teaching, self-directed learning, and professional behavior. They believe they are inadequately prepared for their roles in teaching and evaluation and feedback (Greenberg, Goldberg, & Jewett, 1984) and find conflicts and stresses that are especially apparent regarding areas of professionalism and their own learning (Bentsen, 1997; Tacci, 1998). The profound effect of these often conflicting roles as new physician, trainee, caregiver, and teacher on residents’ ability to teach and learn is also well described in the qualitative study of 2nd-year resident interviews by Yedidia et al. (1995).

Students, who often recognize their own professional responsibilities and the need to take responsibility in seeking their own education, nevertheless expect a high level of skill and professionalism from their residents in every area. At the same time, faculty express a great deal of concern regarding residents’ attitudes and behaviors with students, their lack of teaching skills (Wilkerson, Lesky, & Medio, 1986), and often-negative image building (Snell, 1989).

Self-Reflection and Motivation

An understanding of the mechanisms that underlie residents’ own learning will enable reflection, self-assessment, and change in residents’ own behaviors. This self-reflection is a powerful self-motivation tool and will be of benefit both for their own professional goals and for their obligations as role

models and teachers (Bing-You & Harvey, 1991; Mann, 1999; Sasson, Blatt, Kallenberg, Delaney, & White, 1999) (see chapter 4).

Critical Needs

To be better prepared for their teaching roles, residents need an understanding of educational theory along with experiential development and supervised practice in role-modeling and teaching methodology. In short, the untutored tutor generally has little chance for success in this important role.

Faculty and Institutional Responsibilities for Developing the Resident as Teacher

The assumption that physicians can “just teach” is widely entrenched. Social learning theory helps us understand why there is no substitute for the competent educator-model who is present in the environment and is given time to teach and demonstrate good care. Despite the evidence for the positive effects of residents as educators (see chapter 7), implementation of development programs is not widespread (Bing-You & Tooker, 1993). One key issue is faculty members’ need for development of their own skills and understanding in these areas in order for them to be competent role models. The “outsider” role generally assigned to educational process per se has projected a powerful negative image. It is now essential that we proactively incorporate the best teaching techniques currently available along with traditional clinical teaching abilities. We must also recognize natural talent in teaching and educational leadership and foster their emulation.

Realistic assignment of resident and faculty time and recognition of teaching as academic productivity is also critical (Alpert & Coles, 1988b; Bloom, 1988; Ludmerer, 1999, 2000; Skeff & Mutha, 1998; Wright, Kern, Kolodner, Howard, & Brancati, 1998). Recognition of the value of time spent in faculty development and in the development of house officers as educators, with participation and leadership by department and program chiefs, is essential (Maudsley, 1999). Providing assistance to residents and students for noncognitive chores makes an important contribution. Resources such as basic teaching tools are another frequently neglected issue. Each clinical program should have available current medical information sources and patient data sources and prepare trainees for their use. Institution and public responsibility must accompany high expectations (Cohen, 1999; Fullan, 1991; Mellinkoff, 1989; Philibert, 2000).

Recommendations for faculty efforts to improve the training environment with sensitivity to others and to the powerful influences of role modeling are well known. Perhaps contributing to their inconsistent implementation has been the lack of a cohesive underlying theoretical structure for understand-

ing the complex learning situation during clinical education. With the body of work now available in education and medical education, these changes can become widespread. The development of faculty and house staff competency in key skills, such as direct observation and feedback, the modeling of problem solving, management practices, and self-directed learning, should become the norm. Development of faculty members' and trainees' perceptions of themselves as educators is clearly crucial. Approaching the educational process itself as well as all aspects of physician performance in this more analytical, scientific way, which has been suggested in the past (Engel, 1987; Flexner, 1910), now seems essential.

SUMMARY

“Example is not the main thing in influencing others, it is the only thing.”

—Attributed to Albert Schweitzer

For the teachers of developing clinicians, this chapter clarifies the importance of their task of using social learning theory to understand the observational nature of clinical learning and the development of clinical performance. Three groups of interrelated functions comprise the objectives of the clinical educational process: the clinical practice processes; the trainees' personal growth, development, and socialization; and their education roles. Residents have conflicts about their various roles as caregiver, trainee, and teacher, and the clinical environment must be structured to be constructive. Trainees must attend to personal growth and development while becoming clinically competent. Self-reflection can be highly motivating during this process. Particular role models can be powerful influences on professional socialization but the hidden curriculum can deter residents from becoming altruistic, knowledgeable, skillful, and dutiful. In order to fulfill their education role, residents need educational theory as well as experiential development and supervised practice. Faculty members must accept responsibility for learning the educational process so they can teach it and model it for residents, and programs and institutions must support the education role.

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CHAPTER 3

Clinical Teaching Techniques for Residents

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This chapter presents techniques that medical residents can use when teaching students in inpatient and outpatient clinical settings. These techniques may be useful in other settings and to other teachers as well, although we are addressing residents here.

They can be used without special equipment, elaborate organizational structures, or support personnel. Many of them are basic and may be obvious to some experienced clinical teachers. Table 3.1 lists the techniques described in this chapter.

Knowledge of resident teaching can be generated from four sources: (a) research studies, particularly direct observation studies; (b) perceptions of students, attending physicians, and residents themselves; (c) experts' opinions; and (d) adaptations of social science, particularly education and psychology theory and research. Material for this chapter has been drawn from all four sources.

MANAGEMENT TECHNIQUES

To teach well, a resident has to manage his patient care responsibilities, time, and the students. This requires a juggling act or good management techniques.

TABLE 3.1 Clinical Teaching Techniques for Residents**Management Techniques**

Teach students to win their cooperation with work.
 Tell students to ask for help when they need it.
 Communicate objectives and evaluation criteria at beginning of rotation.
 Plan ahead.
 Hold work rounds early.
 Make a work list.
 Group and divide the tasks for maximum efficiency.
 Meet with team at end of day to plan the next day.

Motivation

Set a good example—social learning theory.
 Appeal to current and future interests:

- Place students in role of practicing physician.
- Remind students to prepare broadly, regardless of specialty interest.
- Remind students of course requirements.

 Arouse conflicting thoughts.
 Attribute success to efforts and failure to lack of effort.
 Display high expectations.
 Emphasize each learner's improvement rather than competition

Cognitive Techniques

Use patients whenever possible—visual images
 Build knowledge network:

- Associate and elaborate ideas.
- Organize ideas.
- Encourage reading.
- Ask questions and explain:
 - * Address questions first to the student responsible for the patient.
 - * Wait for student to think.
 - * Consider the setting: patient present or not.
 - * Select an appropriate questioning style during case presentations.
 - * Use strategy of open-closed-open questions to discuss cases.

 Use problem-solving strategies:

- Think aloud.
- Have students independently gather patient data and formulate the differential diagnosis.
 - Pose hypothetical cases.
 - Use a "data-repository" for group problem-solving

 Teach clinical skills:

- Explain the procedure.
- Demonstrate the procedure.
- Provide supervised practice.

Give feedback.

Use evidence-based medicine

Evaluation of Performance

Find out evaluation responsibilities.
 Write evaluation notes periodically.
 Advise attending physician of problem students.
 Fulfill due-process requirements.
 Evaluate attainment of the objectives.

The resident in charge of an inpatient service has an even broader set of responsibilities. He is responsible for overall management of patients, setting priorities, and making adjustments as needed under the broad direction of an attending physician. The resident in charge must assess the performance of subordinates and assign work appropriately. He/she must keep track of everything, doing whatever is needed to ensure timely evaluation and treatment of the patients. The resident must keep the attending (staff) physicians apprised of major developments or questions, and in addition to all this must teach.

Efficient utilization of time and resources is essential, not only for patient care, but also for teaching. If the team is poorly managed, important tasks may be deferred or forgotten. Some members of the team may be busy while others are not. There may be a shared feeling of wheel-spinning and frustration. There may be little time for teaching.

All aspects of a clinical rotation will work more smoothly if residents use some specific management and communication techniques during the first 2 or 3 days. These include telling students to ask for help when they need it, orienting students to the objectives and evaluation criteria, and establishing work routines and duties.

Another resource for learning how to begin a rotation is a chapter in the handbook titled *Teaching During Rounds* by Weinholtz and Edwards (1992).

Win Cooperation

Good residents quickly discover that teaching helps them win the cooperation of students. Students are much more willing to help out with the work if they are given something in return. As a general rule, they will follow the resident around willingly and help out as a member of the team when they perceive that they are appreciated and treated as learners as well as workers. Students should be told that the only serious mistake they can make is not asking for help.

Communicate Objectives and Evaluation Criteria

Communicating objectives (expected learning outcomes) is basic to any teaching relationship. In the beginning, the teacher must make sure that the learner knows what is expected. This makes learning more efficient and evaluation more equitable (Popham, 1973). Residents should find out from clerkship directors what the objectives are for students so that they can reinforce and facilitate their attainment. Moreover, they must tell the students and interns what is expected of them in the day-to-day routines.

Example: A student is called on to present a case at morning report. He starts off well enough but gets bogged down: "This 57-year-old male is admitted to

the west service with a chief complaint of cough and sputum production. He has a complicated medical history with diabetes, congestive heart failure, and cirrhosis." The student then goes into great detail about the patient's past history and is interrupted by the chief resident who tells him to come to the point "What are you doing? We have 10 patients to cover in the next 30 minutes. Just tell us why the patient came to the hospital this time."

The student should have been told at the beginning of the rotation how to present a patient in morning report. Negotiating an individual learning contract is a way to ensure that a student learns what he wants to learn as well as learning the standard objectives.

Evaluation criteria also need to be communicated at the beginning of a rotation. The student clerkship director should communicate student objectives and evaluation criteria to the residents at the beginning of each academic term. If this has not occurred, the resident must take the initiative to find out what has been communicated to the students about how they will be evaluated. In general, the resident should evaluate the attainment of the objectives. It is inappropriate to evaluate the students on the basis of how good they make the resident look or on the amount of noncognitive chores they performed. Performance evaluation is explained in more detail later in this chapter.

Managing the work efficiently is necessary to make teaching time feasible, and the work day has to be organized explicitly. Work rounds should be held early with clear division of labor. A work list is helpful and can be used during the day to keep track of things, and tasks should be grouped and delegated for maximum efficiency. The team should meet at the end of the day to plan for the next day. Efficient managing facilitates both patient care and teaching.

MOTIVATION

Set a Good Example

The best motivation for others is a good example. Chapter 2 of this book explains why the observation of teachers and their role modeling is so important in clinical education.

In a very real sense, each teacher is a reflection of his own teachers and the ones before them. Each good resident stands as the youngest in a long line of physicians who have influenced the formation of the resident by their own example and lives. This heritage is perhaps the noblest legacy that one doctor can pass to another.

Residents model not only the science of medicine, but also the art. Students learn how to interact with patients and with other physicians from residents. Students must see honesty, diligence, and selflessness as the basis

for all else in medical practice. They must see skilled physicians at work examining, operating, thinking, comforting, teaching, and doing all the other things that comprise medical practice. Negative examples set by residents and attending physicians can decrease the students' dedication to duty and can foster cynicism.

Live role models may be supplemented with historical models. William Osler, who is the physician-teacher role model par excellence (see chapter 1) spoke about this eloquently.

This higher education so much needed today is not given in the schools, is not to be bought in the market place, but it has to be wrought out in each one of us for himself; it is the silent influence of character on character and in no way more potently than in the contemplation of the lives of the great and good of the past, in no way more than in the touch divine of noble natures gone. (Osler, 1901, p.61)

Osler set the example in his own life of how to relate to students. He considered students his "junior colleagues" and addressed them as "fellow students." He put no distance between himself and them, but instead tried to make them feel as members of a family to bring out the best in each. Being a living example is perhaps the best way to motivate learners.

Appeal to Current and Future Interests

There are several other ways that residents can motivate students. One is to appeal to current and future interests by putting the student into the role of a practicing physician. Ask the resident to develop a plan or write orders for an actual or hypothetical patient.

Examples:

1. A 23-year-old woman in the 3rd trimester of pregnancy presents to the emergency room with vaginal bleeding. The chief resident is called to see the patient and asks a student, "Should we admit the patient?" The student responds, "Well, the differential diagnosis includes. . . ." The resident repeats his question, the student tries to dodge the question again, but the resident won't let him and says, "Put yourself in my place. There are reasons for and against admitting this patient, but you have to decide now." Eventually the student says he would admit her. The resident says, "Good, now let's move on to the next patient." The student realizes, perhaps for the first time, that he is called to a life of action and must be prepared.

2. The ward team arrives in the x-ray department. The resident turns to a student and says, "You have shown an interest in x-rays. You will be the radiologist this afternoon. Are you up to it?" The student who plans to go into radiology has her big chance!

These approaches appeal to the students' interests. Other interests might include their own hobbies, their families or medical problems they have observed in their own families or among friends. Such personal information can be gained during coffee breaks, lunches, and while socializing after work. An alert teacher uses all this information to motivate learners.

A different approach may well be needed for students who show little interest in the subject matter and who are planning to specialize in other areas. Some residents may be able to use case material to illustrate basic science points that students might need. Students may need to be alerted to changing technology and practice and the importance of being prepared for this. In extreme cases, a resident may need to point out that students have to pass the present course before they can do whatever they are planning to do, and the requirements are to do this or that.

Arouse Conflicting Thoughts

Thought can motivate action. Conflicting thoughts raise cognitive dissonance, which gives rise to motivation for finding the facts or the truth, thereby resolving the dissonance. One way to arouse conflicting thoughts is to ask questions instead of making statements, or to present conflicting information or opinions (Gagne, Yekovich, & Yekovich, 1993). Sylvius, a famous seventeenth century clinical teacher, liked to provoke disagreement because he believed that intellectual dissension resulted in consensus of opinion and improved morale; it also enabled him to express his own opinion (Linfors & Neelon, 1980). Care must be taken not to make such conflicting thoughts threatening to the learner, however. Making an intellectual game out of conflicting thoughts and playing devil's advocate reduces the sense of threat. Knowing when and how to motivate a particular student or resident requires judgment. Most intelligent and willing students will profit from challenging exchanges, but sensitivity to the learner's ability and degree of motivation is required.

Attribution and Expectations

Attribution of success or failure can motivate when used properly. If students think that success is due to effort and they see themselves as hard-working, they are more likely to persist longer in learning and achieving. Likewise, if students think that failure is due to lack of effort, they may try harder. On the other hand, if students think that failure is due to bad luck or to circumstances beyond their control, they are likely to be less motivated (Weiner, 1980).

Teacher behavior and affect can heighten motivation. If the learner thinks that he has control over his own actions, he is likely to put forth greater

effort. Teachers who display higher expectations for students and who demand good performance can motivate students. Displaying sympathy for failure implies that the learner has no control over the learning situation (Gagne et al., 1993).

Emphasizing the individual's improvement rather than competition among others can lead to increased effort and achievement (Gagne et al., 1993). Residents should be careful about pitting one student or intern against another in a spirit of playful competition. Rather, improvement over previous performance should be emphasized with each individual.

A number of different motivational techniques can be used to stimulate learning. Setting a good example (social learning theory) remains the single most powerful motivational technique that can be used.

COGNITIVE TECHNIQUES

The goal of teaching is to promote learning. Hence, teaching techniques should support and cultivate learning. Clinical teachers must understand the essentials of the process that goes on in the learner's mind. For that purpose, a brief explanation of current concepts about how learning takes place in an individual's mind is given here.

During the past 30 years, research in cognitive psychology has sought to discover the structures and processes of the human mind. Integration with neuroscience, artificial intelligence, and computer science has enabled researchers to make great strides in understanding how humans take in information, store it in memory, and retrieve it.

The human mind is conceptualized as an information-processing system of structures for receiving information, processing it through immediate and working memory (awareness), storing it in long-term memory, and retrieving and transmitting it to the outside world through effectors. How is knowledge (frequently termed declarative knowledge) represented in the structures of the brain? Paivio (1990) has long championed the dual-code theory that there are two types of representation: verbal and visual information. Visual images of patients are familiar icons in physicians' thinking. (Plauche & Edwards, 1988; Edwards, 1990).

Verbal information is thought to exist in the form of logical propositions, which represent meaning in an abstract manner without preserving exact wording. Drawing from logic and linguistics, a proposition is defined as the smallest unit of knowledge about which a true or false judgment can be made. One example of a proposition is that heart failure causes pulmonary congestion because left ventricular filling pressure rises. Propositions are usually represented in neural networks, which represent the associations among concepts (Fig. 3.1).

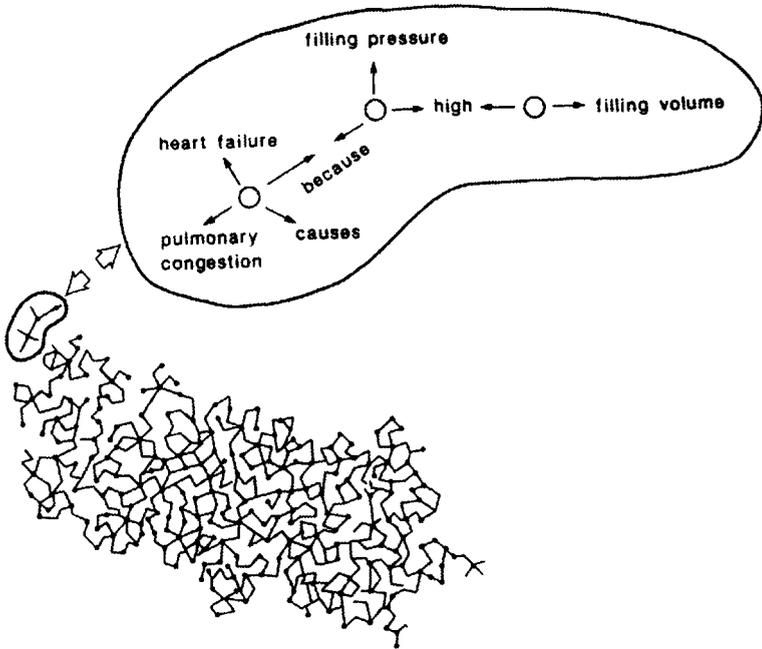


FIGURE 3.1 The propositional network. Each proposition is linked to other propositions through common ideas.

Adapted from Ellen D. Gagné, *The Cognitive Psychology of School Learning*. Copyright © 1985 by Ellen D. Gagné. Reprinted by permission of Little, Brown and Company.

Besides propositions, other types of abstractions of meaning are hypothesized to exist. Concepts are abstractions from specific experiences to general categorizations. Semantic networks, similar to propositional networks, represent categories or concepts. Schemas are another abstraction of meaning of concepts or categories; schemas encode what is generally true rather than what is true about a specific instance. For example, a schema of the concept *house* would immediately infer the parts of a house such as a roof, walls, and windows. One would also know that house is a specific instance of a *building*, the superset. Event schemas (which include scripts) enable us to represent general series of events such as going to a movie or dining in a restaurant. The restaurant schema includes being seated at a table, reading a menu, ordering food, eating, and paying the bill (Anderson, 1995). An illness script then would represent clinically relevant information of the enabling conditions, causes, and consequences of an illness (Schmidt, Norman, & Boshuizen, 1990; Irby, 1994). Clinical teachers can assist trainees in understanding one patient case as an instance of a more generalized illness script of a disease.

Information, then, seems to be stored in memory as images, verbal propositions, concepts, and schemas. Learning medicine requires the acquisition of enormous amounts of information, stored effectively for retrieval and problem-solving when the physician encounters a patient and must formulate a differential diagnosis and treatment plan. Using patients to create mental images, associating and elaborating ideas, organizing knowledge, and encouraging reading are all active techniques that build the declarative knowledge network.

Use Patients

Residents should use patients for teaching whenever possible. Patients make lasting impressions on students and the basis for this may relate to the mind's storing images charged with emotion. It seems logical for physicians to think about disease processes in images because the human body is a physical, tangible object existing in space. Organs are located in spatial relation to other organs and to the skeletal-muscular system. Physiological functions occur in space encapsulated by the body. The patient's body, then, is an image that assists in encoding information.

Medical students should generate increasingly more elaborate mental images as they progress from textbook learning in the basic sciences to clerkship experiences with patients. Ingenious experiments have demonstrated that people do amalgamate images to generate new ones (Kosslyn, 1980).

Affect, or emotion, associated with the patient charges the image, helping to fix it in memory and making it easier to retrieve. The learning atmosphere with a patient present is charged with emotion. All the reasons which brought the student to that point—concern for the sick patient, the intellectual stimulation of solving a problem, the sense of performing a duty, even the necessity of presenting the case to others—serve to fix the experience in the student's memory.

Yates (1966) recalls that Giordano Bruno summed up these thoughts well: "Images must be lovely, active, striking, charged with emotional affects so that they may push through the doors of the storehouse of memory" (p. 294).

Build Knowledge Network

Associate and elaborate ideas. A major principle is that one learns by associating propositions (Wittrock, 1986). Students increase their knowledge network by relating new information to existing knowledge. By relating learning to other patients, facts (diseases, treatments, anatomy, pathophysiology), or structure (categories), the student sees interrelationships and hooks new information onto a growing network of information.

Another term for this technique is elaborating ideas. Anderson (1995) defines elaborating as "embellishing a to-be-remembered item with addition-

al information” (p. 190). Many psychology experiments have shown that people who activate additional information from their neural network to associate with new information or who read questions to direct their attention in advance of reading new information learn the new information more deeply (Stein & Bransford, 1979).

Bordage (1994) describes elaborating knowledge to use in diagnostic reasoning as forming semantic networks. He states:

The most accurate diagnosticians, whether students or specialists, are those who have the most diversified sets of semantic axes . . . and who organize symptoms and signs into coherent systems of relationships of abstract qualities, and thus demonstrate a broader and deeper representation and understanding of the problem. (p. 884)

He recommends encouraging students to develop their own mental representations of subject matter by reading with an organizational framework in mind. When finished reading, the student should ask himself or herself questions about the material or explain to a colleague relationships among the material.

Example: A ward team is discussing a patient with diabetes. The resident asks a student, “Why does this patient have diarrhea?” The student hesitates. The resident asks what organs are affected in diabetes mellitus. The student indicates that the kidneys, eyes, and blood vessels are involved. Another student suggests that the nerves are also involved. The resident points out that the gastrointestinal tract should be added to the list and explains the reason for this. He has hooked a new piece of information to the students’ growing knowledge of diabetes.

Organize knowledge. Teachers can facilitate knowledge retrieval from long-term memory by helping learners organize their knowledge. Many experiments in cognitive psychology during the past 25 years have used the paradigm of novice-expert differences to describe mental processes. In general, the expert has more knowledge pertinent to a given problem area, and that knowledge is more highly organized. She has more connections in the neural network of memory for each proposition, and her entire knowledge base is organized hierarchically (Gagne et al., 1993; Feltovich, 1981). It is important for teachers to assist learners in organizing their existing knowledge and integrating new knowledge.

Example: A student has presented a patient with fever of unknown origin (FUO) to the senior resident on the service. The resident asks, “What is the differential diagnosis of fever?” The student begins a jumbled list of diseases that might produce this symptom, and the resident interrupts. “Let’s approach

this more systematically. What are the major categories of disease that produce prolonged fever?" The student says that infection, neoplasia, connective tissue disease, and a miscellaneous group are the major categories. The resident says, "Right. Now let's consider each category, and list the most common causes of fever in that category. When we have finished, we will go back and see how this case fits in."

Encourage reading. Osler (1901) said that to care for patients without books to guide is to sail on uncharted waters. Patient-centered reading helps to increase and particularly to organize students' knowledge base about specific medical problems. General medical reading is beneficial, of course, but patient-oriented reading has this advantage: The student is highly motivated to learn about a particular problem by his responsibility to care for the patient. Patient-centered reading also has the advantage of storing information in the context in which it will be used in the future. Associations and elaborations of the new information are connected into the existing knowledge network around the patient (Bordage, 1994).

Students and residents often complain about the lack of time for reading. Time shortages are a part of professional life, however, and students must be taught to use prudently whatever time they have. Patient-centered reading allows students to teach themselves throughout their careers.

Ask questions and explain. Questions serve two purposes: they stimulate knowledge and they guide problem-solving. Teachers should show students how to answer questions by helping them search through their own knowledge base, relating new information to what they already know, estimating probability, sorting, or refining concepts. Questioning is frequently more valuable to the learner than explaining because questions require the learner to recall what he already knows, make associations within the memory network, and apply that knowledge. In general, questioning requires the learner to be active in learning. Explaining is useful when the learner has not yet acquired knowledge or cannot apply knowledge to a particular problem.

Many classification schemes or taxonomies of questions have been proposed and applied to teaching (Foley & Smilansky, 1980; Graesser & Black, 1985; Hyman, 1979). Houlden, Collier, and Frid (1999) have published some useful advice about using questions in large group teaching.

In this chapter we are focusing on the use of questions among the members of ward teams who are caring for and presenting patients. Weinholtz (1983) categorizes questions according to type (probing, clarifying, or mixed) and frequency (high, medium, or low). The advantages and disadvantages of using different questioning styles during case presentations are presented in Table 3.2. The use of a particular questioning style should depend upon the student's ability and experience, as well as on the complexity of the case.

TABLE 3.2 Advantages and Disadvantages of Different Questioning Styles

Questioning style	Advantages	Disadvantages
High-frequency probing	Provokes student into preparing presentations carefully	Flusters and disorients student, thereby inhibiting instructor's ability to assess depth of knowledge and presenting skill Prolongs presentations and rounds
Medium-frequency mixed	Enables instructor to assess depth of student's knowledge and presenting ability Provokes student to prepare carefully, while stimulating interest	Most difficult approach to implement, because optimal number of probing questions is hard to gauge
Low-frequency mixed	Enables instructor to assess very selectively depth of student knowledge, while providing very clear indication of presenting skill Easy approach to implement	If left unguided, the student may ramble, consume time, and bore other team members
Low-frequency clarifying	Provides clearest indicator of student's ability to present a case Most preferred by students	If left unguided, the student may ramble, consume time, and bore other team members Instructor must take notes or concentrate very carefully to remember follow-up questions

From Donn Weinholtz, *Directing Medical Student Case Presentations*, *Medical Education*, 1983, 17, p. 367. Copyright © 1983 by Blackwell Scientific Publications Limited. Used by permission.

Weinholtz considers the medium-frequency mixed style most advantageous because the instructor can assess the student's knowledge and presenting skill without disorienting him. This style is the most difficult to use, however.

One frequently used distinction is between open and closed questions. Closed questions are narrow and designed to elicit knowledge; open questions require problem-solving. An example of a closed question is, What is the patient's temperature? An open question is, What is your impression? In some instances the teacher may just want to know specific bits of information. If time allows and the setting is appropriate, the teacher should go beyond closed questions.

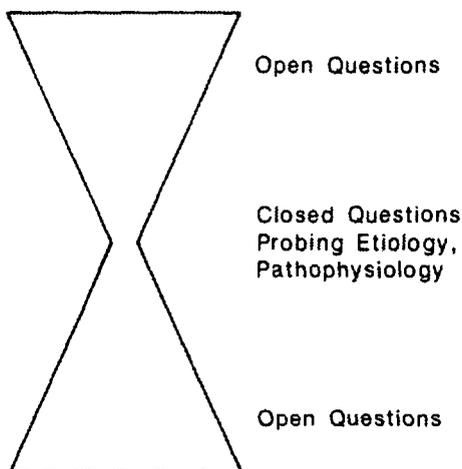


FIGURE 3.2 A questioning strategy for discussing patient cases with one student.

Other questioning techniques include rephrasing or simplifying a question. Clinical teachers should allow students thinking time; they should be careful not to answer their own questions. It might be advisable to count slowly mentally to 15 before repeating the question or asking another team member to respond, or even to wait as long as 1 minute to allow the learner to consider and phrase his answer.

We think that questions should be addressed to one learner (the one responsible for the patient), at least initially. Finally, the setting should be considered. Some questioning can take place in the patient's presence, but the patient must be included in some way—for example, by defining terms and explaining the significance of what is being said. Very detailed or critical questions should be addressed away from the patient.

Here is a questioning strategy for discussing a patient case with one student. The student presents the chief complaint, history, and physical findings according to the prescribed format. Then the teacher begins the discussion with an open question such as: What is your impression? This question allows the student to reason as far as he is able without guidance. Only when the student falters or is wrong does the teacher move in with closed questions dealing with specific facts of pathophysiology and etiology. These closed questions probe the student's knowledge base and stimulate him to relate clinical findings to textbook knowledge. When the teacher has guided the student through the line of reasoning to the most basic concepts, the questions can begin to widen out into more open questions allowing the student to generalize to principles and related cases. (Edwards, Brannan, Burgess, Plauche & Marier, 1987). This strategy can be diagrammed as two pyramids, apexes touching (Fig. 3.2).

The following example illustrates good questioning and explaining techniques.

Example: A surgical team is called to the accident room to assist in the care of a patient who has been run over by a truck. Once the patient is stabilized, the resident turns to a student and says, "What is the first thing you have to do for a patient like this?" The student hesitates. The resident prompts, "Do you have a list in mind? You know, A, B, C. I am referring to general principles now." The student says, "Initial steps include stopping hemorrhage and immobilizing the fractures." The resident explains that the airway must be secured and circulation reestablished first. Then she goes on to describe a short protocol for managing major trauma cases. Finally, the resident asks, "What do you think will happen to this patient?"

Table 3.3 displays the major points about questioning as well as other teaching techniques in a concise format for teaching case presentations. Residents may find it useful to look at the checklist from time to time as they work with students. It may also be used to review videotaped teaching performance.

Use Problem-Solving Strategies

The previous section of this chapter described declarative knowledge and techniques for acquiring and storing it. This section deals with the other type of knowledge—procedural knowledge, which is knowledge about how to perform various cognitive activities.

All procedural knowledge—that is, all cognitive activities—can be viewed as problem solving (Anderson, 1995). A problem can be said to exist whenever one has a goal and has not yet identified a means for reaching that goal. Three general processes occur during problem-solving: (a) forming a representation of the problem; (b) searching the problem space; (c) evaluating the solution.

For a number of years, social scientists tried to find general problem-solving strategies that could be used with any type of problem. Many cognitive psychology experiments used the expert-novice paradigm to study the differences between these two levels of learners. It was hoped that expert strategies could be described and then taught to novices to improve and speed up the development of expertise. Instead, evidence mounted that experts did not have problem-solving skills that could be generalized. Experiments in many different fields including artificial intelligence, playing chess, and learning mathematics and reading led to the conclusion that each domain required declarative knowledge organized effectively for rapid retrieval (Salomon & Perkins, 1998; Schmidt et al., 1990).

Medical education research during the 1970s focused on the hypothetical-deductive nature of the clinical reasoning or medical problem-solving pro-

TABLE 3.3 Checklist for Teaching Case Presentations

-
- I. To communicate objectives
 - 1. Ask or tell the student what information should be included in the presentation before starting.
 - 2. Ask or tell the student how the case presentation should be organized before starting.
 - 3. In general, establish the ground rules for the presentation.
 - II. To question
 - 4. Question (rather than lecture) to stimulate student's thinking.
 - 5. Ask closed questions to probe student's knowledge of patient case and medical information.
 - 6. Ask open questions to help student integrate and evaluate information and plan treatment.
 - 7. Phrase questions clearly.
 - 8. Wait adequate time for student to organize thoughts and respond.
 - 9. Avoid unnecessary and frequent interruptions.
 - III. To synthesize information and analyze the case
 - 10. Provide or elicit medical knowledge relevant to case (such as pathophysiological principles, pathogenesis, risk factors).
 - 11. Assist student to organize or summarize presentation, focusing on important facts.
 - 12. Establish with student a concise, organized problem list.
 - 13. Direct student in clear and organized line(s) of reasoning to obtain a diagnosis.
 - 14. Review pertinent facts in relation to the diagnosis and discuss their significance and implications.
 - 15. Pose hypothetical situations to expand and deepen student's understanding.
 - IV. To provide feedback
 - 16. Comment on *specific* positive and negative points.
 - 17. Recommend improvements.
 - 18. Be objective so that the student does not feel he is being personally attacked.
 - V. To consider generalities
 - 19. Demonstrate support, understanding, and encouragement of student (good eye contact, attentive body posture).
 - 20. Acknowledge limitations of one's own knowledge.
 - 21. Encourage use of medical literature and other medical personnel to aid in problem-solving.
 - 22. Take notes or use chalkboard, if appropriate
-

cess (Elstein, Shulman, & Sprafka, 1978). By the late 1980s the major conclusion was that medical cases were content specific; that is, the strategies a physician used to solve one medical case did not transfer or generalize to other medical cases.

Finally, the preponderance of evidence led to the conclusion that experts in a domain were distinguished from novices by the following attributes: (a)

they perceived large meaningful patterns; (b) they had superior memory for information in their domain; (c) they performed the basic skills of the domain faster; (d) they represented problems at a deep semantic level; (e) they spent a great deal of time analyzing the problem before attempting a solution; (f) they had strong self-monitoring skills (Gagne et al., 1993).

How, then, do clinical teachers teach medical problem-solving or the clinical reasoning process? The teaching of all procedural skills, including the clinical reasoning process, involves demonstrating the process and then providing practice with guidance and feedback. The section of this chapter subtitled "Teach Clinical Skills" describes the various stages of developing clinical reasoning and clinical skills.

Think aloud. Demonstrating the process of clinical reasoning can be done every day as residents go about their business of patient care. Thinking aloud is an excellent way to demonstrate the reasoning process. This flow of thoughts put into words for the student's benefit is a way to explain and demonstrate, revealing the learning process in action. Thinking aloud is an important technique for teaching problem-solving and procedural skills. Residents should also point out explicitly that they are demonstrating the clinical reasoning process by doing this and should emphasize the value of learning the clinical reasoning process.

Have students work independently. Practice in clinical reasoning can be provided in a number of ways. Residents should arrange periodically for students to interview and examine a patient and formulate a diagnostic impression without help from charts or other persons. A resident should observe part or all of this and discuss with the student. Having to collect the data and figure out the diagnosis and treatment largely on his own is exactly what a practicing physician does. Students will not learn the process adequately if "groupthink" is the only method used to teach medical problem-solving. Students are quick to recognize and appreciate the learning benefits from such opportunities.

Pose hypothetical cases. It is necessary for students to have exposure to many medical problems to develop their skill in diagnostic reasoning. Experience with large numbers of examples traditionally has been the main teaching strategy for problem-solving. The value of extensive exposure has been asserted again recently in teaching clinical reasoning (Eva, Neville, & Norman, 1998). A clinical teacher can pose case material from his own experience or hypothetical cases that serve as a framework for teaching. This may be the best way to find out how the student thinks by himself. Cases that a student prepares with the help of others on the team reflect a group effort. Many experienced teachers have sets of cases or stories that they use because

these are good examples of important or frequently occurring problems. Residents should be encouraged to do the same.

Example: A patient with chronic obstructive lung disease has been admitted to the hospital. Once he has been stabilized, the resident tells the student of another case about a man with much more severe disease who was admitted to the hospital. He provides the student with data on the patient's blood gases and asks how the student would handle the case. He might even give sets of hypothetical values for the blood gases, seeking interpretations of each and asking about treatment plans. He might then tell the student what would happen if his plans had been adopted. The exchanges may be made more realistic by creating time pressures. For example, in the middle of working through one case the resident might tell the student that he has been called to another area of the hospital to evaluate a patient who has developed GI bleeding. At the same time he might refer to the family of the third patient who may be dying and who are asking to speak to him. How would the student deal with all of this?

Resident teachers should make explicit the similarities and differences between cases. In particular, they need to point out underlying principles that make cases similar (Eva et al., 1998). The surface features of age, physical condition, etc. are not the important similarities. Pathophysiological principles that underlie patient cases help students to build cognitive schemas that they can apply to new cases.

Giving guidance and feedback to learners is an area in educational psychology that is receiving much attention currently. Publication in the western world of writings by Vygotsky, a Russian psychologist, has stimulated much thought and experimentation about learning guidance. Vygotsky introduced the concept of the "zone of proximal development—the distance between the actual developmental level of a learner as determined by independent problem-solving and the potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 85). The concept of "scaffolding" is also useful for clinical teachers. Resident teachers need to build a scaffold of guidance for students to climb step by step. They can do this by carefully questioning students as they go about the care of a patient. This questioning is quite different from "pimping," which frequently is questioning of only facts. The questioning strategy and the checklist for teaching case presentations in this chapter are designed to be this type of scaffold. Students need guidance and feedback to engage in meaningful clinical reasoning.

Use data repository. Much of the learning of clinical problem-solving can be learned on teaching rounds with the ward team. One technique for teaching problem-solving to a group is described by both Engel (1971) and Kassirer (1983). According to this approach, the student presenter serves as the "re-

source person” or “data repository.” This student takes a proxy role for the patient; no one else in the group has any information about the patient. After the student has given the chief complaint, the teacher invites the team to question the “patient” to procure more data. Each questioner must justify her question in terms of a diagnostic hypothesis or rationale for information that would relate to the diagnosis. If the group agrees with the student questioner, the student data repository responds as is appropriate. The response could be one of relating details about the present illness, past history, physical findings, or laboratory results. The resident then asks to explain the data and relate it to her working hypothesis. Requests for information on results of certain tests or treatments can be rejected by the instructor. In more advanced groups, the instructor can move quickly to diagnostic or treatment questions. This method is close to the real-life process of clinical reasoning. Each member of the group can take part in the overall reasoning strategy by activating the associated propositions in her particular memory network. All of the intermediate details of the diagnostic process are exposed. Mistakes in the reasoning process can be corrected immediately.

Problem-Based Learning (PBL)

Problem-based learning (PBL) has been one of the two major innovations in medical education during the past 20 years. Although clinical problem-solving may be confused with problem-based learning, the two are different. Problem-based learning is a curricular or “instructional innovation characterized by the use of patient problems as a context for students to learn problem-solving skills and acquire knowledge about the basic and clinical sciences” (Albanese & Mitchell, 1993). PBL was initiated at McMaster University School of Medicine in the late 1960s to replace the traditional first 2 years of basic science, which were perceived as “dehumanizing, demotivating, inefficient, and ineffective.” The innovators thought that “medical education should be fun, that students learn better when actively involved and interested in their learning task, that basic science concepts would be better understood, remembered, and subsequently applied if learned in a clinically relevant format, that problem-solving and self-directed learning skills could and should be nurtured in future practitioners of medicine” (Berkson, 1993). Medical problem-solving, on the other hand, is the clinical reasoning process, described in the previous section of this chapter, that students must learn in order to practice medicine.

During the past decade, a number of reviews of the results of problem-based learning have been published (Norman, 1988; Norman and Schmidt, 1992; Albanese and Mitchell, 1993; Berkson, 1993; Donner and Bickley, 1993; Maudsley, 1999; Vernon and Blake, 1993). Although many results have been measured, the relevant question here is “Can residents and stu-

dents who experienced PBL during their medical school curriculum be expected to do better at the clinical reasoning process than trainees who have not studied PBL?" And the answer is negative. However, two reviews (Albanese & Mitchell, 1993; Vernon & Blake, 1993) give evidence that on clinical clerkships, supervisors of students who had matriculated in PBL curricula evaluated them as performing better than students who had studied in traditional curricula.

The view presented here, which is the current prevailing one, of medical problem-solving or clinical reasoning is that strategies do not exist that can be generalized. Clinicians who are good at medical problem-solving have highly developed networks of declarative knowledge that enable them to recognize patterns and represent problems at deep semantic levels. Therefore, it is logical that PBL has not shown evidence that problem-solving strategies can be generalized.

It is also logical that PBL students would perform better in clerkships than traditional students. PBL students are accustomed to thinking about patient problems and taking responsibility for their own learning. They learned basic science in the patient context in which they will use science all of their careers. Therefore, on clinical clerkships, they make fewer major adjustments and continue to think and act as they had to during their first 2 years. Traditional students, on the other hand, must make an adjustment from memorizing organized bodies of knowledge to thinking about patient problems and taking responsibility.

Teach Clinical Skills

Teachers are always in the position of being observed or of being demonstrators. Chapter 2 on social learning theory presents this idea more thoroughly. This fact of life for physician teachers is most obvious when they teach clinical skills such as intubation or lumbar puncture. Residents are often in the best position to teach these things to students because they spend much time with them at the clinic, at the patient's bedside, in the emergency room, and in other areas where the day-to-day problems of medical practice are encountered.

Large bodies of research exist about developing psychomotor skills in the disciplines of anatomy, physiology, and kinesiology. Extensive programs of research sponsored by the military on motor skills in the context of pilot training began after World War II by psychologists. This work continues today with exciting advances in computerized simulators for training. Detailed scientific investigations have been carried out in movement science for the development of sports training. Success in sports competition is based on the optimum development of psychomotor skills. Sophisticated methods of training for complex skills, such as tennis, swimming, golf, and football are

being used today. All of these research and development projects demonstrate that psychomotor skills develop in three stages: the cognitive, the associative, and the autonomous.

In the cognitive stage, medical students develop declarative knowledge of the skill. In the associative stage two things happen: errors are gradually eliminated, and the knowledge is transformed into procedural skill; that is, the learner can perform each step in a smooth routine. The outcome of this stage is successful performance of the skill. In the autonomous stage, the speed and accuracy of the skill increases with practice over time (Fitts, 1962; Anderson, 1995). Students and interns struggle with stages one and two in learning to perform clinical procedures. Residents develop expertise (the autonomous stage) with sustained practice.

The technique for teaching procedural skills involves the following components: (a) Demonstrate the procedure; (b) verbalize each step of the procedure as it is demonstrated; (c) provide practice; (d) give verbal and manual feedback during practice.

Before allowing a student to try a procedure, the resident should initiate communication about the process. She might ask if the student has seen the procedure performed. This is a well-established pattern in training programs. Questions like "Have you seen this done or have you done this before?" come first. There might be related procedures that the student has seen or done that might be helpful. The relationship should be brought out in discussions with the student. The student may have read about a procedure or seen a slide or model demonstration that would have given him visual images and information.

Residents must demonstrate every aspect of the procedure for the student including selecting the best approach, adapting to whatever circumstances exist, and relating to the patient before, during, and after the procedure. This process should be verbalized, if possible, at the time in the presence of the patient. Depending on the type of procedure and the patient's level of consciousness or anxiety, the explanation may have to be given elsewhere.

Residents should point out landmarks and other technical details during demonstrations to help the students associate the visual, aural, or tactile images with whatever else they know. If the patient is awake, the resident should explain things to the patient during the procedure.

Supervised practice is essential to develop expertise in performing skills. If possible, residents should provide practice and supervise students immediately after demonstrating a procedure. They should also give opportunities for repeated practice over a period of time. Artificial models may be used to supplement practice. Sustained practice over a long period of time is essential to become expert at procedures. The highest achievements in music, athletics, and other similar activities are attained after 10 or more years of intensive practice.

Complex skills may be a composite of subskills. If the subskills are independent, they should be identified and taught separately and then practiced as a whole (Fitts, 1962). For example, beginning swimmers are usually taught to kick, stroke, and breathe in separate practice sessions; then two of these are practiced in combination. Finally, all three components are put together and practiced. Surgical subskills are frequently taught in microsurgery labs today. In these labs, students can learn each component skill and practice them on models.

A good example of teaching a procedure is provided by Bosk (1979, p. 45). In this example, the learner's effort is supported initially by the teacher's hand, which is withdrawn by phases as the student learns to operate on his own.

Example: Carl, the intern, was closing an incision while Mark, the chief resident, was assisting. Carl was ill at ease. He turned to Mark and said, "I can't do it!" Mark said, "What do you mean, you can't? Don't ever say you can't. Of course you can." Carl had been forced to put in and remove stitches a number of times, unable to draw the skin closed with the proper tension. "No, I just can't seem to get it right." Mark, replied, "Really, there's nothing to it," and taking Carl's hand in his own, he said, "The trick is to keep the needle at this angle and put the stitch through like this," all the while leading Carl through the task. "Now go on."

Give Feedback

Feedback takes place when a person is offered insight into what he actually did and the consequences of that action. Medical students often complain that they receive little or no feedback to guide them. Residents can change the atmosphere of clinical education by giving feedback to the students, which can reinforce correct learning and prevent recurring mistakes, as behavioral psychology has amply demonstrated (Biehler, 1978).

The following guidelines are recommended (Ende, 1983): (a) Give feedback frequently and as soon as possible; (b) use first hand observation; (c) make feedback specific; (d) make feedback descriptive and informative, not judgmental.

Mistakes, widely recognized to be part of the learning process, must, of course, be corrected. Before criticizing a student, however, consider whether or not the student should be expected to know the answer. Consider also the type of mistake—intellectual versus normative, repetitive, or attitudinal. Also consider the setting (bedside, corridor, or private conference room). Sharply critical feedback, especially that dealing with overall performance, should be given in private in most cases, never in front of patients.

Students become more knowledgeable and skilled if they receive feedback regularly. They are grateful to residents who give feedback and usually cooperate better with these residents.

Feedback should be based on firsthand observation, if possible. The observation may be only a few minutes in duration, such as observing part of a complete history and physical exam, if that is all the time a resident can manage. However, each student should be observed by an attending physician or resident on a rotation doing at least one complete history and physical. Residents may be in a better position than attending physicians to give feedback to students relating to many of the routines of clinical work.

Specific detailed information helps the person to see herself objectively. What some might consider general feedback is merely a performance rating that usually cannot guide future learning. Telling a student she did "all right" after she has spent an hour examining a patient may increase her confidence, but it does not help her improve her physical exam skills. Commenting on the particulars of that performance will help more; for example, "You should ask more specific questions" or "You might find it easier to have the patient sit on the edge of the bed for this purpose."

As a general rule, feedback should not judge or evaluate the learner's intentions. It should be descriptive and limited to what was said and done or how it was accomplished. For example, "You appeared to be upset in that patient encounter. Why were you upset?" The teacher might then go on to talk about how to deal with feelings in patient encounters, how to use feelings as a signal. "After all, you are responding to something." Feedback that implies judgment or evaluation of a person's motivation or values that are personal may make students defensive. Nonetheless, feedback like this must be given in some cases, but it should be done away from others if possible. In most situations the feedback person must be perceived as an ally of the learner, not as a judge. A relationship of basic trust must exist between the resident and the student.

Use Evidence-based Medicine

The practice of Evidence-based Medicine (EBM) means integrating individual clinical expertise with the best available external clinical evidence from systematic research (Sackett, Richardson, Rosenberg, & Haynes, 1997). EBM is a lifelong self-directed learning process in which physicians:

- Convert their information needs into questions
- Search efficiently for the best evidence to answer the questions
- Critically appraise that evidence for its clinical usefulness and validity
- Apply the results in clinical practice
- Evaluate their own performance

Now a physician might be saying, "Doctors have always done that, perhaps not in a perfectly systematic way, but we have always tried to do that. What's new about EBM?"

Most physicians today are saddled with too much information and there is also potential for conflict between various sources of information and opinions. The national uproar over errors in medicine is a symptom of the enormous conflicts among doctors about treatment of various medical conditions and the conflicting information published in textbooks, journals, and practice guidelines (Korn, Corrigan, & Donaldson, 1999). The plethora of information today and the connectivity of the world make it imperative for doctors to critically appraise information.

EBM is for practitioners. Most residents are destined to become practitioners, and they need to become independent learners before they leave the training ground. Traditional journal clubs, by and large, do not fulfill the goal of teaching residents how to critically appraise the literature. Additionally, residents need to learn not only how to read the literature, but what to read and when. Residents are in a unique position to instruct students in EBM and foster collaborative learning relationships with them. For these reasons, we include basic ideas about EBM.

A major premise of EBM, or Information Mastery as Shaughnessy, Slawson, and Bennett (2000) term the movement, is that the clinical relevance of research needs to be given a high priority. Much research has been conducted on the rare cases of patients who have been hospitalized in university hospitals. The odds are that only 1 person in 1,000 will be hospitalized in a university hospital where research is conducted. Therefore, much published research lacks wide clinical relevance. The following equation makes clear the importance that clinical relevance must have for research to be useful.

Slawson and Shaughnessy have developed POEM (Patient-Oriented Evidence that Matters) to designate research results that are useful to clinicians. A physician needs to consider three questions to determine the relevance of research for his practice:

1. Will this information have a direct bearing on the health of my patients?
2. Is the problem common to my practice?
3. If true, will it require me to change my current practice?

Residents need to know the important principles of clinical research to determine the validity of published results. Validity is dichotomized into internal and external. Internal validity has to do with the proper conduct of the study so that the results can be trusted as scientific evidence. External validity relates to the ability to generalize the results to patients other than those used as subjects in the study. The important concepts included in these two types of validity are randomization, double-blind controlled trials, concealed allocation assignment, accounting properly for all patients in the study, Bayes theorem, and the characteristics of subjects that can be generalized. It

is beyond the scope of this chapter to explain each of these concepts, but residents need to exercise initiative to obtain essential information about these concepts and learn to use them regularly. *Evidence-based Medicine: How to Practice and Teach EBM* by Sackett et al. (1997) is an excellent, easy guide to understanding and applying these concepts to interpret research literature. The series of articles titled "User's Guide to Medical Literature" (*Journal of the American Medical Association*, 1993–2000) is a more detailed guide to learning how to critically appraise the medical literature.

The best available evidence from clinically relevant research must be combined with the physician's own clinical experience. With increasing experience, physicians develop expertise. Their declarative knowledge becomes tacit rather than overt as it is in residency; recognition of patterns of symptoms and behavior becomes rapid, and attentiveness to patient individuality becomes keener. Thus, we speak of a physician's intuition about a particular patient. This intuition, along with an awareness of economics and ethical issues, must be combined with the best available evidence to make the decision about how to treat each patient.

Finally, residents need to be knowledgeable about the newest electronic databases of biomedical research, and they need to develop skill during residency in using these databases. The Cochrane Library, an electronic database, is the cornerstone resource to practice EBM. The Cochrane Library is published on CD-ROM, 3.5 and is available on the Internet on a subscription basis. It contains the following components: the Cochrane Database of Systematic Reviews, the Database of Abstracts of Reviews of Effectiveness (D.A.R.E.); and the Cochrane Controlled Trials Register. Residents are urged to avail themselves of skilled librarians, who will tutor them in learning to use these and other electronic databases.

Palm-size computers are rapidly becoming an essential tool in locating quickly the best available evidence for use in treating patients. These small but powerful computers will enable physicians in the future to access research databases that can be used in clinical decision-making in the clinic exam room or bedside.

EVALUATE PERFORMANCE

An extensive discussion of evaluation is found in chapter 6. This section focuses only on the resident's evaluation of student performance. Residents are frequently asked to give an opinion of students, formally or informally, at the end of a rotation. This duty may be imposed without advance notice. To avoid any such surprises, residents should find out at the beginning of each rotation what, if any, evaluations are expected. The resident should be alert throughout the rotation to each student's progress. Periodic notes about performance will make the final evaluation more detailed and balanced.

Another aspect of the relationship between resident and student relates to the student's functioning as a member of a service unit. The student must be held accountable by his superordinates. Residents should question students in order to determine if they are doing their job. Before students have earned the trust of residents, questioning can be intense with complete accounting of every action demanded. Is the student meeting basic expectations? Is he on top of the situation? If he is, the questions may then shift from *what* to *why*. Then the resident can lead the student through the clinical reasoning process as described earlier in this chapter.

Students (or residents) may make two types of errors (Bosk, 1979). Errors of the first type are technical or judgmental and are seen as part of the learning process. This type of mistake stems from a lack of experience or knowledge. The second type of mistake is normative and is seen as a basic defect. This type of mistake relates to a lack of diligence or honesty and includes failing to disclose problems fully and honestly, missing important findings, quarreling with other health care personnel, or failing to secure the cooperation of patients and their families. Generally, normative errors are not tolerated. The amount of monitoring by a resident is inversely related to his assessment of a subordinate's competence (Bosk, 1979).

Mistakes are missed by residents for various reasons. Because of the corporate aspect of clinical work, those who know what is going on rescue those who do not. Rotations may be short, or questions may be directed at a group rather than at individuals. This limits, and may preclude, competent assessment of that individual's performance.

Judgments about attitudes and interpersonal skills are often difficult to make. These should be assessed as specifically as possible, but sometimes a resident just has a gut feeling about a student, which should not be ignored. Student absence from required functions is usually a symptom of more serious problems. Whenever problems arise, the resident should alert the attending physician immediately and document in writing the specific problems.

Frequently students having serious problems slip through the evaluation system because nobody recognizes the problems in time to do anything about them. Due process requirements must be met, which: (a) inform the student of the objective; (b) present him with a written notice as a warning of failure; (c) provide time and resources to the student so that he may correct the deficiency; (d) provide an appeal system.

At the time of final evaluation, the resident should evaluate the student in terms of the objectives that were set forth at the beginning of the rotation. Residents should be able to evaluate students' skill in taking histories, performing physical examinations, and performing common procedures. In fact, residents usually have more direct supervision of students' learning in these areas than have attending physicians. Personality factors, of course, indirectly influence the assessment of students' performance, but these should not

unduly sway the resident's judgment about student attainment of the objectives. If the student has met or surpassed the minimum standard, emphasis should be placed on progress made during the rotation.

CONCLUSION

The teaching techniques described in this chapter include a broad range—from ward team management and motivation to building a knowledge network, from problem-solving techniques and clinical procedures based on cognitive science to feedback to performance evaluation. The EBM movement holds enormous potential to decrease errors and improve medical practice. For these reasons, we encourage residents to become involved in practicing EBM and to serve, when possible, in the Cochrane Collaborative Network. Individual residents can learn to use these teaching techniques by reading, practicing, and asking for feedback. Chief residents and program directors will find here a rich array of content for teaching skills programs. Additional content is described in Chapters 4 and 5.

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CHAPTER 4

Observing, Developing, and Reflecting on Residents' Teaching Strategies

JANET PALMER HAFLER

Residents are faced with the challenge of being learners, teachers, and patient care providers. Residency is a critical time during which residents make the transition from student to teacher, an important step in their professional training. In this chapter, readers will discover how the very structure of the residency can be used to help residents become effective and empowered teachers.

Some believe that teaching is an art and that a resident either has the gift to be a good teacher or does not. The larger truth is that residents can *learn* to be effective teachers. To a great extent the ability to teach is found in understanding how learning takes place. There are many ways a learner might think about a concept, and those ways may be very different, but just as valid as those of the teacher. Mezirow (1990) noted that good teachers “help learners to critically examine the sources and consequences of their own meaning perspectives and the interpretations they have made of their own lives” (p. 361).

There is pedagogical conflict between teachers who stress *how* to think and teachers who stress *what* to think. The content in this chapter addresses those who would teach *how* to think. Some practical tools are offered that

will help residents become effective teachers. The aim is to help residents learn how to teach without taxing what is already an overloaded schedule. The reader will learn how to observe and reflect on learning and how to use reflections as a form of on-going training to improve teaching. The chapter will provide information that can help residents broaden their view of teaching and learn how to identify and emulate effective teaching.

This chapter begins with a description of learning and how it takes place and examines how teaching can facilitate or in some cases impede learning. With some criteria for good teaching and learning established, steps are provided for observing and identifying good teaching as well as ways to improve teaching. An actual case helps illustrate how observation of others can be a valuable tool for improving residents' teaching skills and how developing observation skills is key to helping residents learn from others. The chapter concludes with a checklist that residents can use to assess and improve their own teaching.

ON LEARNING

Jean Piaget researched the process of acquiring knowledge. By carefully and methodically observing the young, he explored how knowledge is constructed. Piaget and his collaborator built an experientially based set of understandings about knowing and knowledge (Piaget, 1966).

Mezirow (1978), who built on Piaget's work, described the process of learning as follows: One makes an assumption explicit from experience, validates the assumption, and then generalizes from it. He further held that meaning exists within ourselves and is derived from our experiences, rather than from someone or something external, such as books. Mezirow called the process of how people could change their view of themselves based on experiences *transformative learning*. This led him to examine how people alter the structure of making sense of meaning.

Learning is embedded in discovery. John Dewey (1933) defined reflective thought as "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends" (p. 9). Reflection is the process of critically assessing the content, process, or premise of our efforts to interpret and give meaning to an experience. Much of our learning is cast in the form of problem solving. So it was natural for Dewey to deal with reflection in the context of hypothetical-deductive problem solving, the logic and approach followed with great success by the natural sciences.

Dewey's naturalistic views of experience (1929) as a continuous process rather than a series of discreet and specific events are particularly relevant for resident teaching. Although Dewey concluded that he might have con-

tributed more to our understanding of learning if he had used a term other than experience, he did emphasize the relationship among the context, situation, and the field character of an experience (1938). He believed that through the use of intelligence and reflective inquiry, people can understand or come to terms with the problems they face (1910, 1933). However, the first step in reflective thinking according to Dewey is seeing the problem (1933). His four steps were as follows:

- analysis and observation—to gather data to define the issue
- appearance of suggested solutions or hypotheses
- deductive elaboration where one can reason out the implications of the solutions or hypotheses
- verification

Schön (1983) describes the process of learning in the context of professional practice. He speaks about professional knowledge as grounded in professional experience. Residents know more than they communicate verbally and exhibit a “knowing-in-practice,” which Schön calls tacit knowledge. Residents often will be teaching in rounds and not even be aware they are teaching. An obvious example is that residents are always role models for medical students.

Learning is embedded in context and an important aspect of clinical teaching is that teaching is done within a context where students must draw upon their knowledge. Arseneau and Rodenburg (1998) say, “Experience is necessary but not sufficient in developing bridging knowledge expertise. Ten years of experience without reflecting is just one year’s experience repeated nine times” (p. 136).

TEACHING AND LEARNING

Learning is generally understood as a process where, faced with a need to broaden one’s understanding or guide future action, a prior interpretation about the meaning of one’s experience is used to construct a new or revised interpretation of meaning.

It is from their own experiences that residents can learn to be effective teachers. In a clinical situation, residents can expect their learners to make a correct differential diagnosis only if the learners have some prior knowledge about the patient they are examining or discussing; some context for the symptoms exhibited and the data collected; and an awareness of the diseases relevant to the data and symptoms.

Often teachers assume that if they tell students the disease that was missed in an incomplete differential diagnosis, the students will be able to incorporate this information into their understanding and be able to generalize from

the information to the next patient's care. As Knowles (1986) points out, this method focuses on someone else's knowledge and not on the process of acquiring knowledge. In its worst form, it can be encapsulated as follows: If you do or accept what you are told, you will be an effective teacher.

Moreso than telling the learner, making information mean something is truly what learning is all about. Helping learners discover why they left out a particular disease or how the patient's symptoms are linked with the diagnosis leads to problem solving, something more than just problem recognition.

How does the resident connect with a group of students to find out what they know? A stock approach in a clinical case discussion—a practical tip—might have the resident end the presentation by asking the group, “Do you have any questions?” That approach may have its uses, but it also has clear limitations and will not be appropriate for all case presentations.

Instead, as this chapter suggests, what if residents who teach learn how to look and take in what others do as they gather information in a case presentation; reflect on what they see and hear; and select approaches that flow from what they have just observed. This process is key to transformative learning, and critical reflection is at its core. According to Mezirow (1991), “Transformative learning involves reflectively transforming the beliefs, attitudes, opinions, and emotional reactions that constitute our meaning schemes or transforming our meaning perspectives” (p. 223).

Teaching to facilitate learning needs to take into account the student's prior understanding and so is more of a guide to, rather than a source of, expert knowledge. Incorrect concepts that are verbalized, in fact, provide positive evidence that the learner feels safe to express himself. How the teacher reacts to incorrect information, therefore, becomes an important element in any teaching strategy. If the teacher amends wrong answers every time, the student comes to depend on the teacher for knowing what is correct or incorrect, which over time affects the student's opportunities to practice critical thinking.

For residents, teaching happens not just in classrooms, but in hallways, conference rooms, at a bedside, on-line—everywhere. Teaching to facilitate learning can be daunting, but it is hugely rewarding work, and it starts in the simplest and most personal of ways: by asking what it is in someone's life and experience that has helped that person to learn. Teaching is a broad realm that has been surveyed too often through a lens that is narrow and lacking in depth.

LEARNING BY OBSERVING

Transformative learning requires that residents become better observers of their own learning and that they transfer that information into their teaching.

Transferring understanding to a different situation is how learning takes place.

In the best learning situation, there must be some action that prompts learning, where action means making a decision, making an association, revising a point of view, reframing or solving a problem, modifying an attitude, or producing a change in behavior. Teachers consciously decide at any given moment which teaching strategy is appropriate. Whether by asking a question or remaining silent or imparting information, the teacher makes a decision that the given strategy will enhance learning. That is the whole experience of teaching: making decisions in a learning environment.

A teacher must facilitate learning in some fashion. Therefore, the teacher has to have some understanding of what is to be learned. In the context of resident teaching and learning, however, the teacher may be as little as 1 year further along than the resident colleague or medical student. The teacher may have the general pedagogical knowledge of what must be learned but be missing a deeper understanding of the content and experience with it. Given that, what teaching strategy could be appropriate to the situation? The answer is, one in which teachers facilitate learning not only for the learners but for themselves as teachers, and one in which observation and reflection will become sources of knowledge for both teachers and learners.

In addition to reflecting on experience, feedback is an essential step in teaching to facilitate learning. The learner needs feedback throughout an experience. It should occur frequently and provide students with information about how they carried out a task. Most important, it is an opportunity to provide the learner with information about how future tasks can be improved.

By carefully observing how a variety of teachers activate prior knowledge in their learners, residents can build a repertoire of understanding of how they might do the same. They can observe whole teaching experiences, the teaching strategies selected and whether they worked, and the process of giving and receiving feedback. Those observations acquire enhanced meaning with reflection.

A REFLECTIVE EXERCISE

In the following reflective exercise, you can explore the processes of teaching and learning and the conditions under which they are stimulated from a most personal point of view—your own.

Think for a few minutes about the myriad learning experiences you've encountered over your lifetime. Consider experiences that occurred as a child, adolescent, and young adult, both in and out of school. Feel free to go beyond learning in the hospital or in medical school. Look at all life experiences as an adult beyond any formal learning situation. Just pause.

... and think ... about how you learned to parallel park, for example. Or how you learned the multiplication tables. Or how you learned to interview a patient. Or how you learned to draw blood. Jot whatever comes to mind on a piece of scratch paper.

Now slowly, from among the several learning experiences that you have just thought of, narrow your focus and concentrate on recreating one specific occasion that stands out as particularly powerful. The story is about you and your reaction to the event. Now reflect on the following questions directly or indirectly as you think about that learning experience:

1. In what context did this experience occur?
2. What activities was I engaged in as I learned? What was I actually doing?
3. What did I need to learn? Why was it important that I learned it?
4. Who else was involved directly or indirectly? Did someone facilitate my learning? If yes, how did they help me become engaged in the learning process?
5. Why was this a powerful experience for me as a learner? Why did I remember the experience?

This exercise is used to better understand some general principles of learning and the conditions under which learning is stimulated from a personal point of view. The following are some teaching principles and contexts of learning (Table 4.1).

TABLE 4.1 Teaching Principles: Contexts of Teaching*

People Learn Best When	Examples of Formal and Informal Teaching Situations
They are in an informal nonthreatening environment	Dr. Smith facilitated our case conference over lunch and we can really talk about the difficult issues involved.
They want or need to learn something.	My patient has diabetes and I need to care for him m and need information about diabetes. I am going into psychiatry and wasn't really interested in dermatology. My resident sensed this and then spoke about the emotional concerns that patients have about unsightly skin diseases.

Their individual learning needs and styles are met

My resident asked me, a fourth year student, if I had ever put in a swan-ganz catheter. I said that I had not ever placed one and would like to watch to see how it is done.

Their previous knowledge and experience are valued and used.

Dr. Koutz was unlike other attendings. Not only did he ask for our opinions, he would wait for us to answer.

There are opportunities for them to have some control over the learning activities

Dr. Sands always lets us choose among ourselves which cases to present.

They are given active mental and physical participation in the learning activities

The ethical questions that Dr. Thykes asked always made me think; and then he would have me actually get an informed consent from our patient.

Sufficient time is provided for the assimilation of new information, practice of new skills, or development of new attitudes

I think that the reason I am good at interviewing patients is that my last resident showed me how he interviewed, helped me practice and he then came and observed me interview a patient.

After the observation, as we walked down the hall, we discussed how I could get even better information by waiting a second or two longer for the patient to respond.

They have opportunities to practice or to apply—successfully—what they have learned.

I really didn't know how to do a neuro exam until I actually did one on my neuro rotation.

There is a focus on relevant and realistic problems and the practical application of learning.

I really liked the conference because all the cases discussed were the patients we admitted last night. It gave us a chance to focus on real problems.

There is guidance and some measure of performance so that learners have a sense of progress toward their goal.

When Dr. Jones tells me what I have done right or wrong, she always give me clear explanations as to why it was right or wrong and how it needs improvement.

WHERE DOES A RESIDENT TEACH?

Residents have many opportunities to observe attendings or other residents teach; from these observations they can readily reflect on and build an understanding of effective teaching. As mentioned earlier, teaching can take place in a variety of informal and formal environments. In the clinical setting the contexts of teaching include the bedside, during rounds, in a conference room, lecture hall or clinic, and in other settings. Residents need to understand and be able to use a wide array of teaching strategies depending on the setting and the learner.

In the clinical setting where residents can directly observe students, they can see how students create their own understanding in these varied contexts. It is essential that teachers themselves learn to appreciate the different ways each student structures knowledge. The additional challenge for residents as teachers is that they are not only caregivers, but they are at the same time teachers and learners.

Just as it is important to learn from excellent teachers, residents can also learn from mistakes, their own as well as those of others. The following case study illustrates some missed opportunities for teaching and facilitating learning. Examine this teaching opportunity. Read it as if you, the resident, were observing the scenario at your hospital. As you read, think about what advice you would give to the resident. Consider especially what the resident could do to engage the interns in the learning process.

The Case of George

You are the PG-Y2 resident at the nursing station waiting for George, your senior resident, to arrive and start rounds. The elevator doors open and George walks into the residents' workroom. It is now 7:35 a.m. and the two interns are nowhere around. George looks down the corridor and sees John, one of the interns, standing in a doorway down the hall speaking to someone in the room. "This guy in room 512 is a soft rule-out MI," John says as George approaches. "He should never have been admitted. He wants to sign out AMA so he can go smoke. Can't we just discharge him?" George leafs through the chart: 43 years old, few risk factors, atypical but not noncardiac pain. EKG looked normal. "If he wants to leave so badly, he'll need to sign out. Otherwise, tell him to sit tight." George says. John goes back into the patient's room. George looks at you and the other residents who have gathered. "Grab some charts and we'll get started," he says as he turns and just about runs into Carol, the new intern. Carol introduces herself to everyone, including John who has just joined the group. She asks if each team member would round separately and touch base later in the day, which was the way her last senior ran rounds. "Okay, but at least for today this team will round together," George says. "Then we'll see."

The team moves to the first room. Mr. Jones had been admitted the night before by one of the students who begins to present the patient's history. George interrupts the presentation after 30 seconds, then three more times after that, directing questions to one and another team member. Carol and the other medical student answer most of the questions. In Mr. Jones's room George briefly retakes the history and performs a focused exam. He hears bronchial breath sounds that were not reported on the presentation.

George glances at his watch again. Post-call work rounds have lasted an hour and a half already and there are two more patients to see. Each medical student's presentation lasted 8 minutes. At the moment they are discussing the management of Mrs. Thomas, an 85-year-old admitted with fever to 39.5 but with no source of infection. Considering the patient's state of confusion, George says "She needs a lumbar puncture."

"An LP?" Carol asks. "You know how hard an LP is going to be in that lady? She probably has an aspiration pneumonia."

George counters, "Her chest x-ray was reported as clear."

"Because she's dehydrated! Tank her up and we'll see an infiltrate. Didn't you hear her cough?"

George asks John for his assessment. John is silent and then shrugs. George begins to discuss the lack of classic findings of meningitis in the elderly. Carol interrupts. "OK, I'll do the tap."

Let's analyze the case, and in that process recognize how questions can be used effectively to guide reflection about teaching.

- What teaching occurred in the case?
- What were some missed teaching opportunities?
- How could these opportunities have been used more effectively?
- What are the main issues that may affect how the group works and learns together?

Consider what you might have written down about the teaching if you had been an observer during this particular encounter. In fact, in this particular case there was a second resident who observed the teaching encounter of the resident who was in charge of the rounds. The observing resident was asked to discuss what it was like to take notes and observe rounds from a teaching perspective. The questions below were posed to the observer and his answers follow:

- *What teaching occurred in the case?*
"I noticed that the team may have learned about the patient from the presentation."
- *What were some missed teaching opportunities?*
"In response to Carol's asking, 'An LP?' George continued instead of exploring why Carol thought the woman might have pneumonia."

- *What was hard to capture when you were watching rounds?*
“The actual dialogue. As you can see, I didn’t write many quotes.”
“It was easy to capture the big picture and where people were.”
“At times I was caught up in the content of the patient case and not the process of what was happening.”

It is important to note here that the observer naturally focused on the content of the patient case and not on the teaching process. Observers of teaching who are new to the experience constantly need to remember to focus on the instructional interactions and not just on the dynamics related to the patient. While the latter’s importance is accepted, examining the instructional process is necessary to note carefully what is being done to facilitate learning.

The next step is to think about what you would do differently as an observer and as a teacher, which was also asked of the observing resident.

- *What would you do differently?*
“I would try to capture some of George’s actual questions. I would like to think more about his role as a teacher.”
“I think George assumed that getting to know one another was not important for the team, that their work was just to get the task of rounds done.”
“I think he interrupted too much and didn’t allow the new team to really get to know one another and work together. I was able to capture the interruptions, but I am assuming that he didn’t allow the team time to get to know one another. I would look for evidence to support that assumption the next time.”

The observer first noted how he could have improved his own observational skills. The rest of his observations centered around George’s difficulties. The observer was looking more specifically at problems in the encounter as a starting point for improving instruction. Once you have identified areas where improvement is necessary, you can think of specific ways to make the teaching more effective.

As a follow-up, consider the following question: How can you as a resident set up a context that promotes learning? You know that learning to be an effective teacher means far more than simply presenting information. It involves observing both the process and content of interactions. Being reflective means you will invest time into synthesizing the experience you just observed. Given that, what content was being discussed in this case? What was going on with the group and the group process? How can you learn from this situation? What would you do differently if you were one of the principals?

The reflective exercise and the case study touched on the basic processes of observation and reflection. These can be done as part of a team in the form of a conversation. Other ways to use this material are to talk individually with other residents. You may work as a pair or in a larger group to discuss what worked well and what needed improvement. You can also observe and reflect independently.

LEARNING THROUGH OBSERVATION

Once acquired, the skills of observation and reflection can be used any time. Practicing these skills regularly and integrating them into work will improve teaching. Every observation can provide data to reflect upon and to discover what elements in an interaction promoted learning. Observe and reflect on the attendings who have modeled transformative learning as opposed to informative learning. Carefully observe how those attendings have not only provided information, but also have applied the skills necessary to elicit accurate conclusions.

Each observation can be focused according to what needs to be learned. When a resident observes his own teaching, he should look at both the process and content of the discussion. If the need is to know whether the students have learned what was presented, what might reveal that information in the process and content of the discussion?

One other element of the learning process that can help yield the answer is feedback. Imagine, for example, trying to learn how to perform an appendectomy solely from a book or from a lecture. Books—like this one, for that matter—and lectures can give useful information, but what is critical in medicine is learning to apply the information.

The resident needs to do the surgery, to be observed, and then to receive feedback on the procedure. Without actual practice accompanied by feedback, a resident cannot learn how to do the operation. Teaching to facilitate learning requires that the learner apply the knowledge gained from an experience. Once content has been imparted, the teacher must then allow the learner to use the information acquired; must now observe the learner and allow her to apply what has just been learned; and must provide the learner feedback after each important step in the process.

Earlier in this chapter an introspective exercise introduced the concept of reflection. It is important now to look a bit more deeply at some important aspects of reflection: a person's own assumptions

ASSUMPTIONS

To be effective, teachers should acquire a conscious awareness of their assumptions. Such knowledge provides the foundation not only for making

changes, but also for understanding when change is necessary. An understanding of personal philosophies and assumptions about teaching in itself enriches and enhances teaching practice. Assumptions guide teaching, shape perceptions, and influence behavior—and virtually regulate the way a person teaches. By collecting evidence from observations and reflecting on the evidence, a resident can begin to understand her assumptions. A full description of observational evidence incorporates both the cognitive and emotional aspects of behavior.

But to understand experience, a resident needs to further explore feelings that may have been generated in a situation. In understanding personal reactions, a teacher can begin to understand a situation. Sometimes it is hard to develop a critical perspective about behavior. By discussing reflections with peers either informally or formally in a professional dialogue group, a resident can expand the understanding of personal reflections (Coles, 1997).

As a resident develops an awareness of actions and the assumptions that shape those actions, it becomes possible to consider the effectiveness of actions relative to intentions. In an experience where learning has the potential to take place, the observer needs to understand that learning involves the following five primary interacting contexts:

1. *Frame of reference*: What is the starting point? What is the context or overall background? Do all of the learners have the prerequisite knowledge or background?
2. *Conditions of communication*: Has the learning environment been set so that the learners feel comfortable enough to ask for help as needed and to ask thought-provoking questions?
3. *Line of action in which learning occurs*: Are there numerous opportunities for all of the learners to be actively engaged in the learning process?
4. *Self-image of the learner*: Do the learners feel confident after the learning experience to embark immediately on another learning experience? If learners feel frightened or embarrassed, they are far less likely to problem solve or conduct research on their own.
5. *Experience*: Are the experiences appropriate for a variety of learning styles?

The case study of George highlighted some key points about observation. There are techniques and skills that can be acquired to collect useful data.

DEVELOPING OBSERVATION SKILLS: HOW TO LEARN FROM OTHERS

In reflective practice, attention to practice is a means toward personal development. Self-reflection allows a resident to transform meaning schemes,

beliefs, reactions, and attitudes. Professional growth is the journey whose purpose is not knowledge in the abstract, but knowledge of a personal nature. After a resident has observed and recorded notes of other physicians teaching, she can use the data to inform her own teaching.

Skill in observing can be gained by applying the principles of participation observation research (Bogdan & Biklen, 1982; Spradley, 1980). There are three key elements to reflective observation:

1. Insight into what is being observed
2. Skill in recording the data
3. Skill in processing the data

Residents should approach the observation of teaching with the attitude of looking for ways and evidence to analyze a wide variety of teaching situations. Some simple elements first need to be described: Who are the participants? Who are you observing, the entire group or only the attending physician? What is the location, time, and setting? What is the format of the teaching-learning session (case-based discussion, bedside rounds)?

The observer needs to focus on what she actually sees and hears—behaviors and quotations. Nonverbal forms of communication like gestures, body language, and facial expressions are as important as the spoken words and must be recorded. The observer should strive for as much objectivity as possible in describing what is unfolding. For example, one should write

When the student listened with the stethoscope, he smiled as he stated, "Wow, I hear noises that sound like crackles when the patient takes a deep breath!" The student listened for a second time and continued to smile and nod while listening.

That is an objective description, as opposed to the following one:

The student was able to hear rales [a word the student did not use] in the patient and seemed pleased and enthusiastic ["smiled" and "wow" are more factual] about hearing them for the first time [not specifically revealed; this could be an assumption].

Subjective reactions to the observation should also be recorded at the time they are experienced. Later, when the observation is over, the resident should take time to reflect on the experience and record questions, more interpretation, and insights about what has been observed. Interviewing participants provides an opportunity to fill in fragments of missing quotations and to answer any questions the observer may have.

The observer must take field notes by writing in a journal or using a hand-held computer or coding mechanism. Formats for field notes vary, and each observer must devise a system to record and analyze the notes.

Having taken the notes, next really look at—get into—your own assumptions. Identify and write down your reactions to the observation. Reactions are markers on a path leading to assumptions. Disciplined observation is an opportunity to learn not only about the teachers and learners, but also about yourself and your own assumptions.

After a resident has observed other teaching physicians, the data can be used to inform her own teaching. One of the components of good learning that was cited earlier in this chapter is applying what one has learned. A resident teacher will benefit when she makes observations and reflects on her own teaching. The process used to observe others can be adapted and expanded to inform one's own teaching. The following checklist can guide the instructional process and highlight areas that residents might focus on in their observations (Table 4.2).

TABLE 4.2 Checklist for Observing and Teaching

Assessing the Learner

How does the teacher determine, albeit informally, what students already know and what they need to learn next?

- What do the learners need to know?
- What do the learners need to learn?

Planning and Implementing Learning

How does the teacher plan the teaching and learning?

How does the teacher determine overall goals and objectives for the teaching process?

- Were goals for the teaching session set with the learners?
- Was the learning environment appropriate for the content?
- Was the setting (bedside, conference room, etc.) the most appropriate location for the content to be presented?

How does the resident interact with the student?

How does the teacher implement the plan?

- Were the teaching strategies appropriate?
- Were the learners given an opportunity to practice as needed?
- Were all learners invited and encouraged to participate?
- Were the learners given opportunities to think, reflect and problem solve?
- Did the teaching relate information to patients on the floor?
- Were the learners given suggestions or information on how to apply what was learned to other situations?
- Was feedback given? If so, how? How did the students react to it?
- Were the learners given constructive feedback throughout the session?

Evaluating the Teaching

How does the teacher evaluate whether the students learned?

- Did the evaluation take place throughout the session?

- Did the resident examine the teaching process as it was taking place?
 - Did the resident use the information gathered in the evaluation to improve instruction? (formative evaluation)
 - Did the evaluation take place at the end of the session? (summative evaluation)
 - Did the resident examine and reflect on the teaching process after it had taken place?
 - Were the learners invited to make suggestions for improving instruction?
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CHAPTER 5

Planning and Implementing a Teaching-Skills Improvement Program for Residents

LINDA SNELL

The goal of this chapter is to assist individuals who are interested in planning, organizing, and running a residents' teaching-skills improvement program. Practical advice and tips are offered, based on the literature about existing programs, the experience of seasoned program organizers, and the principles of faculty development (Bland, Schmitz, Stritter, Henry, & Aluise, 1990; Steinert, 2000; Wilkerson & Irby, 1998). The chapter is organized according to the sequence of questions listed below. After answering these questions, organizers will have a useable plan that will be easy to implement.

- What are the overall goals of the program?
- Who are the participants?
- How can the residents' learning needs be assessed?
- How can the objectives and content be defined?
- What teaching strategies can be used to attain these goals?
- Who will be the teachers and facilitators?
- What is the best general format?
- How long will the program be?
- Where and when should the sessions be given?

- How can the effectiveness of the program be assessed?
- How can the barriers to planning and implementation be overcome?

PLANNING AND PREPARATION

Forming a Planning Group and Identifying Support and Resources

Before starting the actual preparation of a program for improving residents' teaching skills, it is useful to convene a working group or planning-committee, clarify its mandate, and define the resources and support available. The planning committee membership may vary according to the expertise of the individual members, the mandate, and the tasks required. Membership may include the program director, chief residents, other residents who may represent different years of the program or different hospital sites (Bing-You, 1990), good teachers, a representative of the undergraduate education program (Meleca & Pearsol, 1988), and education experts. The mandate of the committee, including the number of educational activities, the target residents, and the time frame, should be clarified. Developing a timeline for planning and assigning tasks to individual committee members should be done during an early planning meeting.

The amount, type, cost, and source of resources needed should be identified (Camp & Hoban, 1988). These include material resources such as audiovisual equipment, office supplies, or catering; human resources such as secretarial help; and administrative support for "release time" or on-call coverage (Greenberg, Jewett, & Goldberg, 1988). Sources of support include the university, medical school, department or residency program.

Defining Overall Program Goals

The committee's first step in planning such a program for residents is to define the program's overall goals. Given the acceptance of residents as teachers of medical students and of their peers, programs have generally focused on improving teaching skills that residents need in their daily context of clinical care as a member of a team. The planners can develop general goals by defining the essential skills for the type of teaching that residents are expected to do. From these overall goals, generic content can be modified for each teaching context, and then activities can be developed with more specific goals for each.

Selecting the Participants

The next step is to decide whether participating residents will be from single or multiple specialties, single or multiple levels of residency, and whether

they will be taught separately or jointly with faculty members. There are a number of advantages to mixed groups, including the efficient use of resources, particularly for smaller programs. Mixed-group programs can be useful when the content of the program is generic or fundamental, and for topics that have no specificity of level or specialty. There are, however, advantages to separate groups. Residents among their peers only are less likely to be inhibited and more likely to participate in the sessions. Residents at the same level or in the same specialty may have a relative uniformity of teaching functions and a similar baseline knowledge; so it may be easier to plan content that is focused on their specific needs and teaching responsibilities. Residents from different specialties have been shown to have quite differing needs (Bing-You & Tooker, 1993; Snell, 1998). It is easier to develop relevant teaching examples that come from the specialty of the residents being taught in single-specialty activities (Sheets, Hankin, & Schwenk, 1991; Johnston, et al., 1996).

Assessing the Residents' Learning Needs

Determining the learning needs is necessary to refine the overall goals of the program. For instance, within a general stated goal of "improving large group teaching skills" might be the more focused needs of using audiovisual aids, improving presentation skills, increasing interaction during lectures, or making slides.

A residents' teaching-skills improvement program should be tailored to the specific needs of the participants. These needs have to be defined in advance of the program. Needs assessments generally define the content, the residents' preferred learning formats, their baseline expertise in teaching, and the best time for the program. The latter three are rarely assessed, and even excellent topics will not improve residents' teaching skills if they are presented in the wrong way, at the wrong time, or at the wrong level.

A number of individuals can provide valuable information for needs assessments. These include residents who are potential participants in the program, previous residents (including those who may have participated in prior programs), or interested faculty members (particularly those who have observed residents teaching). Students or other junior trainees, the residents' peers, or other individuals who have been on the receiving end of the teaching provide a different perspective. Students' program directors, who frequently hear student comments about the residents' teaching skills, may provide useful input into needs assessments.

Needs-assessment methods include surveys (formal written questionnaires or informal verbal polls), discussions with individuals or groups of residents, formal interviews, focus groups, or observation of actual teaching sessions to assess areas in need of improvement. The organizers can also look at current

problems in teaching, using as sources the students' program directors, student evaluations, or accreditation reports. Planners can also find out what has been done in other residency programs (Bing-You & Tooker, 1993; Edwards, 1988a; Johnson, et al., 1996; Sheets et al., 1991). The most frequently used needs-assessment methods are surveys and informal discussions. It is helpful to use more than one method and source of information to confirm and triangulate data.

The timing of a needs assessment depends on its purpose. A general needs assessment may be done at the beginning of the academic year or at the end of the previous year to assess general themes that need to be addressed over the course of the year. For example, a general questionnaire of residents and an interview with the ward attendings may show that 1st-year residents need to improve their formal case-presentation skills and that senior residents need to improve feedback skills. Specific needs assessment for each program should be done 2 to 3 months prior to the program. Observation of the present 1st-year residents may show a need for focusing and abbreviating the case presentation and for improving their use of overhead transparencies. The needs can be refined further just prior to or at the onset of the activity or program to ensure that the content is suited to the participants who are actually attending (Snell, 1998). For example, the senior residents attending a workshop on feedback can be asked to write down specific problems they have had with feedback. These problems can be grouped and posted on a flip chart and responded to during the session.

PROGRAM STRUCTURE

Defining Content and Objectives

Once the organizers have defined the needs, the content and learning objectives of the sessions can be developed. Chapter 3 of this book provides many ideas for content. A number of content areas that are appropriate for residents' teaching skills improvement programs have been outlined in descriptions of successful activities (Bing-You & Tooker, 1993; Johnson et al., 1996; Litzelman, Stratos, & Skeff, 1994; Sheets et al., 1991; Snell, 1989; Wipf, Pinsky, & Burks, 1995). Table 5.1 presents some content areas for teaching-skills programs that are not frequently found in other sources.

Residents can learn a number of strategies that allow them to shape a favorable learning environment. Techniques to help them plan and organize teaching and integrate it with clinical care include preparing for the first day on the ward, using the "teachable moment," and practicing opportunistic teaching. Strategies to deal with heterogeneous groups (such as the typical ward team) include using different question types and recognizing and adapting teaching to varying learning styles. Managing the learning setting for the

TABLE 5.1 Potential Content Areas for Teaching Skills Programs for Residents

The learning environment:

- choosing teaching strategies
- choosing and organizing content
- teaching different levels of learners
- dealing with different learning styles
- time management in teaching
- managing fatigue (teacher and learner)
- learning how to teach when not an expert

Teaching strategies for different settings:

- one-on-one teaching
 - teaching in the outpatient clinic
 - teaching in the operating room
 - case discussion
 - discussion-leader skills
 - bedside teaching rounds
 - teaching on work rounds
 - classroom teaching
 - didactic presentations: lecture skills and use of audiovisual aids
-

context of residents' teaching, where time is at a premium and both the teacher and learner may be fatigued, may improve residents' effectiveness as teachers. There are a number of "5-minute" teaching strategies that can be taught to resident-teachers for use when there is little time available:

Triggers: Use a single piece of clinical information such as a physical finding (digital clubbing, ptosis) or a laboratory result (hyponatremia, an abnormal EKG) to initiate a brief discussion (differential diagnosis, initial steps in management).

Short simulations: For example, most cardiac auscultation findings can be reproduced by holding the stethoscope head on one hand and tapping, rubbing, or scraping the back of that hand while listening with the earpieces.

The deteriorating case: Provide information about a patient in sequential "packets," each requiring an action or response; if the wrong action is taken, increasingly catastrophic events occur until the correct action is taken. This strategy works well for teaching about abnormal vital signs or cardiac arrhythmias.

Expand the case: Useful when there is little new clinical material on which to teach, this method encourages learners to expand their diag-

nostic or therapeutic horizons. For example, when discussing the eighth elderly patient admitted to the ward with a stroke, ask "How would your management differ if this patient was 25 and not 75?" or "How would your management change if this patient was on blood thinners?"

Residents may also need help to deal with the fact that they are at the same time teachers and learners, and may not be expert in either the clinical content or the teaching process. For example, residents can be encouraged to teach what they do (for instance, history taking and physical examination); to provide frameworks that the learners can build on rather than giving many facts; to think aloud, and to role model how they learn.

Teaching strategies for different settings allow residents to choose suitable techniques for the diverse contexts in which they may teach. For example, questioning skills, discussing a case, and tutoring skills may be appropriate for the one-to-one teaching that occurs in the operating room or outpatient setting. Group teaching techniques such as including all group members or providing a structure for group interactions may be more appropriate strategies for work rounds, bedside rounds, or more formally in classroom settings. The residents can also benefit by learning techniques that can be used when patients are present, such as what should be taught at the bedside. Teaching techniques for didactic sessions may include methods for making lectures more interactive or using new technology for producing audiovisual materials.

Residents can be given strategies to deal with difficult situations they might encounter in their daily teaching settings. Perhaps the most frequent problem in this category is the friction between clinical service and teaching. Time-management skills and opportunistic teaching techniques can help the resident deal with this. Residents can be taught approaches to recognize and deal with common problems in learners and can be given advice about when and how to access resources and ask for help. Other content areas include recognizing stress and dealing with harassment or other negative behaviors that affect individual learners or the ward team. Although some of these strategies may be more appropriate for experienced residents who have already encountered some of these situations, discussion should begin early so that junior residents can approach difficult situations with a store of useful tactics.

Other content areas that have been addressed in residents' teaching programs include leadership, management or administrative skills, how to work in groups, skills in information technology, and personal growth issues (stress management, coping skills). Although these are not actual teaching skills, it may be appropriate to include them in teaching programs because aptitude in these areas may have an indirect impact on residents teaching (Wipf et al., 1995).

The content areas covered will depend on the timing within the academic year, the resident level of training, the specialty area, and the culture of the training program (Snell, 1998). For instance, there may be an increased emphasis on the hands-on teaching of procedural skills in the surgical specialties.

The next step is to develop learning objectives for each part of the program from the general content. This involves transforming the needs (which are often described as a problem) into objectives that are specific, achievable, and realistic and that describe observable or measurable behaviors. For example, if the problem or need is that residents perceive they have no time to teach, the content area would be “how to teach when time is limited.” The objective might be worded like this: “The resident will be able to demonstrate five teaching strategies that can be used for 5-minute teaching sessions.” If medical students have difficulty with problem solving, the content area would be “Improving students’ problem solving.” The objective might be worded as follows: “The resident will show how to use six different types of questions to promote students’ critical thinking and improve students’ problem-solving skills.” If the need is for better feedback to 1st-year residents, the objective might state “The resident will be able to list five characteristics of feedback and demonstrate their use in giving effective feedback to junior trainees.”

Faculty: Choosing Teachers and Facilitators

Faculty facilitators can make or break a teaching-skills improvement program so selecting faculty is one of the most important steps in planning. Potential faculty facilitators include respected teachers who can reflect on their own teaching and articulate their ideas about teaching. Residency program directors can be key figures in developing successful residents’ teaching programs and are often key teachers. The organizers might also consider asking recent winners of teaching awards to act as faculty. The residents often respect these individuals and view them as role models. However, a teaching-award winner may not have reflected on her teaching and so may not be able to translate her clinical teaching excellence into skills that are needed by a good facilitator.

Non-physician medical educators can add a different perspective to the sessions. There is often a synergy when medical educators co-teach with physician facilitators. In these situations there may be a useful combination of theory and concepts of education with the application to the residents’ actual clinical teaching contexts (Camp & Hoban, 1988).

Chief residents might also be considered as potential facilitators. In many cases, chief residents have been involved in organizing the sessions, so they are aware of the goals and teaching strategies needed. They are usually

respected by the residents and already act as role models, and they offer the benefit of near-peer teaching. Being a facilitator may also provide personal development to the chief resident.

Others who might be willing to facilitate these programs include the students' program directors and teachers in faculty development programs. For these individuals, there may be a potential benefit to their own programs if the teaching skills of residents are improved.

Students and 1st-year residents can also be teachers in these programs and they can be used as "standardized students" in teaching scenarios (Gelula, 1998), as subjects for the residents to practice teaching skills on (Orlander, Bor, & Strunin, 1994), and to give feedback to the residents.

The organizer might consider using as assistant or co-facilitators those individuals who, by being included in the planning and implementation process, will learn how to be fully independent facilitators and possibly organizers for later sessions. This will expand the pool of teachers available for subsequent activities.

Choosing Teaching Strategies

This topic is discussed in detail in another chapter but will be reviewed briefly here because it is important to choose the appropriate strategy for the goals of the session. Effective teaching strategies reflect current concepts of adult learning and fit the following criteria (Skeff, Berman, & Stratos, 1988). The strategies should address the residents' needs and have clear goals and should help residents see themselves as teachers and motivate them to teach more and better. The strategies chosen should provide opportunities for the residents to set their own goals and draw on and build on their personal experience. They should provide a positive learning environment, for example, by giving opportunities for active learning and practice with feedback, by being organized by complexity, by incorporating factors that enhance retention of the skill, and by modeling the skill being taught.

A number of teaching strategies have been described (Skeff et al., 1988; Bing-You & Tooker, 1993). The ones commonly used are interactive group discussions, teaching scenarios, observation of teaching with feedback, videotapes, and didactic presentations.

Interactive group discussions for all the participants or in smaller break-out groups can be used to explore concepts, encourage and model interaction, or to share experiences. They offer the advantages of active learning and increased retention. Although some residents may be reluctant to participate fully, they can be encouraged to do so by excellent facilitators or by breaking into smaller groups or pairs.

Microteaching exercises allow a teaching skill to be practiced in a brief period; this is followed by feedback. For example, the participant is asked to

give a 5-minute lecture or lead a small group discussion for 10 minutes. All other participants observe or participate in these practice teaching sessions. The facilitator and participants then give feedback. Microteaching is useful for practicing specific skills in a safe environment. It allows the residents to try out a number of different techniques that could be used in a single teaching context.

Teaching scenarios can be used for microteaching sessions, role-play sessions, or in skill-building exercises. Prepared scenarios can also be used to trigger a discussion. The actors in the scenarios can be medical students or the other residents participating in the sessions (Gelula, 1998).

Videotapes can be used in a number of ways (Skeff et al., 1988; Steinert, 1993). First, they can be used as triggers to start a discussion, then as resource tapes to demonstrate effective or ineffective teaching behaviors. Videotapes can also be used during microteaching or real teaching sessions, where they are particularly useful for lecture skills. In this case, participants are taped and can review their own teaching performance alone or with others.

Lectures and didactic presentations are used to present information when other methods will not be more effective. However, residents are usually passive learners when this strategy is used. Written materials such as handouts and checklists can also present information or can be used in skill-building exercises, for feedback sessions, and as reference materials.

When choosing a teaching strategy, the planners must consider the goals of the session and the learning objectives. For example, it might be appropriate to give an interactive lecture on feedback when the objective is to increase knowledge or to use role-play scenarios for practicing feedback techniques. It would be inappropriate, however, to give a *lecture* on feedback if the goal was to *practice* feedback skills.

It is important to role-model the teaching strategies and best practices being discussed (Spickard, Wenger, & Corbett, 1996). In many cases one can match the teaching strategy to the content being taught and model the content during the learning process. For instance, an interactive lecture could be given that models the types of interactive strategies that can be used during lectures.

Adequate time must be allowed for practice during and after the sessions. It may be appropriate to give homework between regular sessions, for example by asking residents to try out a particular teaching strategy before the next session in the series and reflect on it, and come prepared to discuss their experience.

Realistic clinical examples should be used from the specialty area of the residents who are participating in the program. A surgical resident may relate better to a teaching scenario based on the clinical topic of the acute abdomen and a medical resident to one on hypertension.

When a resident is practicing new skills during the sessions, feedback should be solicited from the facilitators and the resident's peers. This can be

structured by asking these individuals to describe what was effective and what they would have done differently in the practice session.

To hold the participants' attention, strategies should be varied. The organizers may consider using a modular format in which each module addresses specific learning objectives. These modules can then be combined according to the residents' needs and the time available. Each module or section may have a similar structure. It may start with an introduction and description of goals and objectives, followed by a brief didactic session to provide basic information and to set the stage. Time is then allocated for active learning or practice with feedback. The module ends with a debriefing, summary, direction to further learning resources, and homework assignments. The order of these may change and the length of each may vary.

Format, Length, and Location of the Sessions

There is a wide range of options for format, length, timing, and venue for programs to improve residents' teaching skills. Many have been effective and no single method has been proven superior.

The common formats and lengths range from multiple short sessions (or occasionally a single short session) of 1 hour or less, to longer sessions lasting up to several days. The latter are usually run as multicomponent seminars or workshops, using a number of teaching strategies in each (Skeff et al., 1988). Short sessions are useful for addressing one or a small number of objectives. Examples of this format include seminar series or resident rounds presentations. These sessions are quick to plan, can address single, well-defined needs, and can be integrated into existing teaching sessions. In longer sessions, many strategies are combined to address complex areas or to address more than one objective on the same general topic, such as improving feedback skills. Examples of longer sessions are academic half-days, freestanding workshops, or resident retreats. The advantages of longer sessions include the long time period where the sole focus is teaching, the availability of time for practice, the social aspects of the program, and the possibility of moving away from the work setting.

There are advantages to having individual activities as part of a larger program addressing teaching skills (Spickard et al., 1996; Bing-You, 1990). These larger programs can include activities that enable, reinforce, enhance, or maintain effective teaching behaviours. Examples include follow-up or "booster" sessions (often utilizing challenging, advanced teaching scenarios); reminder systems (e.g., checklists that the resident can use once back in their own teaching context); formal observation of real teaching with feedback (Bing-You, Greenberg, Weideman, & Smith, 1997); formal feedback to residents from student evaluations; "bring-your-own-teaching problems" activities; or the use of logbooks, journals, or self assessments of teaching

activities to encourage residents to reflect on teaching (Spickard et al., 1996). As with faculty development programs, periodic reinforcement of the content has been shown to improve the overall effectiveness of resident teaching programs (Bing-You & Tooker, 1993).

Less commonly used formats to improve residents' teaching skills include consulting with professional educators (Skeff et al., 1988) or attending faculty development sessions. Occasionally a senior resident or a chief resident takes on the role of a junior attending, with a faculty member acting as a consultant to the resident and giving feedback on teaching. A small number of residents may do education electives, perform literature reviews, carry out educational research on teaching topics, or develop educational materials. A few will get graduate-level training in education. Although these formats may provide high-quality skills improvement, they are not generally available to all residents.

The optimal timing during the day and the choice between work hours or after hours depends in part on the specialty. For example, surgical residents may be in the operating room all day and unavailable, whereas medical specialties may be able to build teaching sessions into existing, protected teaching time, such as academic half-days or extended noontime sessions. In internal medicine, about 80% of the programs are held during work hours (Bing-You & Tooker, 1993).

There is no one optimal time during the academic year or the residents' program. Many sessions are held near the beginning of an academic year when the residents have just taken on new roles, yet after they have had time to experience these roles and know what they need to learn. In other cases, particularly when the residents are aware of their future roles, the programs can be given just before the start of a new rotation or year when the residents are experiencing anxiety about assuming new roles (Wipf et al., 1995).

There are two general choices for venue: in the work environment or away from the work setting. Shorter sessions may more easily be given in the hospital, and attendance may be better if the activity is offered close to the resident's work setting. Off-campus may be better for longer sessions, which tend to be more relaxed and may be viewed as something special. The residents are less likely to be called away, especially if they have signed out their on-call duties to others.

The planners will have to decide whether attendance at the sessions should be mandatory or optional. Clearly, sessions held during work hours should be considered mandatory, as they are part of the residents' program during their workday. In this case, residents should be given release time from their clinical duties to attend. To ensure that residents can participate in all sessions, completion of the activities could be considered mandatory by the end of the residency program. If these sessions are then repeated on an annual basis or more frequently, a missed session may be made up in a subsequent year.

Table 5.2 Sample Teaching Plan

Content or Topic	Objectives:	Duration	Teaching Strategies
Feedback is a form of teaching	<ul style="list-style-type: none"> -differentiate between feedback and evaluation -list the characteristics of good feedback -demonstrate the steps in giving feedback 	90 min 8:30– 10:00	<ul style="list-style-type: none"> -<i>video</i>: “problem student-patient interaction” (5 min) -<i>feedback</i> to “student” in video (role played) by one of participants (5 min) -<i>group discussion</i> of characteristics of good feedback and comparison to predetermined list (15 min) -<i>Small group sessions</i>: role play of <i>prepared scenarios</i>, with feedback by group members and <i>debrief</i> (60 min)
Break	-socialize and discuss session with peers	15 min	-refreshments provided
Teaching using questions	<ul style="list-style-type: none"> -demonstrate how to ask questions of different types to improve problem-solving skills -list the indications for using different questions in different learning contexts 	45 min 10:15– 11:00	<ul style="list-style-type: none"> -intro of Bloom’s taxonomy (10 min) mini-lecture in pairs, use taxonomy to ask questions on same clinical topic (facilitators circulate & comment) (15 min) -<i>debrief</i> on potential use and indications (15 min) group discussion
How to teach when not an expert	<ul style="list-style-type: none"> -reflect on their own teaching skills and know how to improve them -list ways to teach when not an expert 	30 min 11:00– 11:30	<ul style="list-style-type: none"> -<i>large group discussion with brainstorming, using flip-chart</i> to list ideas (15 min) -<i>smaller breakout groups</i> to discuss the application of these with specific examples from the residents’ settings.
Summary, future directions	-reflect on what they have learned and how they will apply it in their own teaching context	15 min 11:30– 11:45	<ul style="list-style-type: none"> -<i>large group discussion</i>, residents asked to choose one skill to try within following week -readings and learning resources distributed

Agendas, Materials, Tips

Once decisions on the content, objectives, time, and strategies have been finalized, it is helpful to develop a teaching plan to see how parts of the activity fit together and to insert breaks. The teaching plan is also useful for orienting and training facilitators. A typical teaching plan is shown in Table 5.2. The first and third columns (topics and timing) can be used to develop

an agenda that can be distributed to residents. The objectives listed in the second column can be summarized in a handout for the folder or can be posted or discussed at the beginning of an activity.

Most sessions, especially the longer workshops and retreats, will appear more professional if handouts and references are provided to each resident in a folder. This folder could include an overall program or agenda for the session (see Meleca & Pearsol, 1988, for an example), a list of goals for the activity, copies of slides from plenary presentations, supplementary readings (only a few are needed), a humorous item (e.g., Brancati, 1989; Cook, 1989) or cartoon, if appropriate, the contact information for resource people, and some blank sheets of paper for notes. Checklists, outlines, frameworks, or other material that will be used during or following the session may also be added. There are a number of excellent references for further reading. These references can provide interested residents with detailed approaches to specific teaching issues or can direct them to additional resources (Foley & Smilansky, 1980; Newble & Cannon, 1983; Schwenk & Whitman, 1984, 1987; Weinholz & Edwards, 1992).

To encourage attendance, the programs can be publicized through house-staff newsletters, flyers, announcements at rounds, personalized invitations or e-mail messages (Wipf et al., 1995).

The organizers and facilitators should arrive early at the site to check the seating arrangements and the audiovisual equipment. For large groups a registration area may be set up and name badges issued. On-call coverage for the participants should be arranged and the residents asked to leave their pagers at the door. In most cases, food should be provided, and time allotted for the residents to socialize.

Many sessions to improve residents' teaching skills are run as small group sessions, so the planners should follow the basic principles of small-group teaching. During the session remember to set expectations, create a non-threatening learning environment, keep on target, involve all participants, keep an eye on group process, keep on time, summarize and synthesize, encourage application of the new skills to the residents' own teaching settings, and arrange for follow-up (Steinert, 1992, 1996). Appropriate use of humor usually makes learning easier and more enjoyable. A good way to end each session is with a question like "How will you use what you have learned today?" or "Where do we go from here?" (Meleca & Pearsol, 1988).

Novice organizers need not feel they must start by planning a long and complex program. It is easier to start with a brief single activity, limited in scope, aimed to achieve a small number of goals, and then expand from it to a larger program.

EVALUATING THE EFFECTIVENESS OF THE PROGRAM

The topic of evaluation is being addressed in detail in chapter 6; however, it is touched on briefly here because it is important to build in an evaluation

early in the planning process. The aim of the evaluation is to let the organizers know if they have achieved their goals.

The evaluation of any residents' teaching-skills improvement program should assess the perceptions of the program, the learning that has occurred, and the outcomes. Perceptions of the process of the program, also called a reaction evaluation, can assess the participants' satisfaction and their ratings of the quality of the teaching and content. Assessment of learning can look at subjective or objective factors, such as the participants' self-perceptions of the change in their skills or an observed improvement in the use of a teaching strategy. The outcomes of the program can be evaluated by assessing whether the goals were achieved or by looking at the impact of the program. Observations of changes in the residents' teaching using a checklist, students' ratings of the residents' teaching skills, and faculty opinion of residents' teaching can provide assessments of outcomes (Bing-You & Greenberg, 1990; Snell, 1989). It is useful to get evaluations from more than one source and to get both qualitative and quantitative data (Johnson et al., 1996).

The timing of the evaluations is important. The last few minutes at the end of the session can be used for reaction evaluations. Following the session, the process, learning, and outcomes can be evaluated. Weeks or months later, outcomes can be measured.

Ideally, learning and outcomes evaluation should include pre-post measures to see if the teaching behavior has changed, if it is being applied in the resident's teaching context, and if the change has been maintained (Snell, 1989).

OVERCOMING BARRIERS TO PLANNING

Resistance to conducting residents' teaching-skills improvement programs may come from faculty members, departmental administration, or program directors (Bing-You & Tooker, 1993); support and "buy-in" needs to be obtained from these individuals. If there is resistance to initiating a teaching program for residents, it can be pointed out that residents play a major role in teaching and supervision. In many clinical settings, residents are an integral part of a hierarchical team and have significant responsibility for teaching medical students and junior trainees. Residents may spend up to one quarter of their time teaching (up to 3 hours a day), and medical students and junior trainees receive large amounts of their teaching from residents (Bing-You & Sproul, 1992; Barrow, 1966). Teaching by residents is different from, and complementary to, teaching by attending staff doctors (Xu, Brigham, Veloski, & Rogers, 1993). Residents tend to teach the process of clinical management, while faculty members tend to teach clinical skills and the latest facts (Tremonti & Biddle, 1982). Residents teach in multiple contexts and at times when faculty are not available. Residents offer the benefits of

near-peer teaching: they are usually more available to junior house staff, less intimidating, closer to the trainees in age and experience and so better able to understand their needs. Finally, programs to improve resident teaching skills are effective. They positively influence student evaluations of their resident-teachers (Wipf, Orlander, & Anderson, 1999). Students' overall satisfaction with their clerkships and their choice of residency program has been linked to good experiences with residents (Ashikawa, Xu, & Veloski, 1992; Xu, Veloski, & Brigham, 1995; Pelletier & Belliveau, 1998). It follows that residents should be provided with formal opportunities to learn to teach.

Residents' satisfaction with their role as a teacher may need to be reinforced (Bing-You & Harvey, 1991; Apter, Metzger, & Glassroth, 1988). It is important to promote the benefits of being better teachers to residents who may be resistant to participating in sessions. A great benefit is the parallel of teaching and learning. One of the best ways to learn is to teach (Bing-You & Harvey, 1991; Steward & Feltovich, 1988; Weiss & Needleman, 1998), and learning during teaching is a common incentive to teach (Seely, Pelletier, Snell, & Trudel, 1999). Teaching also may help house officers understand their own learning process, which may help them become better lifelong learners. Also, many interactions with patients involve teaching, so teaching skills are a clinical skill that residents can use with patients. Finally, many residents will teach in future academic practices, and teaching-skills improvement programs will allow them to acquire these skills early.

Planners must also address the four major barriers that residents face in their roles as teachers. The first is that the residents are simultaneously teaching and learning and they are not experts in medical content, in other nonprocedural competencies, or in the teaching process (Yedidia, Schwartz, Hirschkorn, & Lipkin, 1995). Residents may not be accustomed to opportunistic teaching, where there is little time to prepare and where there is little control over the questions or issues that arise. There are a number of methods to overcome these barriers. The first is to model how a seasoned practitioner and teacher deals with lack of expertise; for example, how to deal with questions that arise in daily practice and how to learn. Second, one can encourage residents to teach what they do know and what they can do. They may not know all the facts about a particular disease, but they might easily be able to teach how to take a history or plan the initial investigation of a patient with the disorder. Finally, the residents can be encouraged to learn frameworks (rather than details) that they can subsequently teach.

A second barrier is that some residents may have less knowledge about, and experience with, students and other junior learners. As such, they may not be familiar with the students' learning objectives or competencies needed, the level of teaching needed, or the student evaluation process. On occasion, they may work too closely with junior trainees to evaluate them objectively. To overcome this, residents need to be oriented to student issues

such as the students' expected goals for a rotation and the principles of feedback and evaluation.

Conflict between service and teaching is the third barrier. The residents are trying to perform their clinical work and teach simultaneously, and their first priority is meeting the patients' needs. As team leaders, they must ensure that the students and other junior trainees' work is completed, possibly at the expense of teaching (Yedidia et al., 1995). This may decrease residents' motivation to attend teaching-skills improvement sessions. To overcome this, residents can be taught teaching strategies to use when there is little time to teach and how to use the teachable moment.

The final barrier is that residents may feel their teaching is not considered important. To overcome this, planners can ask a department head, the dean, or another senior respected person to give a brief introduction at the residents' teaching improvement sessions. The presence of this individual makes the commitment and support of the department or university much more visible and tangible to the residents (Greenberg et al., 1988). Personal invitations or publicity in house staff or hospital newsletters (Wipf et al., 1995) may increase the profile and perceived importance of residents' teaching and the programs. Program organizers may increase the residents' motivation by supplying certificates of attendance at the end of the program. Finally, it is necessary to reward and recognize the residents for their actual teaching. This can be done with personal feedback or with awards such as "teaching resident of the month" prizes.

SUMMARY

By breaking the planning process into steps and manageable tasks that can be shared by planning committee members, the pleasant responsibility of planning and implementing a residents' teaching-skills improvement program can be simplified. If the program is relevant to the resident teachers, addresses their needs, makes good use of their time, and fits into their routine (Edwards, 1988b), it is likely that the resident participants will become more enthusiastic about education, appreciate the program, and become more effective teachers.

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CHAPTER 6

Residents as Teachers: Evaluating Programs and Performance

DEBRA A. DAROSA

Newly appointed Associate Dean for Education, Dr. Bertha Mark, at Spring-patch Medical School wants to demonstrate that the traditional Residents as Teachers Program should continue to be funded, and possibly even expanded beyond the three one-hour sessions per discipline currently afforded. Her predecessor was the associate dean for years and ran a rather informal program. Other than the file containing an outline of the topics to be covered, he kept no systematic records of attendance or evaluation results with the exception of a couple of end-of-course evaluation summaries. The data are incomplete, the summaries were not kept for all programs, and there is a great deal of inconsistency in how the evaluation data were gathered and summarized. Dr. Mark asked her predecessor if there were any other evaluation reports on the program, but the response was, "You'll know if the program is bad because the residents will have themselves paged out, or the word will get out and they won't show up at all." Dr. Mark wonders if the Resident as Teacher program, as initially designed, is doing what it is supposed to be doing—developing residents' teaching skills and ultimately enhancing learning. She thinks the program is probably too short to have much impact, but is unsure how to demonstrate its need for expansion. (Cafferella, 1994)

Dr. Mark is not unique in inheriting an educational program that lacks evaluation data sufficient to judge its worth or support decisions on whether to

maintain, modify, or discontinue it. Although evaluation system development is an integral part of any instructional design process, it is often an afterthought with little attention given to how the data will be used. This chapter emphasizes four important reasons resident teaching-skills (RTS) program administrators should plan for a systematic evaluation of their program, and then provides guidelines for how to go about it simply and effectively.

PURPOSE OF EVALUATING PROGRAMS AND PERFORMANCE

Although it is tempting to defer thinking about any sort of program or performance evaluation after the time-consuming effort already expended in planning and implementing an RTS program, program evaluation is a critical process for determining program impact, justifying resources, continuing program improvement, and highlighting the program's importance.

To Determine Program Impact

Did participation in the RTS program change the way residents teach? What have the students, junior residents, and patients gained as a result of their teachers' enhanced skills? Is there an improved learning climate that can be attributed to the residents' heightened awareness of their roles as teachers? Were the learning objectives accomplished?

These questions focus on the intended outcomes of an RTS program and need to be answered in order to determine whether the program was successful in achieving its ultimate goals.

To Justify Resources

Were the hours taken to attend and teach the program well invested? How much did the program cost and how was the time and money spent? Were the dollars spent for instructional materials, meals, honorarium, and other expenses reasonable?

Because of the fervor for accountability and tightened budgets, collecting evaluation information that articulates and justifies a program's use of resources can be critical to future funding decisions. Faculty and residents who may have had to assume patient care responsibilities for the residents while they attended the program will more likely agree to support future programs when they see evidence that a program is using its resources efficiently and as intended.

To Improve the Program

Were the topics and skills presented relevant to the residents' learning needs? How was the quality of teaching perceived? Were the teaching strategies well

executed? Was the program too short, too long, or just about right? Was the best possible instructional design employed considering logistical constraints?

This type of evaluation data informs decision makers of the program's strengths and weaknesses. It can guide actions needed to be taken for enhancing program content and instructional strategies.

To Highlight the Program's Importance

The old axiom that anything worth doing, is worth doing well is clearly communicated when learners, faculty, and administrators see visible efforts to evaluate a program. It demonstrates that the program is not being conducted just because it is an accreditation requirement or to go through the motions of training the trainers. When faculty seek feedback on the residents' response to a program and the program's impact, the message is communicated that being an effective teacher is a critical responsibility of the residents and one which faculty members want to help them with.

PLANNING FOR SYSTEMATIC RTS PROGRAM EVALUATION: HOW TO DO IT

Collecting evaluation data is a lot like collecting garbage. You better know what you are going to do with it before you collect it.

—Mark Twain

The consequences of not planning for program evaluation before implementing a course are a) collected data will be of limited use, b) opportunities to collect the type of evaluation data needed will be lost; or c) "half-baked" data collection strategies will yield information of questionable value. Program administrators need to decide on the type and scope of the evaluation system in advance of the actual program to ensure that appropriate data are gathered and summarized in a format useful to decision makers. Determining what aspects of the program will be evaluated, when and how it will be evaluated, and how the information will be used will depend on a number of factors. The following steps for planning, implementing, and assessing an RTS evaluation system are designed to help program administrators decide how extensive an evaluation system is warranted at their institutions.

Step One: Reality Check—Verify and Negotiate Resources

There are two schools of thought about the point in time at which resource availability for implementing an evaluation system should be checked. It is similar to the schools of thought about how to purchase a new car. One person will explore car dealerships until she finds the car she absolutely has

to have and then use creative strategies for acquiring the necessary money. A second person will verify the amount of money available in the savings account and then go shop for the car that fits the budget. The financial politics at an institution will likely determine the appropriate strategy to take. However, finances are a critical consideration in planning an evaluation, because evaluation efforts will be compromised if sufficient staff and technology support are lacking. All programs should include resources in their budgets for program evaluation. The scope of an evaluation system must correlate with the extent of staff, time, and technology available for this purpose. If these resources are severely limited, the scope of your evaluation system will be as well.

Step Two: Decide What and How to Measure

The best approach to deciding what to measure is to brainstorm a list of decisions that will need to be made relevant to the program, and then decide what evaluation information is needed to support those decisions. For example, let's assume that Dr. Bertha Mark, in her position as Associate Dean, outlines the following types of decisions she needs to make for the benefit of her institution's RTS program:

1. Are the objectives addressed in the current RTS curriculum sufficiently comprehensive to meet the residents' learning needs in their respective disciplines?
2. Are the residents applying what they learned in the RTS program to their everyday teaching encounters?
3. What are the specific costs of the program, and what critical characteristics of the program need to be preserved and funded (e.g., syllabus, etc.) and what could be cut (e.g., too many invited speakers, etc.)?
4. Would a centralized program structure make better use of resources?

This is not meant to be a comprehensive list of decisions that a person in Dr. Mark's position might want to address, but rather an illustration of how to start identifying and prioritizing the type of evaluation information required.

When identifying the kind of evaluation information needed it is helpful to consider three major types of evaluation: reaction evaluation, evaluation of learning, and evaluation of outcomes. This represents a modified classification scheme originally described by Kirkpatrick (1975).

Numerous strategies exist for acquiring evaluative data. Choosing among the strategies depends on what the information will be used for. Following is a description of the three evaluation types and methods for collecting evaluation data relevant to each type.

Reaction Evaluation

Definition: Conducted to make judgements about the quality of the curriculum and instruction from the participant's point of view. The information is used to decide what parts of the curriculum should be modified, deleted, or maintained. It also supports decisions related to faculty, facilities, and course logistics.

Reaction evaluation is the most common type of evaluation method used. Its design typically captures participants' opinions on the value of course content, quality of presentations and instructional strategies, usefulness of the instructional materials and quality of the program's organization, instructors, and facilities. Although some acquire this information through oral feedback sessions with participants at the conclusion of the program, most distribute an evaluation form comprised of items with correlated rating scales and space for narrative comments. These are usually distributed for completion before attendees leave, but sometimes are mailed out after the program to give participants a chance to digest and reflect on the experience. Attachments A and B in section D, are examples of such forms. Attachment A was designed to acquire ratings of content value and presentation quality for each specific session within a program. Data from the form is helpful in making decisions about which topics should be cancelled, altered to become more valuable, or given more curriculum time. It also provides feedback from the learners as to the quality of presentation. The advantage of having dual scales is that residents may think the topic is valuable, but that presentation was poor. If the form only included a single scale, residents may give the topic a poor rating because they did not find it of interest, when in fact it might not have been of interest because of how it was presented.

Forms similar to attachment B take a wider approach to evaluating the program. This format highlights characteristics of the program (for example, appropriateness of learning objectives, quality of facilities, effectiveness of faculty) that are working well or not so well from the perspective of the learner. It also asks participants to provide an overall rating of the course which is helpful for measuring future changes and how they may have impacted participants' global perception of the program. These forms can be combined for evaluating a program administered in a single day. If the course is administered over time, attachment A can be given at the end of a day and attachment B at the end of the program.

Reaction evaluation seeks to glean the "consumers" perspective on the instruction and program. The challenge is getting the residents to complete the forms to achieve a high response rate. If the forms are to be completed several days after the course and anonymously, it is advisable for follow-up purposes that a trusted third party code each form to determine who did and

did not complete the forms. If oral feedback is solicited from attendees, it should be done by someone other than the instructor to ensure openness. Whether written or oral, the results should be summarized without revealing to the instructor who in the course said what.

Evaluation of Learning

Definition: Strategies used to evaluate the extent of behavioral change that can be attributed to the program.

Survey results from 259 internal medicine programs in the U.S. showed that only 15% of the 51 residents' teaching-skills improvement programs performed any assessment to evaluate the impact on participants' abilities to teach (Bing-You & Tooker, 1993). All data collection strategies for evaluating learning have their strengths and weaknesses in terms of psychometric qualities. There is no one perfect measure. That is why multiple sources for evaluation information are recommended to compensate. Strategies used to measure whether residents actually enhanced their teaching skills as a result of participating in a formalized teaching-skills improvement program might include examinations, self-assessment surveys, and learner feedback.

Examinations. Participants can be given tests that measure changes in their knowledge and skill levels. Some would argue that a pre-post performance-based exam is optimal, but given time and cost constraints, some choose to conduct post-course performance-based examinations only. The performance-based exams typically include standardized students or real students who are trained to simulate a teaching encounter. Dunnington and DaRosa (1998) created a multiple-stations exam that tested residents on selected objectives of their Resident as Teacher program. Examples of their 10-minute stations included a challenge in giving constructive feedback, teaching a student how to tie surgical knots, and critiquing a videotaped faculty member conducting bedside rounds. Studies published elsewhere describe the use of standardized students in assessing teaching skills (Dunnington & DaRosa, 1998; Gelula, 1998; Simpson, Lawrence, Grosenick, Krogull, & Wescot, 1992). Standardized students, similar in concept to standardized patients, are individuals trained to simulate a scenario involving a learner and teacher. The student is taught beforehand how to respond to questions or comments from the teacher, what affect to reflect, and what questions to pose. Standardized students can be trained also to provide constructive feedback to the teacher. Some standardized students are used for purposes of assessment, while others rely on standardized student encounters as an instructional strategy.

Written examinations are less costly than a performance-based examination, but results can only be assumed to translate into actual behavior change.

In other words, an individual may be able to write five questions that address higher level thinking, but whether or not the questions reflect those he or she poses while teaching at the bedside or in the clinic or operating room can only be inferred.

The limitations of using a posttest only must be considered in examination results. The examination score cannot be attributed directly to what was learned in the course. Without a pretest there is no baseline performance data. The evaluator has no way of knowing if the results of the evaluation are due to the program or some other variable. For example, if the post-program evaluation results show high scores from the students evaluating the residents' teaching, is it possible that these ratings would be the same had they been collected in the previous year? To offset the weaknesses of a post-evaluation design, Sheets and Henry (1988) tested participants progressing through a faculty development program using a pretest, posttest, and delayed posttest. They found significant differences between performance on all three administrations.

Self Assessment Surveys. Residents could be asked at specified times after the program (e.g., a 3-month follow-up) whether they applied teaching behaviors emphasized in the course. For example, they could be asked if they have given feedback to a learner using the principles taught in the RTS program, or whether they are assessing students' learning needs at the scrub sink prior to entering the operating room as instructed. The teaching behaviors they would be asked to rate or comment about should be consistent with the program's learning objectives.

Self-assessment surveys are easily administered and summarized. It will be critical to the credibility of results to ensure a high response rate. The findings could be used to analyze those segments of the program that residents report as having the least impact on their teaching. Given the findings from previous studies, however, it may be wise to collect self-assessment information as well as feedback from their learners. Wolfe and Turners (1989) found that teaching staff members consistently believed they used each skill significantly more than students said they did. Similarly, Hartman and Nelson (1992) suggested from findings in their study that researchers must be careful in the use of self-reporting as a means of assessing teaching behavior, and that whenever possible researchers should observe the teachers they are studying to supplement the self-report information.

A self-assessment survey for evaluating any long-term influences of a program can be sent out after participants have had time to practice and apply what they learned. Edwards, Kissling, Plauche, and Marier (1988a) provide a description of their experiences using a longitudinal follow-up approach to evaluate the impact of their resident-as-teacher training. Attachment C is a sample form used for this purpose by DaRosa, Folse, Reznick,

Dunnington, and Sachdeva (1996) to follow up on graduates from a 6-day faculty development course for surgeons.

Learner Feedback. Learners (that is, medical students, junior residents, or patients) who are taught by graduates of an RTS program can be asked to evaluate their residents' teaching behaviors. They could rate or comment on the extent to which certain teaching behaviors are demonstrated and with what consistency. Written surveys or interviews could be used to obtain the feedback. It could be collected in a pre-post format, or a post-course survey or interview approach. Wipf, Orlander, and Anderson (1999) described their use of forms completed by students to rate their residents' teaching. They compared ratings from 3 years before and 3 years after a resident teaching-skills course was introduced and found continuous and statistically significant improvement each year after the introduction of the course. Skeff, Berman, and Stratos (1988) summarized the results of several studies that evaluated the impact of feedback from student ratings on teaching behaviors. Irby's (1988) review of research on student ratings of teaching in higher education led to following conclusions: (a) Learners are able to make reliable judgments about teacher performance within a class and across time; (b) learners can be accurate in evaluating different aspects of a teacher's performance; (c) ratings of an instructor are consistent over time; and (d) the validity of student ratings of teachers is substantiated by the opinion of experts and by earlier research. Attachments E and F in Section D are examples of evaluation forms that could be completed by learners to provide feedback and evaluate residents as teachers.

Observation by Educators, Peers, and Faculty. Some departments may have access to an educator who could observe residents teaching and document their teaching behaviors. For example, the educator could observe a resident's lecture to evaluate whether the resident applied the guidelines for lecture organization and delivery that were taught in the program. This is a useful approach as educators can document their observations and also provide feedback to the residents.

Another approach may be to observe resident teaching indirectly through videotape reviews and complete an evaluation form. Several programs have successfully detected improvements in residents' teaching using this method (Edwards et al., 1988a; Sheets & Henry, 1988), which can be a pre-post design or post-course observation, depending on time and resource availability (Bing-You & Greenberg, 1990; Edwards, Kissling, Plauche, & Marier, 1988b).

Residents could evaluate their peers' teaching abilities if the program is large enough to protect anonymity. For example, senior residents might be asked to evaluate the abilities of their fellow senior residents to teach junior

residents and students in the various teaching skills addressed in the RTS program.

Interested faculty members can also play a role in evaluating residents' teaching. For example, a faculty member supervising a resident-run clinic could document teaching behaviors of the senior residents who are teaching junior residents or students. Obviously it is important that the faculty member or peer resident be very familiar with the RTS program to ensure that the evaluation criteria and rating scale are consistent with the program's objectives and that evaluators share a common frame of reference for what each point on a rating scale means.

Forms used to guide observers' ratings should include criteria correlated to the programs' learning objectives. Sheets and Henry (1998) and Lawson and Harvill (1980) developed forms for observing teacher performance and present them in published articles. Lawson and Harvill (1980) referred to the form that was used to assess resident teaching as the "Instructional Skills Evaluation Instrument" (INSE).

The type of technique (observations, interviews, written questionnaires, or tests) that should be used to gather information for evaluating learning depends on the resources available, the scope of the RTS program, and the RTS program administrator's interest level. Each technique has its strengths and weaknesses as a measuring tool. It is critical to ensure that the techniques used are developed to their fullest potential. For example, a pretest-posttest performance-based examination can be very convincing in identifying behavioral changes. But although the examination format may be optimal for this purpose, it requires significant time to develop a good performance-based exam that has adequate evidence of validity and reliability. Evaluators need to keep in mind that "garbage in, garbage out" does not apply only to computers. Whatever methods for evaluation are chosen, poor decisions will follow if the appropriate effort is not made to ensure a high quality of evaluation measures.

Evaluation of Outcomes

Definition: Evaluation data used to study the impact an educational program may have had on the environment and whether program goals were achieved.

Clear and realistic program goals are critical to guiding decisions on what to evaluate and how to measure impact or outcomes. If the RTS program goals are too vague, it becomes difficult to decide what variables should be measured to determine the program's impact.

The data collection strategies described in the previous section can also be used to collect information on a program's impact. Some outcomes that might be associated with an extensive RTS program include enhanced learn-

ing outcomes, improvements in the student clerkship, new educational initiatives, an improved learning environment, and enhanced quality of patient care.

Evidence of enhanced learning. The old adage states that not everything that is measurable counts, and not everything that counts is measurable.

If residents are successfully taught how to enhance their students' learning, one might expect to be able to measure that impact. The problem is, RTS programs are not typically extensive enough to achieve this level of impact in a measurable way. Such precise types of measurement either do not exist or are too resource-intensive to develop and implement. Administrators are not likely to find an increase in scores on end-of-clerkship multiple-choice or standardized exams that can be solely attributed to their residents having attended a RTS program. Learning is a complex process and is dependent on prior knowledge, intellectual capabilities, and knowledge organization and retrieval. Honing one's teaching skills is just one component, albeit an important one, of facilitating another's learning. Because of the lack of evaluation tools to precisely measure increases in student/resident learning that can be attributed to a resident instructor attending a RTS course, it may be more plausible to measure changes in student learning processes. For example, if residents are taught in an RTS program to provide objectives and clarify expectations to students prior to the resident clinic, they may find students better prepared, hence able to answer more questions or address patient problems. Another example might be that teaching residents how to provide constructive feedback might result in students seeking more feedback on their performance. Few would argue that these are critical learning strategies for students, but chances are the consequences would not be measurable on an examination. In summary, finding hard evidence that a traditional RTS program was solely responsible for the enhanced learning of participants' students is difficult, which explains why the literature suggests we continue to work toward this end.

Evidence of an Enhanced Student Clerkship. If one of the RTS program goals was to enhance the quality of the student clerkship, an administrator could review end-of-clerkship evaluation data generated by the students to study whether resident lectures, rounds, or other specific resident-centered education efforts show improvement. Most RTS programs involve teaching residents how to give constructive feedback. An item on an end-of-clerkship evaluation form with a corresponding rating scale may show evidence of an increase in frequency and quality of residents' feedback to students. An alternative or adjunct to the end-of-clerkship evaluation form might include a focus group discussion with students or telephone interviews facilitated by an objective faculty member or educator. Students could be asked directly

about their perceptions of whether RTS graduates accomplished program goals.

Evidence of New Educational Initiatives. Other evidence of impact might include residents developing new teaching initiatives such as formalizing a suture knot-tying session for new residents, supplementing work rounds with a weekly teaching-rounds program, starting a reading club or other type of innovation. Residents could be asked to develop and maintain a teaching portfolio where evidence of education developments, teaching ratings, or teaching awards could be organized and later reviewed to determine how an RTS program might have influenced performance and productivity in education. Teaching portfolios have been well described by Simpson, Morzinski, Beecher, and Lindemann (1993).

Evidence of an Enhanced Learning Environment. The learning environment may also be an outcome target for an RTS program. Variables associated with the learning environment are complex, but an evaluation might focus on conference attendance, lecture cancellation rates, completion rates of performance, and rotation evaluation forms; or on whether residents previously identified as having a bad attitude toward teaching reflect post-program improvements in the student ratings.

A questionnaire developed by Greenberg, Goldberg, and Jewett (1984) was used to evaluate residents' confidence as teachers and attitude toward teaching prior to entering a teaching-skills improvement program. A tool such as this could be employed in a pre-post format for evaluating how formal teaching programs impact attitudes, as attitudes have a direct correlation to the learning climate.

Evidence of Enhanced Patient Education. If patient education enhancement was part of the RTS program goal, an evaluation can be done through observation, rating forms, or patient interviews to determine whether residents are using clearer communication techniques for teaching patients about their illness, operation, or treatment regimen. For example, if an RTS program included a segment on listening skills, one could measure talk-listen ratios before and after the course.

The key is that program outcome goals have to be articulated in clear terms and be reasonable given the time and scope of the skills-development program. Evaluating the impact of educational programs is difficult, since most resident teaching-skills programs are small in scale. Expectations of what the RTS program is supposed to accomplish should be commensurate with the amount of time and effort invested in it. For example, a half-day seminar may aid attendees in learning how to orient students to the rotation effectively, but it would be unreasonable to expect that alone to change their

learners' perceptions of the overall clerkship. The criteria for judging a program's impact must be directly linked with program goals, and the variables involved must be measurable, either qualitatively or quantitatively.

Another factor to consider is that RTS programs may have varying impact on residents at different training levels. Bing-You (1990) evaluated the impact of a program using videotapes of the residents' teaching that were made from 2 to 11 months after the course. He found that interns improved their mastery in certain skills taught in the course, but more senior residents did not. He concluded, as did Edwards et al. (1988a), that the timing of resident teaching-skills programs may need to be adjusted to accommodate these differences and that periodic reinforcement may be necessary to maintain residents' teaching skills in specific areas.

Step Three: Analyze, Summarize, Interpret, and Disseminate Results

Each source of evaluation information needs to be analyzed, quantitatively or qualitatively depending on the type of data collected. A summary of scores or ratings using indicators of central tendency such as the mean and median, and indicators of score variability such as the standard deviation, will help summarize rating scale data into a useful format. Whether one performs statistical tests depends on the design of the evaluation and the measurements made. If pre-post or treatment/control-group comparison designs were used, statistics that show the significance of the difference between scores and the effect size should be calculated. Unless this is within the readers' abilities, it is strongly recommended that a statistician be consulted to decide how to analyze the data prior to its collection. It is not mandatory to do statistical tests to produce a good evaluation report. However, doing them will strengthen conclusions. Regardless of the methods used to summarize data, it is strongly recommended that all data be graphed in order to spot trends and view the results.

With today's technology, it is not difficult to create summary reports that synthesize the evaluation data to translate more easily for use to support decisions and judge the RTS program's worth. It may be necessary to create different reports for different stakeholders. For example, the dean may be interested in an evaluation report that summarizes time, expenses, and general impact data. Instructors in the course may want a report that summarizes residents' reactions to their respective teaching session, overall impression of the course, and outcome study results. Attendees likely would be interested in seeing how their rating of the course compared to other participants, and department chairs may want a report that outlines evaluation information for their residents only.

After deciding the evaluation information needs of the various parties involved, draft reports with simulated data and have them reviewed in ad-

vance to verify that the format meets the individual's information needs. Finalizing the different report formats before data collection will ease the data entry and report-generation process. Additionally, the reports should be generated in a timely manner. Reaction evaluation reports can be disseminated within days of program completion, whereas outcome evaluation reports may not be available for several months or longer. Stakeholders should be informed about when they can expect to receive their evaluation reports.

Step Four: Evaluate the Evaluation System

Evaluating the evaluation system need not be a cumbersome process, but it is an important step. Informal conversations with the individuals who received the evaluation reports can reveal whether the information supplied met their needs. Any tests or follow-up studies should be evaluated to ensure adequate evidence of reliability and validity. Evaluation information that does not have credibility with the people who supplied or received it has no value.

Step four also involves reviewing items on the data collection forms to determine whether additional or fewer items are warranted and whether the evaluation system (from data collection to report distribution) needs fine-tuning or can be made more efficient. Adjustments to evaluation data sources (exams, surveys, self-assessment forms) and reports should be completed in time for the next RTS program. Finally, all raw data and summary reports should be filed and organized for easy access and in such a way that trends can be studied if needed.

Step Five: Apply What Was Learned From the Evaluation to the Program

This step closes the loop from deciding what needs to be evaluated to applying the information learned from the evaluation system. It also raises the "so what?" question. If no action, pertinent discussions, or decisions are made from the evaluation reports, one has to wonder about the value of the evaluation system. For example, if the program evaluation data shows that certain instructors were poorly prepared and received by the learners, and no changes are made to either enhance the instructors' performance or replace them, the "so what?" question needs to be addressed. There is no need to collect evaluation information that no one acts upon.

SUMMARY

Planning and implementing a system for evaluating a resident teaching-skills program is critical to determining program impact, justifying resources,

improving the program, and highlighting the program's importance. A five-step approach can be used to develop the system:

1. verifying and negotiating financial, human, and technical resources
2. deciding and prioritizing what and how to measure
3. analyzing, summarizing, and distributing evaluation results
4. studying how well the evaluation served its intended purposes
5. applying what was learned from the evaluation data

Planning and implementing a resident teaching-skills program, either at the departmental or central level, is an investment of time and resources. Efforts are needed to evaluate the program although the final scope of the evaluation system should be consistent with the scope of the program, as well as with the information needs of the administration and faculty. Without an evaluation system, the program's future may be jeopardized or challenged. It may also become subject to changes based on instructor bias or other forces, rather than being modified based on decisions that are informed by evaluation data that bring the program's strengths and weaknesses to the forefront.

Even very early publications describing resident and other faculty teaching improvement programs typically concluded that additional information was needed to more thoroughly evaluate the worth or merit of their program. Although no one perfect measure exists to accomplish this, it is recommended that an evaluation system be designed employing multiple sources of evaluation data in order to better understand and document participants' reactions to the program, the extent of learning accomplished, and overall impact. A collection of such evaluation studies would help inform administrators like Dr. Mark who are faced with decisions regarding an RTS program as well as those initiating new programs.

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CHAPTER 7

Interpretation and Projections

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Great strides have been made in developing residents' role as teachers over the past decade. Within the Association for American Medical Colleges (AAMC, 2000), a special interest group has been identified in the section on graduate medical education (GME). Numerous requests for information on developing programs suggest an attitudinal shift in the past few years. Our perception that many medical educators have been searching for and needing appropriate materials for resident teaching-skills improvement programs spurred us to create this book as a practical and useful resource. However, much work remains to be done in this area of medical education—work that must be adjusted closely to the changing health care environment.

CHANGING HEALTH CARE ENVIRONMENT

The health care environment continues to evolve in a dynamic, even tumultuous atmosphere. Shortened hospital stays and increased managed-care pressures threaten the historical basis of the inpatient teaching model, and medical students and residents are under increased pressure to evaluate, treat, and discharge patients ever more quickly. This frenetic focus on getting the work done leaves little time for residents to teach.

Residency review committees (RRC) are also increasing requirements for more ambulatory teaching for residents. Although the shift toward more ambulatory teaching is occurring for medical students and residents, we

believe a core element of the curriculum at both levels will remain in hospitals, where residents are closely involved with students.

Decreased Medicare funding for graduate medical education threatens the availability of residents as an important source of learning for medical students and fellow residents. Beyond the enormous service capabilities provided by residents, we also need to emphasize the value-added component of resident teaching. Without residents, this tremendous teaching responsibility would fall to faculty members who are already overburdened.

TEACHING AS A CLINICAL COMPETENCE

During the 1990s, teaching was recognized formally as a component of residents' clinical competence. In 1988, Edwards and Marier made the following projection:

To develop the role of residents as teacher, it will be important to gain approval from residency-accrediting agencies for teaching skills to be a component of clinical competence. In this way, teaching may be allowed to take its rightful, albeit third, place in residency training. Then in time, the concept of teaching as an integral part of the residency experience may be accepted by all those persons involved in training students and residents, and may be incorporated into the routine evaluation of residents' performance.

This projection became a reality with the statement in the Liaison Committee on Medical Education (LCME) Standards (1993, p.14), which reads:

The required clerkships should be conducted in a teaching hospital or ambulatory care facility where residents in accredited programs of graduate medical education, under faculty guidance, may participate in teaching the students. Residents must be fully informed about the educational objectives of the clerkships and be prepared for their roles as teachers and evaluators of medical students.

Institutional requirements of the Accreditation Council for Graduate Medical Education (ACGME, 1999) include the following statement: "Institutions must ensure that residents have the opportunity to participate fully in the educational and scholarly activities of their program and, as required, assume responsibility for teaching and supervising other residents and students."

Although these requirements have a lower priority than some others, the presence of these statements highlights the importance of resident teaching. Recently the AAMC (2000) has defined core competencies for GME that include teaching for all residents. Consequently, residents and program directors now recognize teaching as a valid component of clinical competence.

TEACHING ASSESSMENT

The strong focus on teaching as a clinical competency will drive improved approaches to assessing residents' competence in teaching. An initial step in this area is to more clearly define resident teaching skills. There is no one set of core teaching skills for residents although a great deal of work has been done on faculty teaching skills (Irby, 1994; Litzelman, Stratos, Marriott, Lazaridis, & Skeff, 1998). The unique context of resident training, where residents perceive themselves in conflicting roles as clinicians, learners, and teachers (Yedidia, Schwartz, Hirschkorm, & Lipkin, 1995) suggests that a different set of skills is required by residents. For example, team leadership skills (eg., group dynamics, negotiation) may be more relevant for residents than faculty. With fewer faculty members feeling comfortable and competent to teach residents and students (Wickstrom et al., 2000), residents may become a major resource for teaching. Rather than allow assessment to define teaching, it is hoped that empirical research will establish a set of core teaching skills.

Once the competency of teaching is defined more precisely, subsequent steps must be taken to determine appropriate methodologies to evaluate it. In chapter 6, DaRosa describes evaluation of resident performance and evaluation of resident teaching-skills programs (RTS). To evaluate performance of teaching skills, DaRosa describes examinations (written and performance), self-assessment surveys, learner feedback, and observation. She describes performance examinations that use multiple stations and "standardized students" or real students. Similar to Objective Structured Clinical Examinations (OSCE), these Objective Structured Teaching Examinations (OSTE) have the potential to assess complex teaching behaviors well. Videotaping teaching performance and evaluating the videotape is another method of objectively measuring actual behaviors. Direct observation by faculty, resident peers, and educators can yield valuable information for learning and evaluation. Learners, both students and patients, can give residents feedback about their teaching.

Better defining and assessing core resident teaching skills will help to strengthen whatever skills residents already have. Medical educators need to reinforce positive behaviors as much as delineate behaviors needing improvement.

In the future, methods and programs will be needed to address the issue of remediating those residents who are considered poor teachers or who lack certain teaching skills. Program directors may soon be faced with advancement dilemmas. For example, should an intern be allowed to advance to the PGY-II level if medical students continually rate him as deficient in teaching skills? Should a resident be allowed to graduate if she fails an OSTE?

Best Evidence in Resident Education (BERE)

Medical educators have played off the Evidence-based Medicine movement (EBM) that was described in chapter 3 to create Best Evidence in Medical Education (BEME) (Harden, Grant, Buckley, & Hart, 1999). We take the liberty of advocating Best Evidence in Resident Education (BERE).

With BERE in mind, what has been learned about residents as teachers over the past decade? There is evidence from medical students that resident teaching is important and meaningful. A survey similar to Barrow's (1966) was published in 1992 (Bing-You & Sproul), again indicating that students thought one third of their knowledge came from working with residents. Another survey of candidates who were applying to a pediatrics residency showed that 76% were "highly interested" in a residency that helped them teach medical students and residents (Satran & Harris, 1992). Medical students also appear to correlate their overall satisfaction of clerkship experiences with their positive assessment of resident teaching (Ashikawa, Xu, & Veloski, 1992). O'Sullivan, Weinberg, Boll, and Nelson (1997) conducted a multisite study across specialties to evaluate students' educational activities during the clerkship year. Using 24-hour student logs, the author noted that the students received 2.8 hours per day of teaching by residents. This was more instruction than students received from either full-time or volunteer faculty members. Residents accounted for the majority of informal teaching. This study was replicated in the fall of 2000 (personal communication, May 2000).

Residents themselves recognize their role as teachers (Apter, Metzger, & Glasroth, 1988), although they generally have not received any formal instruction in teaching skills prior to resident training. They also perceive that their own medical knowledge and skills are improved by teaching others (Bing-You & Harvey, 1991). Faculty members think that residents are active teachers. Residency program directors in surgery (Anderson, Anderson, & Scholten, 1990) and internal medicine (Bing-You & Tooker, 1993) documented that residents contribute positively to students' learning. The latter study indicated that only 20% of internal medicine programs surveyed offered teaching-skills improvement programs at that time.

Reports of teaching-skills programs have described multiple approaches across various specialties. The number of instructional hours has varied from 1 to 24 (Bing-You & Tooker, 1993; Spickard, Wenger, & Corbett, 1996; Wipf, Pinsky, & Burke, 1995). Most programs have been single sessions although some have reported sessions spaced over several months (Bing-You & Greenberg, 1990).

Many different types of content have been described in the literature (Bing-You & Tooker, 1993). Evaluation, feedback, discussion skills, and learning climate are frequently the focus. In internal medicine programs, the

program director typically is the faculty member who develops and facilitates the program.

Attempts at improving resident teaching have occurred in many specialties, including radiology (Troupin, 1990), surgery (Anderson et al. 1990), pediatrics (Johnson et al., 1996), internal medicine (Spickard et al., 1996), and family medicine (Susman & Gilbert, 1995). Some programs have included residents from multiple specialties. Residents from all levels have been included in some programs, while others have focused on incoming residents (Pristach et al., 1991) or senior residents only (Susman & Gilbert, 1995). The Stanford Faculty Development Program does not differentiate content by specialty or postgraduate level (Skeff, Stratos, Berman, & Bergen, 1992).

One of the few published randomized studies indicates that written feedback to residents about their teaching improved students' ratings of residents (Bing-You, Greenberg, Wiederman, & Smith, 1997). This randomized, 1-year, multicenter trial used a summary of a team interview and rating forms as the written feedback. Senior residents who received the feedback were rated higher in establishing rapport with learners and providing feedback and direction. Overall teaching effectiveness also tended to improve for the experimental group.

What evidence (BERE) is there that teaching-skills programs for residents are effective? This cumulative evidence is presented and discussed more thoroughly in Bing-You and Edwards (2000), but we give a brief review of the BERE here. At least nine studies over the past 20 years using evaluation methods other than self—assessment indicate that teaching-skills programs improve residents' teaching skills (Bing-You, 1990; Edwards, Kissling, Brannan, Plauche, & Marier, 1988; Edwards, Kissling, Plauche, & Marier, 1988; Jewett, Greenberg, & Goldberg, 1982; Lawson & Harvill, 1980; Litzelman, Stratos, & Skeff, 1994; Snell, 1989; Spickard, Corbett, & Schorling, 1996; White, Bassali, & Heery, 1997). All the studies showed improvement in the skills taught; six of the studies showed statistically significant results. In two of the studies, improved skills declined over time, which indicates that periodic reinforcement ("booster") sessions are necessary. The evidence suggests that multiple formats with an emphasis on interaction are effective (e.g., role-playing, interactive lectures, feedback practice, skill demonstrations). Short sessions (less than 5 instructional hours) and single sessions have been effective in improving skills. Programs specific to specialties rather than general programs for all specialties may be necessary to achieve maximum effectiveness. The limitations of the evaluation studies include small numbers of resident subjects and lack of randomized designs.

Despite that, these evaluation studies demonstrate effectiveness. Enough is known to give directions for future evaluation and research. In view of the increasing financial constraints for institutions and researchers, waiting for

the ultimate set of randomized trials would not be prudent. More studies are needed to define precisely the most effective methods, content, and timing of teaching-skills programs. We hope that the resources in this book will facilitate the development of programs by the faculty and residents within each institution. Furthermore, we hope that researchers will collaborate in multi-site studies to answer the research questions. The following section provides some direction for future development and research.

NEW APPROACHES

Chapter 5 provides detailed, practical information and advice from a seasoned clinician/educator about developing a teaching-skills improvement program. There is information about planning, scheduling, selecting the teachers, designing content and teaching strategies, and overcoming barriers. Chapters 3 and 4 give content and approaches to developing content. Chapter 6 presents practical approaches to evaluating the effectiveness of teaching skills programs. With materials provided in Part II of this book, residency program directors and faculty members can put on their own program for residents.

We advocate that each institution develop its own teaching-skills program or form consortia to do that. There are at least two advantages to “growing your own” rather than hiring a consultant to come in and perform a program annually. First, faculty members will invest themselves and grow professionally through the process of developing a teaching-skills program for residents, so it is a vehicle for faculty development. Second, this investment of faculty time and energy tells the residents that the institution values teaching; therefore, residents are more likely to invest their own time and energy in learning how to teach. Students profit most from the combined efforts of faculty and residents. The development of a teaching-skills program can be a catalyst for raising the level of education throughout the institution.

Innovative approaches to improving residents as teachers include Objective Structured Teaching Examinations (OSTE), standardized students, live simulations, computer simulations, Internet resources and instruction, longitudinal programs throughout the years of residency, and providing teaching programs for medical students, especially during their senior year of medical school.

The Objective Structured Teaching Examination (OSTE) is similar to the Objective Structured Clinical Examination; that is, multiple stations assess practical teaching skills. Standardized students, the standardized family (Pugnaire, Domino, & Alper, 2000), and the standardized ward team can all be useful innovations in instruction and evaluation about teaching and learning. New technologies will provide alternative and complementary ways to improve residents’ teaching skills. Just as there are live operating-room simulations, live or computer-based simulations (e.g., work rounds) can assist in teaching. The World Wide Web can be used to collect evaluations of teaching

performance and channel feedback to residents and for sharing resources nationally, interactive sites, and discussion groups. To date, most teaching-skills programs have been short sessions offered at strategic times in a residency program. Scheduling instructional sessions in a longitudinal manner throughout the years of a program may be more effective.

Providing medical students with teaching-skill instruction before they enter residency may be expedient (Friedland, Zimmerman, & Liscum, 1998; Greenberg & Jewett, 1987), and the latter part of the senior year of medical school affords time for such experiences. In view of residents' duty hours and competing demands, such instruction at an earlier stage could possibly be the norm rather than the exception.

Finally, evaluation research is needed to define more precisely the type of content, time within the residency program, and format of teaching-skills programs. The time has arrived for outcomes of these programs to be evaluated. In chapter 6, DaRosa provides several measures that have not been evaluated yet as outcomes of resident teaching-skills programs. An enhanced student clerkship can be measured by the improved quality of resident rounds, lectures, and feedback. Conducting a focus group with students at the end of the clerkship could yield valuable qualitative data. Another outcome could be increased evidence of new educational initiatives by residents. Such initiatives might be new types of teaching sessions conducted by residents for students or new residents or residents developing their own teaching portfolios. Evidence of an enhanced learning environment is another outcome that could be measured although this is a difficult measuring task. The ultimate outcome, of course, is enhanced patient education. Patients today are more demanding of good communication with doctors and there is more information to communicate about. Therefore, measuring patient education as an outcome of teaching-skills programs is eminently practical. Excuses for failing to evaluate outcomes of resident teaching-skills program should no longer be accepted.

New approaches to develop programs in teaching skills and to design research may be generated from social science theories. During the 1990s, there was renewed interest in the role of social interaction and culture in the thinking process of individuals. For at least 25 years, educational psychologists centered their attention on the cognitive processes of the individual learner, attempting to formulate general principles by which normal human beings think. (Chapter 3 presents a concise view of the current state of this theory, information processing, and teaching techniques grounded in it.) No doubt the paradigm of information processing will continue to generate new concepts and studies. The fields of artificial intelligence, computer science, psychology, and education are all involved in using this paradigm. In the future, the field of neuroscience may eclipse the simulations upon which information processing is based. That is, we may discover exactly how the brain works through biological advances and thus obviate the need for com-

puter simulations about the working of the mind. Currently, much interest exists about the ways in which culture and social interaction bring about learning. Chapter 2, "Social Learning Theory" and chapter 4 on observing and reflecting are manifestations of this renewed interest in sociocultural theories. As mentioned in the preface, science has not been able to develop a complete theory of how the human mind functions. Only fragments of theory or models exist; when we speak of sociocultural theories, we are using the term theory loosely.

At least five different ways of viewing learning can be envisioned from sociocultural perspectives (Salomon & Perkins, 1998). Social mediation of individual learning occurs when one or more persons help an individual to learn. A resident who is tutoring a student in how to present a patient case to an attending physician is such an event. Another way of viewing learning involves several individuals participating in a social process of knowledge construction. If the members of a ward team together make up the ground rules for a rotation so that each person has meaningful input, they can be said to be constructing knowledge. Cultural tools or artifacts can assist an individual in learning. For example, a resident who uses computer software as a consultant in solving a difficult or unusual patient case is using a cultural tool, or using cultural scaffolding to assist her learning. Books and videotapes are similar cultural tools.

A fourth perspective is that the social entity can be a learning entity. Managed care organizations are an example of social entities; that is, teams of physicians and other players are learning new ways to practice medicine. The learning is distributed across the organization; it affects not just one individual, but everyone in the organization. Learning how to learn is yet another method that involves social interaction. Becoming a self-directed learner or a lifelong learner has become a favorite goal in medical education. Learning to use systematic reviews of the literature (Evidence-based Medicine) is one method of becoming a lifelong learner. Finally, learning social content (how to act and react to various persons) is another type of learning.

A sociocultural view looks at learning as a social phenomenon constituted in the experienced, lived-in world. It is situated learning. Through legitimate peripheral participation in a community of practitioners, one learns and becomes a full-fledged member of the community of practice (Lave & Wenger, 1991). Apprenticeship is a form of legitimate peripheral participation. The apprentice participates in a legitimate but peripheral manner. That is, the apprentice has a valid place in the community of practice, but she is on the periphery of the action, not at its center. Such diverse apprenticeships as butcher training, midwives in the Mayan culture, and participation in the Alcoholics Anonymous organization have been studied to develop a sociocultural theory of learning. Residency training has long been considered an apprenticeship. Learning in an apprenticeship is frequently haphazard. Mod-

ern residency programs, through accreditation by the residency review committees, also require structured learning experiences such as lectures, case conferences, and journal clubs. Requiring documentation of procedures is another effort to compensate for deficiencies. Therefore, residency programs may be said to have a hybrid character, part apprenticeship and part formal curriculum. Studies of the residency and medical student apprenticeships, which involve highly skilled work and intellectual effort, may yield rich and practical insights. Could not medical training, which deals with life, death, and quality of life, be instrumental in illuminating the complex ways in which culture and society shape learning?

During the 20th century, the residency apprenticeship became highly efficient in training full-fledged doctors for practice and delivering beginners' training for medical students in the hospital setting. In the ambulatory setting, the apprenticeship model has not yet achieved these same goals efficiently. Studying the training of residents and students in the ambulatory setting as an apprenticeship may prove productive.

Many research questions can be studied that would profit everyone in medical education, and a sample of possible research questions follows.

1. *Outcomes*

- Do students learn more effectively from residents who have successfully completed a resident teaching-skills program than from residents who have not had instruction?
- Is patient care or education improved as a consequence of teaching-skills programs.
- Do residents who improve their teaching become effective faculty teachers?

2. *Program Content*

- Do residents need different teaching skills for ambulatory settings than for hospital settings?
- How can the apprenticeship model become effective for residents and students in the ambulatory setting?
- How should residents of different specialties be instructed?
- How can reflective thinking about teaching be facilitated best?
- How do resident physicians use images in their clinical reasoning?
- What new technologies (e.g., audience response systems) need to be used?

3. *Program Format*

- What is the minimum number of instructional hours needed?
- What is the most effective time schedule for instruction and reinforcement throughout a residency program?
- What is the most effective form of reinforcement?
- Can regional consortia provide effective programs?

SUMMARY

Information, practical materials and ideas to be used in planning, conducting, and evaluating teaching skills programs for residents are included in this book. We advocate that institutions and consortia of institutions “grow” their own programs because doing so will develop the faculty members’ interest and skill in education and will transmit to residents and students a genuine value for teaching and learning. Research is needed to define more precisely the content, timing, and format of the programs. Evaluating the outcomes must become a standard form of evaluation. Finally, we offer some suggestions for future research.

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PART II

Materials for Teaching-Skills Programs

Part II of this book contains practical materials that can be used in teaching skills improvement programs for residents and students. Readers who want to copy the materials should request copyright permission from Springer Publishing Company, which will be granted readily. All the materials in this section have been used a number of times by experienced medical educators and have been revised through feedback from participants to become more effective. The authors of each set of materials are willing to respond to questions or to offer advice if asked by readers. Readers may contact the authors directly or through the Springer Publishing Company.

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SECTION **A**

The Role of the Senior Resident: Team Manager, Leader, and Teacher

JOYCE E. WIPF

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Assistance with development of cases: University of Washington Residency Advisory Committee; and Linda Pinsky, MD, Department of Medicine, University of Washington. *Preparing Residents for their Teaching and Leadership Roles*: Manual for SGIM precourse written by Joyce Wipf, MD, with contributions from Molly Cooke, MD, Department of Medicine, University of California, San Francisco. In this chapter segments on leadership skills are adapted from those written by Dr. Cooke. "Microskills of Teaching" adapted from *The One Minute Preceptor* by Kay Gordon, MA; Barbara Meyer, MD, MPH, Department of Family Medicine, University of Washington; and David Irby, PhD, University of California, San Francisco. "Resident Impairment" segments from American Board of Internal Medicine, *Problem Behaviors in Residents: Recognition and Resolution*, 1992.

INTRODUCTION

Course Background and Evaluation

The stress of the internship is well recognized. Less attention has been given to the difficult transition from internship to senior resident. The resident is expected to be the ward team leader, to run work rounds efficiently, and to manage and teach interns and medical students, interact with the attending physician, and above all, ensure good patient care. Many residents request more formal training on how to be effective teachers. They often feel ill-prepared to supervise a team, which requires communication skills to clarify goals, expectations, and performance. Practical education and advance problem-solving for new senior residents better prepares them to handle the unique pressures of ward team leader.

Previously reported interventions to improve resident teaching skills are time-intensive for both faculty and residents, and therefore not easily implemented by many programs.

- In this course, we describe a practical 6-hour course based upon teaching courses developed at our institutions, integrating the resident role as a teacher with responsibilities as a team manager. (See course schedule for two sample 3–hours sessions.)

- The initial portion of the manual (pp. 130–132) is devoted to course issues for faculty, and the remainder is meant to be given to residents in a teaching course. The cases and exercises allow residents to discuss their teaching and leadership roles and develop potential solutions to typical problems they will encounter.

- The course has received overwhelmingly positive evaluations by residents. Attendance is excellent, with over 90% of residents attending all sessions. Most residents welcome the opportunity to practice teaching skills, and those residents uncomfortable with role-play still enjoy giving “observer” reactions.

- Analysis of data from a 6-year cohort of University of Washington resident teaching evaluations, 3 years before and 3 years after initiation of the course, shows a statistically significant increase after the course was initiated in mean evaluation scores in all nine areas of the clinical teaching assessment form developed by David Irby (Wipf, Orlander, & Anderson, 1999).

SAMPLE TEACHING COURSE SCHEDULE

SESSION I: (3 hours)

Managing a Ward Team
Leadership Skills
Work Rounds: Goals, teaching, time management
Supervising patient care
Attending Interactions
Teaching Medical Students

SESSION II: (3 hours)

Resident Role as Teacher:
Teaching students
Feedback and evaluation
Criteria for grading
Practice microskills of teaching

Problems for Residents:
Stress and depression
Substance abuse

*Each 3-h.r session is complemented by a manual of sample cases that residents can later review on their own

Course Description

1. Practical course for new 2nd year and 3rd year residents, integrating the resident's role as a teacher and as a ward team leader.
2. To improve resident communication with other team members, including the attending physician, and increase resident ability to clarify expectations, goals and evaluate performance.
3. Interactive format with emphasis on generating constructive discussions and developing potential solutions, recognizing that optimal approaches and management styles vary among residents.
4. Practice teaching skills in small groups with supportive environment.
5. Course length and timing compatible with training program's ability to cover residents from other service responsibilities.

Development of a Resident Teaching-Skills Course

There are several factors to consider in organizing a resident teaching course, including resident availability, course content, number and length of sessions, timing of the course, and appropriate instructors. All residents are sent a personal invitation letter describing the course. Third-year residents are specifically asked to participate to enhance discussion and describe their strategies for management.

Key Factors in Developing a Resident Teaching Course

1. *What is optimal timing for this course?*

We chose June or July, since residents new to their role appear most able to modify their teaching and leadership styles. Interns may benefit from the course, although they think about issues from the intern's point of view.

2. *What topics should be covered?*

We focus on teaching and leadership skills. Also included are recognition and management of coping problems such as stress, depression, substance abuse.

3. *How many sessions and what length of sessions are needed?*

Initially we chose three 2-hour sessions, held weekly, and have more recently changed to two 3-hour sessions one week apart for scheduling convenience. Follow-up discussions during the year are also very helpful, after residents have encountered some problem situations.

4. *Who are appropriate instructors?*

We select faculty known to be excellent teachers. Recent chief residents are helpful for practical approaches to work rounds. The program director and a psychiatrist cover resident problems, and the training program's response when difficulties are identified. Actual cases and recreated videotape vignettes stimulate discussions.

5. *How will ward duties be covered while residents attend the course?*

We hold sessions at a time when residents usually have conferences. All residents are freed from service duties to attend. Coverage of hospital services is done by chief residents, attendings, and fellows supervising interns.

6. *Where should the sessions be held?*

We used non-classroom sites for an informal environment and interactive format without formal lectures. Refreshments are provided by the program.

7. *How will the course be evaluated?*

We ask the residents to complete an evaluation form after each session, which is helpful in identifying the content and speakers as well as suggestions for future courses. In addition to the UW study of course impact, other programs have also shown course benefit (see references 8-10).

TEACHING COURSE MANUAL FOR RESIDENTS

MANAGEMENT OF A TEAM

Resident as Manager of a Team

Case 1. You are post-call in August and rounding with your team. One of your interns casually updates you about a new admit who had “a little chest pain, no big deal.” You probe further and hear that it lasted a few hours and was relieved by 2 or 3 doses of Valium for anxiety and diaphoresis. When asked if she tried to call you, the intern says, “Well, I didn’t want to bother you.”

- What is your initial reaction?
- How do you clarify expectations with interns?
- How do you balance need to supervise with intern autonomy?

Management of Excessive Intern Independence

The main problem with independence in this case is the resultant poor patient care. Focus on the lack of an adequate differential diagnosis as a teaching theme: “*What other diagnoses do we need to consider?*” After problem-solving the specific case, you may point out, “*I didn’t clarify when I expect to be called. Let’s go through that now.*” If you have an overconfident intern who feels she can manage without you, you will need to discuss further your need to supervise and negotiate her need for independence. Overconfidence does not eliminate your supervisory role.

The Transition from Intern to Senior Resident:

Managerial skills are important for running a cooperative team with a sense of collegiality, for facilitating effective work rounds and attending rounds, and for enhancing patient care and teaching.

- You establish your leadership by *planning and coordinating* activities, such as format for rounds, patient care, and days off for team members.
- A well-functioning team occurs as a result of *clear communication* of goals and expectations, ongoing interactive feedback, and your leadership.

Interns and students consider residents the source of most of their learning so do not underestimate the important role you have in teaching by example and “microteaching” on work rounds.

- Make work rounds a learning experience by using “teachable moments” and make them more efficient by clearly defining problems with a plan for every patient.
- You have a major role during attending rounds: *directing* the attending to discuss problems unsolved on work rounds, *selecting* which new patients you want to discuss or visit at bedside as a team, and *keeping the attending focused* on teaching content relevant to your service.

Case 2. You arrive at 8 a.m. to the team room your first day of the month. The medical students are reviewing the weekend football scores; one intern whom you’ve never met is getting sign-out by phone from the on-call team, and the other intern hasn’t arrived yet.

- What do you include in introductions to your team members?
- What is your response to the late intern who hasn’t pre-rounded?
- What ground rules do you have? How do you establish them?

Fundamentals of Management

Management Style

A false dichotomy may be created between a strong leadership style (authoritarian, autocratic, hard-nose, tough) and participative management (democratic, humanistic, nice). Effective management is not exclusively one or the other. It requires *agreed-upon goals*, *regular comparison of goals and behavior*, and *prompt comment* when behavior meets, exceeds, or falls short of agreed-upon goals.

One-Minute Manager Techniques (Blanchard, Johnson, 1983; Brown, 1987)

1. Set goals (may be helpful to put briefly in writing)
 - (a) Your personal goals and practical behaviors to achieve them

Major categories of goals

 - provision of excellent patient care
 - personal learning needs
 - teaching for the team
 - supervision and evaluation of team members
 - support of team morale, promote team identity, unity
 - (b) Establish team goals for the month (individually or as a group)

Benefits of discussion of goals

 - shows your interest in team members
 - demonstrated leadership
 - clarifies expectations

- forms the basis for evaluation
- (c) It is crucial to convert the abstract ("*Learn about your patient's problems*") into observable behavioral terms ("*Read in Harrison's about your patient's central problem and be able to discuss it with the team and attending*").
- 2. Catch people doing something right
 - (a) Immediate praise after observing behavior commensurate with goals will reinforce goals and expectations and helps maintain behavior.
 - (b) *Do not wait for perfect behavior* to give positive feedback, but give praise as you observe any step in the right direction.
- 3. Give negative feedback immediately
 - (a) Don't wait for the end of the month to let a team member know all of the things they have been doing wrong; *feedback is ongoing*.
 - (b) A single criticism is more easily received than several at once.
 - (c) Correct the behavior only; do not belittle the person.
 - (d) Don't sandwich negative feedback between too many accolades or the person may not hear the reprimand.

Supervision of Team Members

A common difficulty at the beginning of the 2nd residency year is moving out of the role of the intern and establishing a strategy of supervision that is sufficiently close to ensure good patient care, while allowing the intern the opportunity to function independently up to the level of his or her ability and leaving time for the resident to read and teach.

- The type of supervision and time required will not be constant throughout the month. At the start of the month after you discuss expectations and goals, supervision needs to be close to ensure that team members actually understand the expectations and how to meet them. Supervision allows you to evaluate specific aspects of their performance and give constructive feedback. You can assure interns that your supervision will become less intensive as you see them carrying out their work goals and observe their conscientious and thorough care of patients.
- *There needs to be enough supervision, however, that you know when problems are developing.*
- *Interns also need to know they can ask you for help and are not expected to flounder about seeking their own solutions.*
- The problem in case 1 of excessive intern independence might have been avoided if the intern knew that you were available and expected to be called for significant symptoms or change in status to review diagnosis, work-up and treatment plan. Since residents have differing

supervisory styles, interns will not know your preferences unless explicitly told.

Evolving Resident Priorities During a Ward Month

<i>Major Priorities at the Beginning</i>	<i>Major Priorities by the End</i>
Confirmation of findings	Prepared talks
Sign-out rounds	Sessions with students
Chart review	Library
Review with RNs	Computer search

Constant Throughout the Month

Styles of Leadership

1. You may choose different leadership styles depending upon the situation, the importance of the task, and the interpersonal needs of your interns and students. To determine the most effective style, you need to know the willingness and ability (readiness) of your learner to accomplish the task.
2. Situational styles of leadership (Hersey & Blanchard, 1988).

<i>Levels of Learner Readiness</i>	<i>Leadership Style</i>
Low (unable and unwilling or insecure)	Telling
Low-Moderate (unable but willing or confident)	Selling
Moderate-High (able but unwilling or insecure)	Participating
High (able/competent and willing/confident)	Delegating

Summary of resident responsibility for orientation

1. Clearly state expectations.
2. Ask needs and goals of interns and students:
 - Solicit information about learning needs to plan teaching.
3. Establish a supportive environment and positive learning climate:
 - Treat them as colleagues.
 - Minimize one-upmanship.
4. Clarify days off for team members.
5. Coordinate your expectations with the attending:
 - *At the start*, plan meeting with the attending for 10 days into the rotation to review how things are going; this gives you a chance to

review problems or changes you would like to make (as well as to hear about any issues from your attending's point of view).

- Planning a meeting before you begin is easier than telling your attending you want to meet because the month isn't going well.

SUPERVISING PATIENT CARE

Work Rounds

Case 1. You are just starting a new ward month. The first morning of work rounds you discover that your predecessor has not required the team to make work rounds together. Instead, the interns have been seeing their patients independently, each with his own student, and reporting back to the resident at 9:00. The problem patients were then reviewed by the resident. The interns tell you this is much more efficient than wasting a lot of time listening to other people presenting patients; they want to continue this way.

- How do you feel about this system of patient care?
- What are the purposes of work rounds and how do you run them?
- How would you effect a change in this pattern?

You should discuss your goals of work rounds with the intern, including:

1. Establish team identity
2. Seeing patients together
 - a) to exchange information on patients with direct patient contact;
 - b) to identify new or unresolved patient issues (at the bedside, you may observe problems not see by the intern);
 - c) to reinforce group teaching and expand your opportunity to teach; student and interns learn from their patients on the team; and
 - d) because patients expect to be seen on rounds, and nearly all look forward to it
3. Working out the plan for the day on each patient. Upon completion of work rounds, the intern has a list of duties for each patient and the plan is clear.
4. Demonstrating leadership that will result in efficient work rounds and verify good patient care and yet achieve teaching. Presentations must be well-organized and concise.

Case 2. You are the senior resident on VA wards, with a busy service of 19 patients and 6 in the ICU. Despite trying to rush through all the patients on work rounds, you get bogged down and never get to several

patients as a team. When you arrive late to morning report, you are criticized.

- How can you improve efficiency?
- What is the medical student role on work rounds?

<i>Causes of inefficient work rounds:</i>	<i>Suggestions:</i>
<ul style="list-style-type: none"> • <i>Discussions too lengthy on 1 or 2 patients</i> 	<ul style="list-style-type: none"> • ICU rounds <ul style="list-style-type: none"> –take advantage of time to make sure specific questions are answered, rather than general discussions; R-2 monitor time and get the attending focused and to the bedside before actual plans are made –make sure specific recommendations are given to intern –R-2 clarify ahead of time how much time can be spent in ICUs
<ul style="list-style-type: none"> • <i>Interns unsure of plan for patients</i> 	<ul style="list-style-type: none"> • R-2s decide quickly on each patient if issues are clear. If so, outline the plan; If not, R-2 look into later; team bring issues up to attending
<ul style="list-style-type: none"> • <i>Poor presentations or lengthy reviews of patients by interns or students</i> 	<ul style="list-style-type: none"> • Review with team how to give brief presentations <ul style="list-style-type: none"> –problem lists to help focus team –if participating, chief resident doesn't expect detailed presentation; CR can help with problem-solving and make sure rounds work for team
<ul style="list-style-type: none"> • <i>Review amount of time devoting to teaching</i> 	<ul style="list-style-type: none"> • Avoid lecture unless there are few patients <ul style="list-style-type: none"> –1 to 2 brief teaching points; realize that you are teaching by example and giving practical point during “teachable moments”
<ul style="list-style-type: none"> • <i>What is team doing with each patient</i> 	<ul style="list-style-type: none"> • R-2 decide what team needs to do at bedside. <i>Example:</i> in a patient with cellulitis, key is careful look at skin, and clarify Rx, not daily chest exam by group on rounds <ul style="list-style-type: none"> –focus exams, “eyeball” all patients

Budget time so all patients are seen and plans developed. This is critical for timely patient care and prompt tests and consultations. If problems are unsolved, move on and do more work on the issue later or discuss in attending rounds.

How Teachers Encourage Learning

It is easy to feel intimidated by teaching and to believe that effective teachers have a natural gift, formal training, extensive knowledge base, or a combination of all three. However, in several multivariate analyses, the *single most important attribute of the effective teacher is enthusiasm for teaching*. Anyone who really wants to can learn to teach well. Provided the requisite enthusiasm is present, five teaching behaviors promote learning:

1. *Provide clarity and organization*
 - Teaching is most effective if it is explicitly focused and clearly explains what is essential to learn and why.
 - Ask yourself, “What can I do in the clinical setting to help team members identify essential learning goals? How can I focus on teaching opportunities on work rounds that will keep all members of the team interested, that will be appropriate to the time constraints, and that will promote learning by all members?”
2. *Generate a positive learning climate*
 - Initial success, feedback.
 - Teacher accessible and personally involved.
 - Support for risk-taking.
 - Challenge and freedom from boredom.
 - Ask yourself: “What conditions work against learning? What can I do to encourage inquisitiveness and open-minded discussions, minimizing rigidity and intellectual intimidation on my team?”
3. *Model the desired skills*
 - Learning is enhanced if the learner has a model performance to watch, systematically analyze and imitate: You will be the most important model for your team during your month together.
 - To promote modeling, tell your plan, demonstrate and label the components of your thought process, provide reasons for your actions, and allow for “mental practice” by soliciting management strategies from team members before giving your own.
 - Ask yourself, “What are the important concepts/skills that team members learn from watching me? Am I modeling any negative attitudes or poor practice habits?”
4. *Offer frequent opportunities for active appropriate practice*
 - Procedure supervision, rehearsal of presentations.

- Questions can promote efficiency in assessing and using one's knowledge base, particularly if question reasoning ("What makes you think the patient is septic?")
5. *Give frequent, specific behavioral feedback*
- Accuracy in learning is increased when the learner receives information on what is being done correctly or incorrectly.

Case 3. You are rounding post-call on a new ward patient admitted the night before with scant hemoptysis. Bronchoscopy is scheduled for later in the morning. The nurse tells you that the patient just coughed up a cupful of bright red blood and is diaphoretic with BP of 90/50.

- What is your teaching opportunity?
- How do you combine teaching with patient care?

Discovery of an Unexpectedly Ill Patient on Work Rounds

In one or two sentences, you can ask the interns what the problems are and what they want to do with the patient. Then you can proceed quickly with specific orders, demonstrating what the emergent work-up should be. An emergency is *not* the time to discuss a subject at length, but you can think about your differential and evaluation strategy out loud. You are teaching by modeling behavior.

Case 4. On your first day with a new team on work rounds, one of the interns wants to skip a patient with terminal pancreatic cancer. The nurse says the family has been hovering and wondering how much longer the patient will hang on. When you ask "Why don't you round on this patient as a group," the intern says, "Oh, our last resident didn't want to go in and stand by his bedside every day. I just see him alone later."

- What is your response and how do you address family needs?
- Role of group rounds in terminally or critically ill patients

<i>Inappropriate responses</i>	<i>Suggestions</i>
<ul style="list-style-type: none"> • "You're giving poor patient care." • "You have an attitudinal problem." 	<ul style="list-style-type: none"> • R-2 realizes intern has learned by the example of the previous resident. • "Palliative care still requires monitoring & team assessment." • Entire team learns to evaluate comfort level and pain Rx issues.

<i>Inappropriate responses</i>	<i>Suggestions</i>
<ul style="list-style-type: none"> • “Okay, you see him later.” • “We can let the nurses deal with the family.” • DNAR discussion on work rounds 	<ul style="list-style-type: none"> • Resident can model approaches to family contact and providing updates. • Note that patients may feel team is ignoring them or doesn’t want to see them. • DNAR issues take longer than rounds to solve. Unless it’s a true emergency or you are making teaching points, save for attending rounds.

Case 5. The cardiology fellow is rounding with you on a CCU patient who ruled in for AMI 2 days ago, and is on Heparin and nitroglycerin drips. As you are commenting on new ischemic ECG changes, the intern reports that he had stopped the Heparin last PM for a high PTT. The cardiology fellow yells at the intern, “You did what? No wonder she’s reinfarcting!”

- Do you support the intern or agree with the consultant?
- What criticism should be given with the team present?

Is the accusation by the fellow justified? If you agree, then your next step is to decide whether to expand upon the mistake in public or review individually later.

- Responding appropriately to errors is difficult. Often we let them go by rather than confront an individual, figuring it was a “one-time problem.”
- But it is *important to address mistakes*: We all want to know about our mistakes so that we can correct them. Negative feedback is best received when given about a specific action: *approach problems constructively*. When a significant error in judgement occurs, the resident must decide if it is part of a pattern suggesting incompetence or indeed an isolated mistake.
- Serious concerns about performance must be reviewed with the individual and *documented in written evaluations*.

Team Problems

Case 1. In your R-2 year on inpatient wards, you are reviewing patients with interns prior to cross cover sign-out. You are told all is well. You come in the next morning on the interns’ day off, and find that one

intern had left a patient with acute upper GI bleed to be managed by the GI consultant and had not notified the covering team. Upon questioning, the intern states that the patient was already in the ICU, had blood in the house, and the nurses could take care of IV access.

- Your comments about patient responsibility in a private hospital?
- What is appropriate sign-out to cross cover team?
- Adequate information about when interns should call you

Discuss with the intern his responsibility for patient care, even at a private hospital. You also are responsible for patients, and he failed to tell you about the problem when it occurred.

- Many interns do not know how to give or receive appropriate sign-out and to do it for each patient. Ask them to call you with updates before they leave.
- In your supervisory role, you should flip through orders and charts for completeness periodically, no matter how thorough your interns are.

Case 2. It is 9 p.m. on your call night, and your intern calls with a sick ward patient with TTP, status-post her first plasmapheresis earlier in the day. The intern has evaluated the patient carefully and diagnoses acute pulmonary edema; she wants to move the patient to the ICU and plan for probable intubation. You concur and are pleased with the thorough work-up and well-organized plan. You begin to discuss intubation procedures and anesthesia.

- How do you give positive feedback?
- Remember to reinforce what an intern or student is doing right

Do it often and promptly with specifics—not just “great job,” but review specific behavior.

- “You very quickly identified the problem of dyspnea and did a thorough evaluation. You recognized how sick the patient was and I’m really glad you called me right away.”

Case 3. The month appears to be going smoothly, until you hear from another senior resident that one of your interns is in the hospital until nearly 9:00 p.m. every night. He does have several complicated patients.

- Is this a problem?
- Is this *your* problem?

Why is this intern working so late? Does he really have so much work, or is he disorganized? *Your role here is to clarify the problem.* Does he know what to do with his patients or is he wasting a lot of time trying to work through problems instead of consulting you?

- Ask what time he is signing out. Many new patient problems arise in early evening that could be handled by the covering team.
- Look at progress notes. Should you be helping more?
- Although you want your interns to be conscientious, you should establish that interns leave at a reasonable time (what time is reasonable?) in order to function well on call days and have a bit of personal time.
- What happens on clinic days? Does the intern return to the wards after clinic? You should notify the attending when team members have clinic responsibilities. Attending rounds may need to be modified to allow interns to complete their ward duties before clinic.

ATTENDING INTERACTIONS

Attending Rounds

Case 1. You are the senior resident in the 2nd week of a ward rotation, with a general internal medicine attending who is very nice, enthusiastic, and brings pastries and juice to the team in the morning after call. Yet attending rounds are not very rewarding. Two days ago post-call attending rounds began as usual with a “card-flip” review of patients. Your new patients included a person who was 2 days s/p cerebellar stroke, and another with hyponatremia and lung cancer. Your attending asked what the team would like to do in rounds, and one of the medical students wanted to talk about hyponatremia, a topic discussed in chief-of-medicine rounds a few weeks earlier. Thus attending rounds were spent with a lecture on the differential diagnosis of hyponatremia, directed toward the students while the interns worked on their progress notes. You did not get to the bedside to see any patients as a team. By the next session of attending rounds, the patient with the cerebellar stroke had been discharged without being examined by the residents and attending together.

- What are the problems with these attending rounds?
- Are there ways to improve the situation?
- As senior resident, what is your responsibility for the content and structure of attending rounds?

Positive Aspects of Rounds in the Above Case Include:

1. Upbeat attending attitude; supportive environment.
2. Attending motivated to teach: the attending tried to have educational focus during rounds and asked for team input into the teaching content.
3. The attending in this case confided to the resident later that hyponatremia was not his favorite topic and regretted not examining the patient's cerebellar findings during rounds (self-reflection is a marker of good teachers).

Some Problems With Above Rounds:

1. Lack of bedside teaching, even with patients with physical findings.
2. Card-flipping not very interesting or helpful to team.
3. Content of teaching rounds determined by the student without input from other team members.
4. Teaching efforts directed at the level of the students; need to stimulate discussion with all of team members.
5. Lengthy extemporaneous lecture-style discussion.

Resident Responsibility for Attending Rounds:

1. Resident role should be active, not passive, in attending rounds.
 - Work together with the attending to plan content and to decide which patients to see as a team.
 - Each attending has strengths and areas of special knowledge and skill. Try to utilize those and have the team benefit from these areas of expertise.
2. At start of month, you should review your goals with the attending. After one or two sessions of attending rounds to see how it goes, suggest changes for future rounds if needed.
 - The first day of a rotation or when new team members join the service, ask your attending to spend a bit of time having each team member talk about themselves and their interests (getting to know each other more as people and not just as co-workers helps teams to work together more collegially and have more fun).
3. Suggest bedside rounds; focus on enhancing skills in physical examination and interviewing.
4. Try a variety of formats during rounds to maintain interest of the team.

Approaches to Specific Problems

1. Bedside teaching:
 - Try to visit at least some of the newly admitted patients during attending rounds.

- Talk with the attending on call to review briefly the admissions and patients that would be interesting to see together on rounds the next day.
 - Ask your attending about specific skill areas in physical examination that he or she would like to cover during the rotation. (Review this outside of rounds at the start of the month.)
 - Avoid standing around at the bedside; get the team involved, ask questions.
 - Ask the attending to cover the following in several sessions:
 - a) Interviewing techniques (focused questions to clarify confusing history or picture).
 - b) Various physical findings: aspects of neurologic examination, ascites, splenomegaly, lung exam, etc. (You may want to bring in articles on rational clinical exam to cover the evidence-base for various maneuvers.)
 - c) What is valuable in a periodic health exam?
2. Card-flipping:
- If the attending wants to hear about all cases, ask if that could be done with you separately outside of rounds.
 - *Limit follow-up discussions to problematic cases* where there are unresolved issues: some attendings use card-flipping for teaching points in a useful way.
 - If you think the attending is micromanaging patients, try to assess whether this is due to insecurity, lack of trust in you, or simply to get info for attending progress notes due to documentation requirements.
3. Lectures:
- Communicate privately to attending that you want interactive rounds.
 - When you ask attending to teach, *be specific about the kind of teaching*: many attendings and residents assume teaching means “you tell us something” but these are often not interactive lectures and not helpful.
 - Bring examples to discuss or ask attending to present vignettes. Emphasis is on using them as puzzles to solve and *getting team involved*.
 - Lengthy extemporaneous discussions in response to a question often lack data and may not be focused. When questions come up, it may be preferable to have the attending or senior resident briefly answer a question, or have a 5-minute team discussion; then plan to return to the topic in greater depth with preparation including articles or supporting literature in a future rounds session.
 - Ask attending to do things such as review peripheral blood smears or gram stains of patients on the team (many labs have teaching microscopes and also have sets of teaching case slides).
4. Encourage *give-and-take* feedback with attending.
5. Realize that you will utilize consultants some months more than others.

Features of Excellent Attendings

- Enthusiastic and interested in the team patient
- Flexible depending upon team work load, acuity issues
- Knowledgeable
- Helpful in managing difficult patients and consultant problems
- Actively involves the learners; entire team participates in discussions
- Attending rounds balanced:
 - include bedside teaching; emphasize teaching points and problem-solving
 - focus on education, not a rehash of work rounds or just card-flip
- Recognizes and appreciates resident's ability as teacher: in discussions sees what the resident has to add (often resident's knowledge of latest Rx, studies, etc., supersedes that of attending)
- Avoids long presentations by students or interns
- Works with students outside of rounds; students' cases discussed by team if interesting but discussion should be at housestaff level
- Realizes resident role as team leader/manager
- Gives and receives feedback easily

Case 2. This month on the wards you have a terrific attending. He gives you plenty of autonomy, yet is helpful in difficult management issues and interpretation of the literature in relation to patent problems on the team. Most of teaching rounds are spent going over physical findings with patients, and all of the team enjoys attending rounds. You don't want to feel ungrateful, yet with such a super attending you feel a bit intimidated and inadequate in your own attempts to teach.

- Do you ever feel like you're being overshadowed by the attending?
- How do you establish yourself as a teacher?

Negotiation Skills

Case 1. You admit a previously asymptomatic pt with HIV infection on no medications, now with near-syncope while at the market. He has a platelet count of 6K, WBC 4K, and hematocrit 42%. You are quite sure he has HIV-related thrombocytopenia and want to start therapy; your attending is a hematologist and wants to do a bone marrow.

- How do you approach differences in work-up or management?
- How forcefully do you argue or assert your opinion?

There is a trade-off between getting what you want and getting along with people. The idea of "principled negotiation" discussed in *Getting to Yes*

(Fisher, Ury, & Patton, 1991) involves arguing issues on their merits and not haggling over positions. One should separate people from the problem, determine objective criteria, and review options to come to a mutually agreeable resolution.

In this particular case, the difference of opinion is the extent of work-up needed before concluding that no other cause of thrombocytopenia exists. Bone marrow is a low-risk procedure, and this conflict is not about a critical issue.

- Ask your attending to clarify the likelihood of each cause being ruled out; determine whether the attending has information of which you are unaware.
- You can then present your concern about unnecessary procedures and cost. Focus on criteria for bone marrow and not on who is right or wrong.
- We all will have cases of disagreement with other physicians about appropriate work-ups or any aspects of patient management; often there is *no single correct approach*.

Case 2. You have an elderly female pt admitted with melena for observation. She has a distant hx of bleeding ulcer and gastric surgery >15 yrs ago. Her primary doctor is very concerned that the pt not be subjected to a lot of unnecessary procedures: "I really think she will be fine. Just put her in a quiet ward room." Two hours after your initial evaluation, the pt has a BP of 84/50, pulse 112, and two further melanotic stools. You would like to transfer her to the ICU and plan for endoscopy emergently, but her primary attending is reluctant and feels sure the patient will stop bleeding on her own.

- What is your response?
- How do you communicate your differences when you feel strongly about a patient management issue?

Unlike case 1, *here you feel you are absolutely correct*: to acquiesce to your attending could have grave consequences for the patient. Communicate your interest in the patient's welfare and the risks of ongoing hypotension and active bleeding.

- As with any opinion from a consultant that you do not understand, say, "Tell me your reasons for this approach or diagnosis so I can learn from it."
- Communicate your discomfort in providing care that you consider incomplete.

- Avoid personal attacks or premature conclusions about the quality of care when voicing a difference of opinion.

Note: In case 1, the attending apologized the next day and admitted an error in initial assessment of the patient's status and level of stability. Realizing that everyone makes mistakes can also contribute to a positive learning experience and lead to a valuable discussion about why mistakes occur and how we respond to our own mistakes.

Case 3. You find yourself reluctant to ask for your 4 days off each month. Your attending is enthusiastic about working with the team and is a strong teacher. On the first day of the rotation, you were relieved when the attending talked about days off as well as marking clinic days on the calendar. But you became dismayed when she said, "Here are your 4 days off that I will cover for you." She determined which days the interns had off as well.

- How do you respond?
- Who should determine when team members have days off?

Many residents feel uncomfortable asking for free time, but it is needed (and required)

- At the start of each month, *review all aspects of month structure, expectations, and goals.*
- If the attending forgets to talk about days off, be sure to bring it up early in the rotation so that there potential days off are not missed, resulting in a scramble late in the month.
- When you are unhappy about a situation, as here when you are not given any control of the days off schedule, it is important to talk directly to the attending. You want to avoid being a martyr, harboring resentment, or complaining about it to others without taking action.
- Try to point out the needs for interns and residents to be involved in planning free time:
 - Free time is most enjoyable when it is compatible with significant other's or partner's schedule.
 - Since residents and interns have little control over their rotation schedules and workloads, it is especially important that they have active involvement in planning personal activities.
 - Note: Attendings may have some restrictions also on when they can cover.
- Since residents cover for interns, the residents should help schedule intern days off, keeping in mind other responsibilities such as continuity clinic.

Work Rounds With the Attending

Case 1. Your attending likes to do work rounds post-call with the team. But the lengthy patient presentations and subsequent attending teaching seem to take forever, and many of the follow-up patients are not seen.

- How do you feel about the attending participating in work rounds?
- How does your own role change with the attending present, and what are ways to retain control of work rounds?

(*Note:* Many attendings now want to make work rounds daily with residents in order to facilitate their own note-writing and documentation requirements. However, the RRC accreditation guidelines require that work rounds be conducted by residents. When the attending is present, usually the resident's role is diminished in directing work rounds and leading patient care. Some programs have solved this by having the attending round only post-call days with the team and reducing length of attending rounds later in the post-call day.)

Advantages of Attending on Work Rounds:

- Attending hears about all new patients.
- More bedside teaching by attending.
- Attending can observe team interactions with patients.
- Plan for patients can be clarified earlier in the day.

Disadvantages of Attending on Work Rounds (As Evident in This Case):

- Rounds are too lengthy with long presentations.
- Resident may miss morning report unless finished on time.
- Too much teaching by attending.
- Not all patients are seen.

Solutions:

- Try one or two x/m rounding with attending post-call, but not every post-call day.
- Set time limits with the attending.
- If attending does work rounds, formal attending rounds can be abbreviated.
- Brief case presentations.
- Resident keep the attending moving and be sure all follow-up pts are seen.
- *Clearly state the time of morning report and that you must attend.*

Summary: Working Well With Your Attending

1. Recognize that you are the team “manager”
 - (a) *First day of month:*
 - Outline with attending (not necessarily all in rounds) your goals, skills you want to improve, and your preferences for content of rounds.
 - Ask about management of students; clarify types of presentations so you can practice brief presentations with students outside of rounds.
 - Clarify what attending wants to be called for.
 - Try to set days off and coverage.
 - (b) *The attending looks to you for guidance. Thus, at the start of each attending round:*
 - Note what the attending wants to cover, so you can be sure patient issues are covered and time is reserved for teaching.
 - Tell attending which patients you want to see at bedside.
 - Post-call: Inform the attending which patients have management issues and which are to be seen as a team.
 - Better to focus on a few interesting or debatable issues rather than covering all patients.
2. Post-call rounds: If you would like the attending to participate, communicate time constraints of conferences like morning report and your need to see follow-up patients also.
3. Learn from the skills of your individual attending physician
 - Realize that not all attendings are the same, nor should they be.
 - In a given month, you will learn different things. Take advantage of your attending’s interests and skills to better learn that area.
4. Ask your attending for feedback on your own performance:
 - Take advantage of that time to also give the attending feedback and communicate changes you think would help the team.

ATTENDINGS WANT TO BE A POSITIVE PART OF THE TEAM,
AND APPRECIATE FEEDBACK ABOUT HOW IT’S GOING

RESIDENT AS TEACHER

I desire no epitaph—no hurry about it, I may say—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.

—Sir William Osler

Resident Has a Key Role as Teacher

1. Resident provides at least 50–75% of ward teaching for interns and students.
2. Resident teaching opportunities
 - Teach by example: Serve as a role-model for patient interactions, problem-solving, attitude, enthusiasm, interest in teaching and learning.
 - “Microteaching”
 - Typical teaching by residents with practical rules: Use on admission work-ups, work rounds, chart reviews, new problem situations.
 - Short lectures

Case 1. You would like to emphasize physical diagnosis skills, and so have planned a session with your 3rd year medical students to visit patients. In one session, you will be seeing three patients with interesting findings: one with a diastolic murmur, one with ascites, and a third with cellulitis and lymphangitic streaks.

- How do you present the patients?
- How do you keep all members interested while one examines the patient?
- Can you challenge the students and yet keep the learning climate supportive?

Determinants of Learning

1. *Learning climate*

Favorable learning environment

enthusiastic teacher,
time set aside for teaching,
learners treated with respect, not intimidated,
interaction by learners encouraged (supportive atmosphere),
teacher is not seen as all-knowing,
teacher is a good role-model.

Nonfacilitating teaching behaviors

insufficient wait-time before answering yourself,
rapid reward,
answer programmed or implied,
nonspecific feedback,
unfavorable learning climate: demeaning to admit ignorance,
low-level questions: single correct answer or yes-no type,
request for fact or information.

2. Oral Questioning: Why We Do It

Enhanced Learning:

- (a). Recall what has been learned.
- (b). Think critically.
- (c). See applications of concepts.

Problem Solving:

- (d). Become actively involved in learning.
- (e). Learn more independently.
- (f). Become problem solvers.

Improved Attitudes:

- (g). Become more interested in the material.
- (h). Develop positive, healthy self concepts.
- (i). Develop appropriate attitudes toward work and patient care.
- (j). Become motivated to take on greater responsibility.

Why We Don't Ask Questions.

- (a). No time—we need to make it a priority.
- (b). Can't ask in front of patients —use discretion; can ask after patient encounter.
- (c). Student performs skill correctly —does student know *why* skill is performed that way?
- (d). Too much pressure in clinical setting —use the teachable moment.
- (e). Poor questioning skills —can improve.

3. Classification of Questions: Bloom's Taxonomy: A forty year retrospective. 1994. Ed. Lorin W. Anderson & Lauren A. Sosniak, Chicago, University of Chicago Press.

(a) Lower order questions

Recall: remembering knowledge previously encountered.

list, describe, identify, label, define, what, when, who

(b) Intermediate level questions

Comprehension: demonstrate understanding of material being communicated, without necessarily relating it to other material; requires reorganization or interpretation.

explain, paraphrase, match, interpret, how, why

Application: use information for problem-solving; usually a single correct answer.

construct, draw, predict, apply, employ, how

(c) Higher order questions

(a) Analysis: breaking down into parts so that organization of idea is clear; think critically; see if conclusion is supported by evidence.

classify, distinguish, compare, contrast, categorize, break-down

Example:

“How do these examination maneuvers for ascites differ? Which are the most reliable in predicting ascites?”

(b) Synthesis; putting elements into a whole; creating an original plan or proposal; no single correct answer.
combine, relate, integrate, put together, develop

Example:

“Could you explain how you think the patient’s mental status is related to this medical problem?”

(c) Evaluation: judging the value of material and methods for given purpose; offering an opinion.
judge, debate, defend, rate, assess

Example:

“Why do you think test A is more useful than test B?”

4. Open-ended questioning

Strive for open-ended questions; intermediate or higher order as much as possible; questions with no right answer, judgment issues.

Examples:

“What do you think is going on?”

“How do you feel about this?”

“Do you think the patient should be DNAR (no-code) status?”

5. Approach to teaching a small group

(a) Encourage entire group involvement by discussions, associations, and reasoning rather than “pimping.”

(b) Getting involvement of members at various learning levels.

- At the start, encourage interaction and avoid talking at the group.
- Try to build enthusiasm and an exciting discussion.
- Attention (and later retention of critical teaching points) by learners is usually better if the discussion is directed toward a specific case. Here you can use your team patients as examples.
- Avoid a lecture-style of you talking at others who are listening passively.

(c) Leading a discussion with a small group include:

- Brief introduction to your discussion, promote comfortable interaction:
“I want to review this work-up because. . . .”
- Review content of the case, discuss objectives.
“How should we approach this problem;” “What are the main issues?”

- Explore various ideas and group differences (avoid premature agreement).
 - “Would anyone do another test?”; “Can you explain that further?”; “Do you agree with that?”*
 - Discuss consequences of each idea.
 - “What would happen if we did that?”; “Why would that occur?”*
 - Compare ideas to each other.
 - “How is your solution different?”*
 - Prioritize alternatives and build consensus.
 - “What is the best approach?”; “Why would we do it this way?”*
- Make conclusions, come to group agreement.
 - “What are the main points of the case?”; “How do we get consensus?”*

MICROSKILLS OF TEACHING

Teacher Reasoning and Action

When distinguished clinical teachers in medicine listen to case presentations during teaching rounds, they first diagnose the patient’s problem, then assess the learner’s needs and finally provide targeted instructions to the learner’s point of need.

Microskills in this practice (Neher, Gordon, Meyer, & Stevens, 1992) facilitate the instructional process by enabling teachers to effectively assess, instruct, and give feedback efficiently. Microskills are most useful in situations with only a few minutes available for teaching (work rounds, ambulatory teaching).

The Five Microskills of Teaching:

- Get a commitment.
 - Probe for supporting evidence.
 - Teach general rules.
 - Reinforce what was right.
 - Correct mistakes.
1. Learner commitment.
 - “What do you think is going on?”
 2. Clarify reasoning.
 - “What supports your diagnosis of bronchitis?”

3. Teach general rules.
 - Make one or two key points.
 - Don't try to accomplish too much in a single teaching encounter (medical educator Neal Whitman).
4. Specific positive feedback.
 - "You explained the diagnosis of metastatic cancer to the patient in a very comforting way."
5. Correct mistakes.
 - "We shouldn't have discharged that diabetic patient with routine AM labs showing a critical bicarbonate of 13."

Microskill Practice Skills

Working in small groups, each person will have the opportunity to play the student, the teacher, and the observer of the interaction.

Learner: Use the cases presented in the manual on the next several pages. Remember that learners make mistakes and modify your presentations accordingly. Don't offer your ideas too freely, or the teacher will be left with nothing to do.

Teacher: Use as many of the microskills as you can; try for at least the first two (getting a commitment and probing for evidence).

Observer: Take brief notes on the dialogue, cues, and responses. What microskills are being used?

After completing the simulation, allow the teacher to self-critique first, then the student, then the observer. Be sure to keep the discussion positive and constructive, avoid overcriticizing.

Microskill 1. Get a Commitment.

Cue: After presenting a case to you, the intern or student either stops to wait for your response or asks your guidance on how to proceed. In either case, the person does not offer an opinion on the data presented.

Resident response: You ask the intern or student to state what she or he thinks about the issue presented. Issues may include coming up with more data, proposing a hypothesis or plan, developing a management plan, figuring out why the patient is non-compliant, deciding on whom to consult, etc.

Rationale: Asking the learners for their interpretation of the data assumes respectfully that they are processing as well as collecting data and are engaged as professionals in problem-solving. When encouraged to offer their suggestions, they not only feel more of the responsibility of patient care, but also enjoy a more collaborative role in the resolution of the problem.

Example of questions likely to get a commitment:

“What do you think is going on with this patient?”

“Why do you think the patient is so hypertensive?”

“What do you want to do next in the work-up?”

“What do you want to accomplish during this hospitalization?”

Example of questions not likely to get a commitment:

“Sounds like pneumonia, don’t you think?”

“Anything else?”

“Did you find out which symptoms came first?”

Microskill 2. Probe for Supporting Evidence.

Cue: When discussing a case, the intern or student has committed on the problem and looks to you either to confirm the opinion or suggest an alternative. You may or may not agree with the opinion and your first instinct is to tell them outright what you think about the case.

Resident response: Before offering your opinion, ask the person for evidence that he/she thinks supports his/her opinion. A corollary approach is to ask what other choices were considered and what evidence supported or refuted those alternatives.

Rationale: Learners proceed with problem-solving logically from their knowledge base. Asking them to reveal their thought processes allows you to both find out what they know and to identify where their gaps are. Without this information, you may assume they know more or less than they do and risk targeting your instruction inefficiently.

Helpful approaches:

“How did you come to your conclusion?”

“What other diagnoses did you consider?”

“How did you select this particular antibiotic?”

Unhelpful approaches:

“What are the possible causes of congestive heart failure?”

“I don’t think this is gout. Do you have any other ideas?”

“This seems like a classic case of. . . .”

“What do you know about her last admission?”

Microskill 3. Teach General Rules.

- Cue: You have ascertained from what the learner revealed that the case has teaching value; i.e., you know something about it that the learner needs or wants to know.
- Resident teacher: Provide general rules, concepts or considerations, and target them to the learner's level of understanding.
- Rationale: Instruction is more valuable (better remembered and better able to be applied to other situations) when it is given as a general rule. Idiosyncratic approaches or preceptor personal preferences are less helpful to learners than teaching that provides more standardized approaches for a class of problems.

Targeting your instruction minimizes the risk of misjudging the learner's sophistication on the topic, resulting either in insulting or losing the learner, and wasting time for both of you.

Helpful approaches:

"In evaluating a rash, history is very important. We need to ask about exposure, medications, pattern of development, previous skin rash, and other medical symptoms or conditions."

"Most patients with headache do not need a head CT unless there are worrisome features in history or physical examination."

Unhelpful approaches:

Giving the answer to a problem (it is better to give an approach to the learner to solve the problem).

"This patient needs diuresis now. Don't start the ACE inhibitor until tomorrow."

Giving an unsupported, idiosyncratic approach.

"I'm convinced that to diagnose cellulitis you need an aspiration for culture."

Microskill 4. Tell them What They Did Right.

Cue: The learner has handled a situation in a very effective manner that resulted in helping you, patients, or other colleagues. She or he may or may not realize that the action was effective and had a positive impact on others.

Resident teacher: Take the first chance to comment on the specific good work and the effect it had.

Rationale: Some actions are the result of careful thought, others due to luck. In either case, learners are developing their clinical skills and need reinforcement of positive actions to fully develop competencies. Supportive feedback also enhances professional self-esteem.

Helpful approaches:

“You carefully thought about the benefits and risks of anticoagulation in this patient, and explained them clearly to her.”

“Although the patient initially was focused on the amount of pain medications the team would provide, you were able to emphasize the medical issues and summarized goals for pain management to him in a reassuring way.”

Unhelpful approaches:

Giving general praise.

“You are absolutely right. That was a wise decision.”

“Nice job taking care of that patient.”

Microskill 5. Correct Mistakes.

Cue:	The learner's work has demonstrated mistakes (omissions, distortions, or misunderstandings) that have or will have an impact on the patient's care, the team's functioning, or the learner's own effectiveness.
Resident teacher:	As soon after the mistake as possible, find an appropriate time and place to discuss what was wrong and how to avoid or correct the error in the future. Allow the learner a chance to self-critique his/her performance first.
Rationale:	Mistakes left unattended stand a good chance of being repeated. By allowing the learner the first chance to self-critique performance and discuss what was wrong and what could be done differently in the future, you are better able to assess his or her knowledge and standards.

Learners who are aware of their mistakes and know what to do differently in the future only need to be reinforced. Learners who are aware of a mistake but are unsure how to avoid the situation in the future are likely to be in a "teachable moment" (eager for tips to get out of or avoid the uncomfortable situation in the future).

More troublesome are learners who are unaware they made a mistake or unwilling to admit it. Obviously they have not seen that their action has an undesirable consequence. To provide effective feedback and maximize learning, it is essential to review the negative effect as well as the correction.

Helpful approach:

"I agree the patient could have drug-seeking motivation, but before making that conclusion, we need to do a careful history and examination and evaluate the complaints."

Unhelpful approaches:

Avoid vague, judgmental statements.

"You did what?"

"I can't believe you ever got into this program."

Microskills Demonstration Case

Demonstration of interaction (note in first example that resident gives direction without explanation, feedback, or determination of subintern understanding of the clinical problem).

Subintern: I want to give you an update on my patient Mr. T. He is the 36-year-old man on 4 East with alcoholic hepatitis. His BP is 106/68, pulse 90. On exam he is jaundiced and has mild RUQ abdominal tenderness, but no rebound or guarding. His wbc is 14.8, unchanged from admission. Lab Data: $\text{Na}^+ = 133$ $\text{K}^+ = 3.3$ $\text{Chl} = 102$ $\text{HCO}_3 = 18$ $\text{Bili} = 2.8$
We did an abdominal ultrasound and he has gallstones. I ordered a surgery consult.

Resident: Cancel the surgery consult; he doesn't need it.

Microskills Approach:

Subintern: (Case presented as above) He has gallstones! I ordered a surgical consult.

Resident: What do you think is going on with him?

Subintern: He has gallstones on his ultrasound.

Resident: Do you think the stones are causing his pain?

Subintern: That's what the surgery R-3 asked me, too. I don't think he has cholecystitis.

Resident: What makes you think he doesn't have cholecystitis?

Subintern: His pain has not been related to meals. It is a constant dull ache in the RUQ that is improving as his LFTs have gotten better and he hasn't had any alcohol.

Resident: I agree that his symptoms sound more like hepatitis. But if we thought he had cholecystitis, then he is at increased risk to have more attacks. That would be an appropriate indication for surgery referral when he is over this episode of hepatitis and medically stable. Since gallstones are so common and most patients with stones will never have symptoms, we generally don't refer asymptomatic patients for surgery.

Subintern: Oh, I got so excited to make a new diagnosis. I guess I shouldn't have called a consult on my own.

Resident: Did the ultrasound show thickening of the gallbladder wall or fluid collection, that might suggest inflammation? Were there stones in the ducts?

Subintern: I didn't see that on the report.

Resident: Your enthusiasm is good; you tried to figure out what was going on and make a plan. But we need to take a step back and first decide whether a gallstone could have caused his hepatitis. Let's go review the ultrasound with the radiologist.

Microskills Practice Cases

(Residents practice in small groups, taking turns being the learner and resident. Other observers in the small group critique the teaching constructively. Each resident is given a "3-x-5" card of the microskills.)

1. Intern: This 49-year-old patient we admitted with weakness and fatigue had some interesting labs. She had a T4 of 3.9, T3U 29, and a TSH of 43. So it looks like she has hypothyroidism. I have begun IV thyroxine.

Resident: {(You want to say: "You did what?")}

2. *Practice this case with a student who is less knowledgeable and struggling.*

Student: This is our 64-year-old man who was admitted 2 days ago with biventricular CHF. He is afebrile, Tmax 99.2, BP 148/85, and room air O2 saturation is 94%. Lungs still have rales at both bases. I wondered if I heard an S3 on heart exam, but I'm not very good at those. The intern thought we could switch him to oral diuretic. I think we need another chest x-ray first.

Resident:

3. Intern: This patient is a 70-year-old non-English-speaking Chinese female with asthma, intubated by the medics 2 days ago. She seems ready to be extubated, but the question is code status and whether we would re-intubate her. When I talk with her via an interpreter she says she would like to be like to be a full code and re-intubated if needed. But her family says she has been through enough and they would not want her put on the ventilator again. What should we do?

Resident:

4. Subintern: This is a 58-year-old woman we admitted last night with a new right pleural effusion. She has a hx of arthritis and CAD. She had shortness of breath for several weeks, worsening in the two days before admission; no chest pain. Her BP is 134/86, pulse

92, resp.28, and she is afebrile at 97.8. She looks mildly dyspneic. On lung exam she has rales 1/4 way up on the right, with dullness to percussion on that side. [*Confidently*] I think the most likely diagnosis is lupus.

Resident: What makes you think that?

Subintern: Well, she has arthritis and now pleural involvement.

Resident:

5. Intern: This man in the emergency room is a 52-year-old with diabetes who complains of pain and swelling in his left leg for the past week. He denies fever, injury, chest pain or dyspnea. He is afebrile. His exam shows swelling and erythema in the calf. He doesn't have an ulcer. I have begun anticoagulation for a DVT.

Resident:

6. Intern: Can I ask you about a cross-cover patient? I just got called about this 63-year-old man admitted 3 days ago with alcoholic encephalopathy, who now is more confused. I went to see him and his vital signs are okay, although his BP is on the low side at 92/54. He feels okay and does not really have any new symptoms. Do you think I should get a CT scan?

Resident: This is a good question we will have to decide. First, can you tell me what you think is causing his confusion?

FEEDBACK AND EVALUATION

Feedback Versus Evaluation

	<i>Timing</i>	<i>Purpose</i>	<i>Delivers</i>	<i>Grammar</i>
Feedback	Immediate	formative	Information	Nouns/Verbs
Evaluation	Delayed	Summative	Judgement	Adjectives/Adverbs

Many of us dread the entire evaluation process, whether giving or receiving feedback or formal evaluation. Traditionally feedback has been used to refer to criticism. As perfectionists, we may have a hard time accepting suggestions for improvement. Two major points to remember about feedback are:

- It is ongoing and reactive to performance behavior.
- It isn't necessarily negative.

Feedback

Case 1. You realize the morning after being on call that your intern did not appropriately evaluate a patient with dyspnea. Nebulizers were ordered and O₂ saturation levels were followed. ABG and CXR were not done, and the patient was not given oxygen. ABG on morning rounds showed significant hypoxemia.

- What do you say to the intern? (both immediately and later)
- How to “discipline” and give reprimands

<i>Inappropriate responses</i>	<i>Suggestions for mistake caught on work rounds</i>
<ul style="list-style-type: none"> • “You did what?” • <i>Extreme criticism in front of group</i> • “You’re a sloppy intern.” • <i>Step-by-step analysis of mistake on work rounds with group</i> 	<ul style="list-style-type: none"> • “This patient should have had hypoxia corrected immediately. What should we do about it now?” • Immediate response: briefly point out error. • Emphasize fixing the problem: “What work-up do we need now?”—specific constructive feedback • Later go into more detail of errors privately with intern (too humiliating on work rounds) • Review that problem (hypoxia) generically with team later so that team learns from it (possibly attending rounds) • Approach Every Problem Constructively

Relationship Between Feedback and Learning

1. An essential component of learning is “on-the-spot” feedback about the learner’s understanding or problem-solving of the case.
2. Performance feedback.
 - a) Formative: improves future performance.
 - b) Reinforces appropriate behavior.
 - Although praise is experientially pleasant, it usually doesn’t produce much behavior change, because it is often vague (“*You did that just fine.*”).

- Allows rapid correction of mistakes.
Corrective feedback is associated with more learning than reinforcement.

Components of Feedback

1. Clearly stated goals and expectations for performance.
2. Supervision.
 - a) Observation of clinical skills, achievement of goals.
 - Can compare learner's performance to initial performance and ultimate goals (self-referencing) or can compare to others at the same level of training (peer referencing).
 - Self referencing produces more and faster learning.
 - b) Questioning learner to determine knowledge level.
3. Feedback to learner (Blanchard, KG, Johnson, S, *The One-Minute Manager*, 1983).
 - a) Provide frequent feedback, give it as soon as behavior is observed.
 - b) Make it specific and descriptive.
 - c) Direct at behaviors which can be changed, not at individual.
 - d) Try to balance positive and negative feedback.
 - e) Keep positive feedback true.

Case 2. You are on-call in November and admit a patient with recent nausea and vomiting, now with palpitations and potassium level of 2.1. You discuss the plan with the intern and stress adequate replacement of potassium. Four hours later you get a stat page to telemetry and hear that the patient had a long run of ventricular tachycardia; potassium orders were for 40meq KCL tid.

- What is your initial response to the intern?
- How do you express your anger?
- What will be the most useful feedback?

How to Give Feedback

1. Give specific examples, not generalizations:
*"You didn't give adequate potassium; the patient couldn't take po."
"With critical hypokalemia, you should have given KCL IV."
not: "You don't listen very well."*
2. Focus on changeable behavior rather than on the individual:
*"Let's go over cardiac risks of low potassium."
"You should review the specific arrhythmias in more detail later."
not: "You have a poor fund of knowledge; any intern should know that."*

3. Make objective criticisms:

"You should write down our plan when we discuss it; I specifically stated this patient would need IV potassium."

A subjective criticism is okay only if you label it as your opinion: *"I feel as if you are distracted and having trouble concentrating on our plans for patients. Do you agree?"*

4. Use nonjudgmental language:

"When the nurse first called you with frequent PVCs, you should have called me."

not personal attacks: *"It's obvious you took a year off after medical school before starting internship; you just don't get it."*

5. Time feedback appropriately:

Immediate focus should be a simple statement of the error, particularly if a group is present. Focus on fixing the problem constructively with specific comments. Later on, review in more detail privately.

Don't continue to rehash the problem the entire month.

6. Make feedback understandable; verify this with the learner:

"Tell me your understanding of what the potassium orders should be."

7. Invite feedback on yourself:

"Was I unclear about the orders in our initial discussion?"

"Do you feel like I give you enough guidance on patient problems?"

8. Positive feedback is critical in reinforcing good performance but should be given honestly in specific terms and not as vague praise ("catch someone doing something right"):

"I'm glad you didn't try to manage the VT alone."

"You're doing a thorough work-up of the patient's diarrhea."

not: *"You're doing a great job!"* (which would be all right if followed by specifics)

Case 3. Your 3rd year medical student has had two previous interaction problems with inpatients that have required nursing involvement to resolve. Today on call, the student admitted a patient post-op status-post modified radical mastectomy, for rule-out DVT. The patient requests to talk with you alone after the student has seen the patient. The patient then states that the student is completely insensitive, showing no compassion whatsoever, was "rough" during the physical examination and generally showed a poor professional demeanor. You now sit down with the student and prepare to give feedback regarding this patient interaction.

- How do you feel?
- What feedback would you give this student?
- Would you document or report this episode?
- How would you work with this student for the rest of the rotation?

Case 4. You are completing your 3rd month as an R-2, feeling frustrated at the lack of feedback or formal evaluation, and are not really sure how you are doing. Fortunately, there have been no glaring errors and your teams have functioned quite well with hard-working interns. Previous attending comments: "Good job. I really enjoyed working with you!"

- How do you get more detailed and specific comments?
- How do you take feedback?

Receiving Feedback

1. Try to avoid association of feedback with negatives.
2. Set your own goals for the month and ask for feedback if you don't get it.
3. If feedback is given in generalities, select specific points of concern to you:
"Do you feel that I reviewed student cases in enough detail?"
"Did I come up with adequate differential diagnoses on our new admissions?"
4. Many of us are perfectionists and have trouble accepting any suggestion for change or improvement: We need to accept feedback for what it is.

Feedback Summary

1. Clarify expectations at the start of the rotation.
2. Feedback should be expected.
 - occurs in the setting of team collegiality and good communication
3. Feedback will be ongoing, and given as soon after you notice a behavior as possible. It will be based on your own observations, not secondhand.
4. You need to supervise team members in order to give feedback AND evaluate.

VIEW FEEDBACK SUGGESTIONS AS IDEAS FOR IMPROVING
CLINICAL SKILLS, NOT AS A PERSONAL ATTACK.

Evaluation

Case 1. You sit down with your student on her last day of the rotation, although you've never been comfortable giving evaluations. Knowing evaluations are supposed to be balanced, you try to list several positive things and then list problems. When you mention the student's cardiac patient who spent an extra day in the hospital because she didn't track down a thallium ETT result in time on Friday before nuclear med closed, she angrily bursts out how difficult it is on a team where no one will give her any help. She also says that you haven't spent as much time reviewing write-ups with her as "other R2s."

- Why is the student frustrated?
- How do you conduct a more interactive session?

Problems with Evaluation in Case 1

- 1. Communicating specific aspects of performance*
 - Beware of sandwiching good and bad points.
 - It is difficult to hear the positive comments in anticipation of criticism.
 - Giving criticism in too much detail is overwhelming.
 - Pointing out problems for the first time at the end of the month.
- 2. Evaluator's attitude contributes to mood and consequences of the session*
 - If evaluation is seen as a chore, perhaps ongoing feedback has not been given or feedback is predominantly negative.
 - Student senses low level of interest in her progress.
- 3. Too much talking by the resident*
 - One-sided feedback: When student finally gets to talk, she is angry.

SUGGESTIONS FOR EVALUATION

Evaluation occurs after previous ongoing feedback

- The sessions should be a summation of the rotation.
- No Surprises: Any criticism should have been discussed earlier to give the learner a chance to improve.

Evaluation is a two-way street

- Start out with a question asking learner how the month went.
- The student is likely well aware of problems that have occurred; given a chance she may point them out first, which creates more dialogue.
- Help the student determine ways to improve.
- Ask for evaluation of your own performance and suggestions for improvement.

Select a few key constructive recommendations

- Give a few specific positive comments rather than a laundry list.
- Ideas for future study and rotations (conveys your interest in helping the student to succeed).

DON'T PROMISE STUDENTS THAT THEY WILL RECEIVE HONORS

Criteria for Grading

Case 1. You have a hard-working 3rd year medical student who provides excellent patient care with close follow-up. In fact, one Friday afternoon he drove a patient home who didn't have a ride. He is liked by the interns. Presentations were a bit rocky at the start, but now after regular rehearsal with you they are quite polished for attending rounds. You have concerns that he generates a differential diagnosis from Harrison's, but has trouble tailoring it to the individual patient (for example: renal failure listed as possible diagnosis in patient with confusion and normal creatinine). He is completing his first 6-week rotation.

- How do you grade this student?
- What if he challenges you to explain why you didn't give honors?

Case 2. One of your 3rd year medical students said at the outset that she wants to stay in town for residency and an "honors grade would really help." Now you are completing her evaluation at the end of the month. She is extremely enthusiastic, hard-working and the interns find her reliable and helpful; in fact, she fits in with the team better than any student you've known. Her management of a dying patient's terminal care issues was stellar. The only drawback is an average to below-average fund of knowledge although she is well-prepared with excellent oral presentations.

- What is your grade for this student?
- How do you determine fund of knowledge?
- What is the effect of student's advance request for honors?

A few comments about problems of grading:

1. Grading is subjective
2. Criteria for grading: Most of us grade on a gestalt impression, rather than any predetermined criteria. Develop your own criteria: if challenged, you can explain grade.

Grading criteria may be based upon:

- peer comparison
- absolute standards
- achievement of performance goals mutually agreed upon

3. Write down specific negative and positive observations about interns and students with specific behavior and circumstances; these are often hard to remember later.

4. The truly stellar student and the clearly failing student are identified consistently by evaluators, others are not. Particularly difficult is distinguishing between average and marginal students.
5. *Documentation of poor performance in written evaluations with specific examples is critical for subsequent failing grade.*
6. Your evaluation is very important, but only one of many aspects of the final grade.

PROBLEM BEHAVIORS IN RESIDENTS

Team Morale and Conflicts

Case 1. You are the senior ward resident and have a difference of opinion with your ward attending about a patient: a 76-year-old woman with renal cell cancer admitted with dyspnea and right lower lobe pulmonary infiltrate. You have made the diagnosis of pneumonia and are treating the patient with antibiotics. The attending is concerned about pulmonary embolism and has suggested doing a lung ventilation/perfusion scan to clarify the diagnosis, which you feel is unnecessary. The next day you are off, and you return the following day to find that the attending has convinced the intern to order the study. From the attending's perspective, he admitted that he "went behind your back" to get a work-up done that he felt was important.

- How could this conflict have been avoided?
- How do you manage your relationship with this attending now?

Essential interpersonal principles

Be open and direct.

Address the issue of competition.

Be able to compromise.

Have respect for the other party.

Be aware of the needs of others and your own needs.

Principles of conflict resolution

Parties need to talk directly with one another.

In discussion or mediation, stick to the issues at hand: set ground rules.

Case 2. You are on service in April with an intern you knew in September to be very bright, conscientious, and enthusiastic. She now appears exhausted, distracted, and occasionally forgets to write orders, although she works hard and is usually very thorough. Despite your efforts to make rounds interesting, she is uninvolved in discussions on work rounds

or attending rounds. When you ask about whether any problems exist, she says, "I'm okay, I'm just tired of being an intern."

- What is your next step?
- As senior resident, how do you create high team morale?

Stress of Residency

No one needs to tell residents how stressful residency is. We feel stress when multiple demands upon us exceed our resources to cope with them.

Reasons for Stress During Residency (Colford & McPhee, 1989)

Stresses related to the nature of residency	Stresses related to education
Sleep deprivation, long hours	Unstructured teaching, limited feedback
Loss of control over schedule	High patient volume
The beeper, "scut work"	Lack of time for in-depth learning
Monotonous, repetitive nature of many tasks	Limited training in ethics
Information overload	Few role models, little faculty support
Frequent rotation to new assignments	Stresses related to work perceptions
Disagreements with attendings	Fear of malpractice suits
Complex procedural tasks	Fear of contracting illness
Responsibilities to patients and their families	Stresses of all physicians in practice
Stresses Shared by Other Young Professionals	Ethical dilemmas
Detachment from parents	Constant patient responsibilities
Geographic separation from family and friends	
Emotional burnout: work w/ sick/dying	
Sexual/ego development	Stresses related to gender
Parenthood; financial worries	"Role strain"
Time conflicts between family and work	Sexual harassment

Case 3A. You are the R-3 on cardiology. On your first call night, your intern says he is not feeling well, but not bad enough to call someone else in. As the call night continues and the admissions pile up, the intern says he feels like he can't continue.

- What should be done next?

Stress Symptoms:

1. "Compensation" phase: becomes more obsessive, stays late and takes work home, cannot unwind (even on weekends).
2. "Beginning decompensation" phase: depressed or anxious or dysphoric (irritable); tired, headache, sleep disturbed; poor memory and concentration, work performance suffers.

3. "Total decompensation" phase: crisis, psychiatric symptoms.

Differential

1. depression.
2. substance abuse.

Case 3B. The intern was sent home. The next day (Saturday) the intern calls you (the R-3) and says, "This is more than the flu—it may take a few days longer to get through this before I can get back to work." You contact the chief resident to arrange coverage.

- What now?
- Are there clues that something else is going on?

Interventions

1. Personal talk ("*I notice that . . . Are you feeling OK?*" "*How can I help?*") for the purpose of support and assessment: How bad is it? How long has this been going on?
2. Decrease resistance to seeking help. (Every human being decompensates when stressed beyond endurance.) Stress = (amount x meaning).
3. Refer to training director or attending to seek advice.

Follow-up note: In case 3A and B above, the chief resident called the intern to see how he was doing and the intern admitted major depression symptoms and writing in his diary: "This is the worst day of my life. How come all the other interns seem to be doing okay? I wish I were dead." After a short leave of absence and initiation of therapy, the intern returned, performed very well, and became a highly successful leader, becoming a chief resident and fellow. (Retold with permission.)

Case 4. You are on the wards of the county hospital. Both of your interns are doing a good job but one is constantly complaining and cynical. He states angrily that patients don't take advantage of the care they are offered. The medical student doesn't want to admit any patients with this intern. One day on rounds after leaving the room of a patient with IV drug use and recurrent endocarditis, he remarks, "It's a waste of time taking care of this patient."

- What is going on for your intern and how do you explore this further?
- How do you anticipate his remark will affect team morale?
- How will you handle negative reactions to and comments about patients?

Assessment: major questions

1. Has he always been this way (personality flaw)? If so take very seriously.
2. Is he only like this with me (personality conflict) or during this particular rotation (misunderstandings about work expectations, burnout, doubts about career choice)?
3. Is he overstressed? (see above, dysphoric mood).

Intervention: depends upon assessment

1. Personality flaw: document incidents and notify training director.
2. Personality conflict: talk it out, best with a third-party facilitator (question chief resident, attending).
3. Stress: see above case #1.
 - Many studies of residents suggest the most stressful time (and lowest point emotionally) is during internship, particularly in the first few months.
 - Responses to stress include cynicism, underconfidence or overconfidence, anger, and irritability, all of which create low team morale.
 - Unrelieved stress may progress to depression, which occurs in 30% or more of residents, or substance abuse in efforts to cope.

Role of the Ward Resident

- Create and maintain a positive and supportive team environment.
- Help interns understand and deal with stresses of residency.
- Identify and get help for team members with significant impairment.

If the intern with burnout is still performing adequately as in case 1, empathetic and confidential communication about the causes of stress may be helpful. Physicians may be reluctant to admit problems coping for fear they will be perceived as weak. They need a nonjudgmental supportive listener.

- Simple solutions such as making sure days off are granted and improved working hours can partially alleviate stress, but residents need to watch carefully for evidence of more severe dysfunction requiring professional help.
- The ward resident may be the first to identify dysfunctional team members (as in case 2), and should start by talking directly with them, encouraging them to seek help from the program director or student offices.
- The attending may also be helpful in giving opinions about the severity of the problem. If the individual fails to get help, the resident should contact directors in the residency program or medical school.

Strategies to Reduce Residency Stress

Hospitals: Ensure adequate ancillary help, clerical assistance; expand fringe benefits, other services.

Departments: Physician-extenders, “protected time,” increased faculty supervision, formal career counseling.

Programs: “Night floats,” reduced call and length of hours, avoid post-call clinic, redistribute primary patient care during residency, establish adequate backup coverage during illness or leave. Maintain good communication with residents about issues and problems and how solutions are working. Incorporate retreats and social events into the program schedule. Establish mentorships between residents and between residents and faculty.

Mental Health Consultation for Residents and Medical Students

Find out from the following information your residency program:

How to contact a therapist:

- *What are the relationships established between your program and the department of psychiatry and psychology?*
- *How are emergent/urgent consults arranged?*

Confidentiality:

- *How is it maintained?*
- *Who has access to the information in your file?*

What are the fees?

What happens if the resident is referred to a psychiatrist or psychologist by the program or chairman?

(This is a separate situation from that described above in which the resident seeks help, and is generally to determine fitness of duty. In this case, the referring faculty member is the client, who would get a report on the results of the evaluation.)

SUBSTANCE USE

Case 1. As the senior resident on call you are surprised to see your ward attending visiting a patient at 7:30 p.m. You go over to chat with him,

and realize that he has alcohol on his breath and is intoxicated, laughing loudly. (Note this could be the respiratory therapist, a fellow resident, anyone.)

- What do you do?
- Whom should you notify?

Case 2. You are on call on Sunday and it's a slow day. Your team is sitting around chatting and one of your students tells about using cocaine at a great party the night before. She is an excellent student and you think she may be at honors level of performance.

- Do you have responsibility to discuss recreational drug use?
- What is appropriate professional conduct off hours?

Substance Abuse

Early signs of alcohol/substance abuse

- withdrawal from peer group,
- irregular performance: some days excellent performance, but often "not feeling well," with mood swings and irritability,
- frequently late, absent,
- concentration problems, forgetful,
- slurred speech, alcohol on breath.

Frequent problem drugs for physicians

- alcohol, benzodiazepines, amphetamines.

Intervention

1. *Personal talk: "There is a problem. What is going on?"*
 - total denial, or
 - admits to stress ("Are you self-medicating?"), or
 - admits to substance use (stress the illness model: he or she does not have control over this)
 - refer to training director for advice.
2. *Personal responsibility:*
 - to document incidents/problem behavior in writing.
 - to support the resident and not the problem
 - avoid covering, making excuses, protecting the resident.
 - avoid giving in to inappropriate "loyalty to peers" or to self anti-authoritarian feelings; such behavior shows indifference and not caring enough to act.

3. Your responsibilities are to ensure that patients are well cared for and to monitor performance. If work and behaviors are not impaired, and you discuss off duty personal behavior, label as reflecting your own values.

Impaired Physicians

AMA Definition

1. Physician unable to practice medicine with reasonable skill and safety because of mental illness or excessive use/abuse of drugs, including alcohol.
2. Currently estimated: 15% of residents have problems; at least 3% impaired by chemical dependence.

Major categories of impairment (ABIM Manual of Problem Behaviors in Residents)

1. Substance abuse: most often alcohol (8–10% of physicians), narcotics, sedatives and stimulants.
2. Psychological problems: excessive stress, depression, anxiety and divorce
3. Physical illness: temporary or long-term.

Development of substance abuse

1. Residents may be at risk because of the severe demands of residency and their access to prescription drugs and narcotics. Studies vary in the magnitude of the problem, but several suggest higher rates of alcohol and Rx drug abuse than the general population. Residents have been shown to liberally prescribe medications at the request of family or friends, which raises concerns about their newly acquired prescription power and the lack of formal instruction in this area.
2. A national survey of 3,000 American resident physicians (60% response) compared with peers in general population found that residents had higher reported use rates of alcohol (5% daily, 87% past month, statistically significant for men and women) and benzodiazepines (4% past month, 9% past year, statistically significant for women). Their use of most psychoactive drugs was lower (46%).
 - Onset of use of alcohol and marijuana was *often in high school or earlier*.
 - There was a disturbing trend for initiation of *prescription drug abuse during residency* (benzodiazepines 31%); reasons cited for Rx drug use on benzodiazepines, barbiturates and opiates was most often self-treatment, frequently without the supervision by another physician.
 - Amphetamines were usually taken to improve performance and wakefulness.

3. Impaired physicians may have more difficulty seeking help than the general population, with greater denial, less discussion of emotional problems with family and peers, and belief in ability to self-treat. They may worry about loss of licensure with any disclosure of problems. Thus confrontation and intervention often are necessary before physicians will obtain treatment.
4. Current approaches recognize substance abuse as an illness without punitive measures if appropriate treatment and rehabilitation are obtained.

Personality and behavior problems of residents

1. Bright residents who perform well academically but have poor interpersonal skills, attitudes, and/or humanistic qualities.
2. Personable residents with good attitudes, but have a poor knowledge base, exhibit deficient thought processes, are pathologically obsessive-compulsive, or exhibit irresponsible and unpredictable behaviors.
3. Poor clinical judgment.
4. Cannot tolerate ambiguity (uncomfortable unless clear-cut answers).
5. Exhibit acute or chronic pathological responses to stress.
6. Psychopaths, verbally or physically abusive.
7. Display self-destructive tendencies.
8. Lack motivation, clinically depressed.

Warning Signs of Impairment

“Just not the same person we used to know.”

- Loss of enthusiasm.
- Negative attitudes.
- Cynical, fault-finding remarks.
- Sarcastic, complaining, antagonistic behavior
- Involvement in staff or administrative battles
- Complaints of being overworked, misunderstood
- Isolation, mistrust, abandonment of old friends

“We can’t trust his work anymore.”

- Changes in work habits (disruption of consistent patterns)
- Erratic productivity combined with crazy hours
- Changes in handwriting
- Wrong dates, word reversals, dosage errors
- Change in prescribing habits and number of consults
- Procedural errors, errors of omission with alibis, cover-ups
- Missed appointments, meetings

- Complaints from staff, patients, families

“She seems different somehow.”

- Looks tired, admits to insomnia
- Eyes don't look right
- Personal hygiene changes, looks seedy
- May smell of stale alcohol or strong cologne
- Tremulous or sweaty
- Intermittent agitation or restlessness
- At times, may look drowsy or doped up
- Changes in speech (slurred, careful cadence, stammering or blocking, “tranquilizer lilt”)
- Increasingly forgetful
- Changes in appetite or exercise pattern; recent weight change
- Self-diagnosed health complaints; morbid health concerns
- Depressed (agitated or retarded)
- Anxious, mistrustful

Getting Help

Confidential steps to take if you suspect a physician-colleague has a problem:

1. Approach your colleague if you are comfortable doing so (if not, contact program director). Comment on specific behaviors that give you concern, and ask for an explanation. Inquire directly if there is a problem.
2. If the individual denies a problem but you still suspect one, wait for him/her to resume the conversation. If the problem is not brought up again, and you still fear that a problem exists, call a reliable source for advice (anonymously).
3. Based on the above information, advice from reliable sources, and your own observations, decide if you still think there is a problem.
4. *If you are convinced that your fellow physician does have a problem, you must take action.* This kind of problem does not go away on its own and is likely to worsen, but if caught early, there is greater potential for a successful outcome. We have professional responsibilities to be sure patient care is not compromised by an impaired physician.

Available Resources:

1. Supervising physicians: chief resident; attending physician; resident program directors; division chief or department chair for staff physician problems.
2. *Department of Psychiatry and Behavioral Sciences:* confidential therapy.
3. *Hospital Physician Well-Being Committee:* if available.

SEXUAL HARASSMENT AND GENDER DISCRIMINATION

Case 1. An R-3 observes that one of her interns with superb previous performance seems distracted and distressed. One evening on call, the intern confides to the resident that the other intern on the team has been making obscene sexual comments and gestures. Once on call he tried to come into her room. She doesn't know what to do to avoid him.

- What is the resident to do?
1. The resident should encourage the intern to contact the program's office or institution site for sexual harassment (e.g., university ombudsman). She should inform the intern that such reporting does *Not* automatically constitute a formal complaint, triggering investigation and action, but rather is an opportunity to talk things over and to explore the various options for further actions.
 2. It is important to respect and support the intern's right to report as well as her right not to do this.
 3. All members of an institution have an obligation to maintain a positive educational and professional environment and to prevent sexual harassment. Thus, even incidents in which the victim decided not to come forward or not to lodge a formal complaint may require an institutional response. Therefore, the resident can contact the office for sexual harassment and explain the situation. She can report the story without identifying names. (Even though this makes direct disciplinary action impossible, it may later be useful in showing a pattern of harassment by that individual.)
 4. Abuse of residents happens to both male and female residents. Physical and verbal abuse are common, and comes from many sources, including commonly are patients and their families.

Case 2. Rounding with the team post-call, one of the interns is preoccupied with frustration about her interactions with the nursing staff the night before. She feels that many pages were inappropriate and could have waited until the morning. One nurse in particular called three times to report on the status of a patient with confusion, whom the intern had visited after the first two pages and found to be stable. The nurse subsequently wrote in her progress note: "Dr. was called three times to evaluate the patient, but chose to do nothing."

- What is going on here between the nurse and the intern?
- What should be done about the nurse's incriminating chart note?

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Aach, R. D., Girard, D. E., Humphrey, H., et al. (1992). Alcohol and other substance abuse and impairment among physicians in residency training. *Annals of Internal Medicine*, 116, 245–254.

Outlines the complexity of drug problems in resident physicians and referral of those needing help. Discusses the program director's duties to identify and humanely manage the resident with drug problems, including after recovery has begun.

American Board of Internal Medicine (ABIM). *Problem Behaviors in Residents: Recognition and Resolution*. SGIM Workshop, April 30, 1992.

Review of illustrative cases of resident behavior problems and substance abuse, with detailed warning signs, confrontation and intervention. Emphasizes our duty to take action if suspicious of problems in other physicians.

Asche, D. A., Ende, J. (1990). Residency reform: Opportunity knocks. *Journal of General Internal Medicine*, 5, 533–534.

Brief summary of program responses to the conclusions by the investigation of the NY Libby Zion case that residents are overworked and undersupervised. Problems of unnecessary pages, poor ancillary support, and lack of adequate sleep are reviewed.—options of altering resident patient load, restructuring call and coverage schedules, and better support services.

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"Data gatherers" spent twice as much time collecting clinical data as any other activity on work rounds and had better patient outcomes and lower readmission rates than residents with other styles.

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Survey of all programs showing that 20% provided formal instruction in preparing residents to be teachers—despite residency program directors' agreement that such skills are important.

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Short practical guide to management that stresses clarification of goals, frequent positive feedback, and immediate reprimands, written as a simple story. This would be very useful for all residents to read.

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leadership skills, low self-esteem, and lack of role models with a good balance between medicine and parenting.

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Very useful book with theories of teaching, microteaching techniques and clinical cases.

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but sticking to the basic issue and using objective criteria to determine what is fair to both sides.

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Critical incident interviews with residents and faculty found that factors most associated with learning were faculty involvement, interaction and reflection in discussion. Residents also thought it was important to feel relaxed with comfortable relationships between the teacher and learners, and were frustrated by insufficient time for learning.

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personal characteristics of the student than content, accuracy or depth of assessment. Subsequent clerkship performance correlated with faculty ratings.

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Study of nearly 4000 resident teaching evaluations over six years at UW. Comparing to baseline 3 years before the July resident teaching course began, there was an improvement in clinical teacher ratings each year after the course began for 3 years (statistically significant) on all nine questions on the Clinical Teaching Assessment Form.

Wipf, J. E., Pinsky, L. E., Burke, W. (1995). Turning interns into senior residents: A practical course preparing residents for their teaching and leadership roles. *Academic Medicine*, 70, 591–596.

Summary of UW six-hour resident course on teaching and leadership skills, review of goals and topics for discussion in each session, and practical issues in developing a course.

Yedidia, M. Y., Schwartz, M. D., Hirschorn, C., Lipkin, M. (1995). Learners as teachers: The conflicting roles of medical residents.

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Describes conflicts that residents may experience as teachers when they still have their own needs for instruction and emotional support. Residents often find it difficult to teach when they feel their own ignorance about many topics and when they must give greater priority to patient care and ensuring that the work is done than time for teaching.

Yedida, M. J., Lipkin, M., Schwartz, M. D., Hirschorn, C. (1993). Doctors as workers: Work-hour regulations and interns' perceptions of responsibility, quality of care, and training. *Journal of General Internal Medicine*, 8, 429–435.

Recorded interviews of interns at NYU showed interns' intense concern for patients and difficulty in maintaining boundaries between personal life and work, experiencing conflict in signing patients over to cross-cover.

SECTION **B**

Teaching Materials for Pediatric Residents: Three Modules

JANET PALMER HAFLER
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PREFACE

Few residents receive any formal training in educational theory and practice, yet they are expected to be effective educators. While the search for effective resident-as-teacher training methods is ongoing, there are models that have been developed, and three modules among those are presented in this chapter.

One useful characteristic about the modules is their flexibility and adaptability. There are many settings in which they could be used. For example, the material could be presented at grand rounds, omitting the more interactive exercises; or the material and exercises in all three modules could be the curriculum content at a scheduled retreat; or it could all be sequenced as a series in scheduled weekly or monthly sessions.

Which among those approaches might be most effective for your institutions? The focused and extended retreat format generally stimulates and motivates the participants the most, but no matter which is chosen, follow-up activities are key to lasting behavioral change and to reinforcing learning when the residents are back on the wards.

Combining approaches in a longitudinal teaching program, building links

between and across the modules, and inviting the residents themselves to propose how they might apply the concepts on the wards will get residents invested and motivated. Periodic newsletters, e-mail groups, dedicated Web pages—whatever type of methodical follow-up appropriate to the people and the institutions—will encourage residents not only to be involved but to stay active in teaching and learning and to stay focused on the original goals of the sessions.

Depending on your institution, these modules can present other opportunities. You may be able to add some questions related to content of the modules to your evaluation of the residents. Residents could be encouraged to do self-assessments in the relevant topic areas so they can gauge their own progress and become aware of how they are succeeding in these areas. Residents, it is known, are self-directed learners who tend to rely on their experiences. The more you can help them understand the relevancy of the material and make the modules part of their experience, the better able they will be to apply it in the clinical setting.

The modules are useful in another way: as a basis for training a group of permanent faculty who could in turn teach subsequent cohorts of residents. No matter the group you choose to focus on, it is essential that they practice the skills they are learning, either with simulated students in a workshop setting or on the wards themselves where you can see firsthand how they are doing and give them feedback.

You may choose to modify the sessions depending on the level of the residents, their past experiences, and your own needs. You are best equipped to decide the issues around selecting the most appropriate learning format for your institution. We have found the following to be always useful: As you set about implementing the modules, reflect on your own teaching and learning. What can you bring to the modules that would help you learn and engage? What do you need to see in order to know that they are learning and that the goals of the modules and of your program are being met? And last, what program review or evaluation will tell you whether the teaching was effective?

MODULE I: THE STUDENT-TEACHER RELATIONSHIP

Why should we care about the quality of the student—teacher relationship? Just as the physician-patient relationship forms the foundation of health care, the student-teacher relationship forms the basis for the overall learning experience. The way learners are treated affects how they interact with patients and colleagues, and the extent to which teachers can foster the students' development and learning (Westberg & Jason, 1993). Learners who are treated collaboratively are more likely to work with their patients in collaborative ways, whereas learners treated in authoritarian style act more authoritarian with their patients (Jason & Westberg, 1982).

Student-teacher relationships differ among the individuals involved, yet several authors describe similar elements that are present in helpful student-teacher relationships. Characteristics of effective student-teacher relationships include empathy, genuineness, and positive regard (Rogers, 1951); respect, trust and candor in the teacher and willingness to learn, honesty and openness in the student (Reiser, 1993); and mutual trust, flexibility, support and collaboration (Westberg & Jason, 1993).

Weston and Brown (1995a) suggest being as caring and humane with the learner as we expect the learner to be with patients, because the learners' experiences with their teachers help them to understand their relationships with patients. They describe a learner-centered approach whereby teachers and students explore together the student's learning needs and goals, and the teacher works to understand the student's educational stage of development and context (Weston & Brown, 1995b). From this, the teacher establishes priorities and chooses appropriate teaching strategies, finding common ground with the learner. The teacher incorporates prior knowledge of the student including strengths, weaknesses, and interests, thereby accelerating and enriching the learning process. Effective teachers work to enhance the student-teacher relationship and to develop an awareness of its components as the student-teacher relationship is the most important factor affecting learning outcomes. Finally, in the learner-centered model, teachers strive to be realistic, balancing personal and professional needs and creating a learning environment in which students can also be realistic about juggling competing professional demands and personal lives.

Getting started with students and setting a student-teacher contract is important. Forming an effective relationship with students includes preparation for the student's arrival; establishing initial rapport, which includes showing interest and respect; developing a culture of support and safety; and sharing and negotiating agendas with students (Kurtz, Silverman, & Draper, 1998).

We designed the following curriculum to help residents understand and appreciate the importance of the student-teacher relationship, and to develop

skills in enhancing and using the relationship for effective teaching and learning.

GOALS

1. To explore elements of the student-teacher relationship that lead to effective teaching and learning
2. To develop skills in listening as one component of the student-teacher relationship
3. To analyze different components of student-teacher relationships
4. To learn how to set the student-teacher contract

The format of the student-teacher relationship module includes how we introduce ourselves as teachers and learners; small-group brainstorming and larger group discussion of the characteristics of the learner-teacher relationship; a listening exercise to explore how we listen to one another; analysis of models of relational teaching using video vignettes; and case discussion about starting the rotation and setting the student-teacher contract.

FACILITATOR GUIDE: EFFECTIVE STUDENT-TEACHER RELATIONSHIPS



Introduction: (10 minutes)

1. Discuss the goals of the module, which is scheduled to take about 1 hour. Remind everyone that we all have had relationships both as learners and as teachers. The goals of the module are to (a) explore elements of the learner-teacher relationship that lead to effective teaching and learning; (b) develop skills in listening as one component of the learner-teacher relationship; and (c) analyze different components of learner-teacher relationships.

2. Allow everyone at the tables to introduce themselves one at a time, and in large print to write their names on the namecard as they prefer to be addressed. As a facilitator, use this time to model a way people can introduce themselves to the group at one or two tables and otherwise to become familiar with as many participants as you can in the time available.

Discussion: (10 minutes) What are the Characteristics of the Learner-Teacher Relationship?

1. Acknowledge that there are many characteristics in a student-teacher relationship, and ask each table to brainstorm and develop a list of characteristics they can identify.

2. After about 5 minutes, invite participants to share the lists they generated, writing them as they are called out on flip-chart paper with an adhesive backing and mounting them on the walls.

3. In one form or another, listening is likely to be common to various characteristics listed. Identify listening as one skill that most everyone can fine-tune.

Listening Exercise: (10 minutes)

1. Distribute the handout “Listening in the Relationship—An Exercise” (which follows) to all participants. Using the handout go through the exercise with the participants.

2. Encourage everyone to pair off with a person they do not know.

3. Instruct everyone that one in the pair is to tell a story for 2 minutes (have someone keep time) with no questions or interruptions; the other person will then feed back the story that has been told. Then have everyone reverse roles.

4. Facilitate a discussion with the group as a whole on the importance of listening in the student-teacher relationship. Begin with “What was it like to be listened to?”

Video Vignettes (25 minutes): Analysis of the Models of the Student-Teacher Relationship.

1. Video 1: Models of Teaching in the Outpatient Clinic.

First explain that this is a video of the 1st day of a rotation in an outpatient clinic. The 3rd-year student knows he is to meet his preceptor, but has had no other information. The preceptor introduces himself and the clinic begins. This clip allows the group to analyze the first few minutes of the learner-teacher relationship. Questions that may arise: How should the preceptor introduce himself? How should the rotation be explained? Should expectations be verbalized? How should they be set?

2. Video 2: Models of Teaching in the ER.

In this video segment you see two different models for orienting potential applicants to the emergency department.

The female attending has organized the session and developed a large handout for the orientation. She uses a didactic approach and has the applicant follow and listen to her as she describes the ED. Watch carefully how she introduces each applicant and how she introduces herself.

The male attending is being assigned to the task at the last minute. He is not prepared and begins by asking the applicant, "Do you want to play doctor?" Watch how he introduces himself and how he meets the applicants.

A critical issue for both attendings is that neither says who they are or give any information about themselves. The discussion should focus on how we introduce ourselves, how we let students/applicants know what to call us, what information we need from the students/applicants to design an effective teaching session.

Summary and Wrap-Up: (5 minutes)

1. Reemphasize the characteristics of effective learner-teacher relationships. Ask them to think about trying to incorporate one new idea when they return home and to think about its effectiveness.

2. Ask for final comments and have them fill out the evaluation of the session.

3. The wrap-up can be very short. The time allotted here can easily be used elsewhere as needed. We have purposely built it in here to allow some flexibility. Here as elsewhere, times are just suggested as a guide.

Video Resource Information

"Models for Teaching in the Outpatient Clinic." Gary Dunnington, MD, Department of Surgery, Creighton University School of Medicine. June 1991. RT:13:40. Web site: www.creighton.edu. Phone: 402-280-2072.

Issues clip reel from "E.R." used with permission from Warner Brothers Television, Burbank, CA.

LISTENING IN THE RELATIONSHIP— AN EXERCISE



Goal

The goal of this exercise is to explore how we listen to each other.

Directions

Think for a few minutes about the myriad experiences you've encountered over your lifetime in a learner-teacher relationship. Consider either the perspective of you the learner or you the teacher. Don't limit yourself to experiences in the hospital or in the medical setting.

Now slowly narrow your focus and concentrate on re-creating one specific occasion that stands out as particularly powerful. Now pair up with someone you do not know. In 2 minutes, describe your story as fully as possible while your partner listens. Listeners do not ask questions or speak they listen. Then the listener feeds back what they heard.

Switch roles.

In the next part of this exercise, we will discuss the role of listening in the learner-teacher relationship.

**CHARACTERISTICS OF AN
EFFECTIVE STUDENT-TEACHER
RELATIONSHIP**



Empathy

Genuineness

Positive Regard

Respect

Trust

Candor

Honesty

Active Listening

Support

Openness

Flexibility

Collaboration

**Alternative Exercise: Paper Vignette Option—Role Play and Discussion
(as follows)**

[“Using Video Vignettes” is included in facilitator’s guide]

Case Author:

Joan Friedland, MD, MPH

Janet Palmer Hafler, EdD

On the Third Day

Resident-2’s part

You are a very busy PGY-2 on a general medicine floor. This is the 3rd day on the service. Trudy, one of the two students assigned to you, has refused to record lab data because she feels it is “not an educational experience.” You know all students are supposed to write up their notes, do complete H & P’s, record lab data, and present their cases. You are surprised that Trudy is not doing what is expected of her. At your request, you will be meeting with her after rounds.

Case Author:*Joan Friedland, MD, MPH**Janet Palmer Hafler, EdD***On the Third Day***Student's part*

You are a very bright student who has had to work hard at a part-time job to be able to handle the financial drains of medical school. You feel you are not getting your money's worth from your current core medicine team. Recording lab data is a job one has to do, but you resent having to do it. It is your 3rd day on service. The upper level resident leading the team—you don't even know her name—has asked you to meet with her after rounds.

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MODULE II: TEACHING IN SMALL GROUPS

Residents interact with one another, with faculty, and with students in a number of groups from work rounds to teaching rounds to conferences. How they learn to be effective members of the group is a very important aspect of their role as a resident. When residents focus on what the group is talking about they focus on the content. When they focus on who talks to whom or how much or how little one speaks in a group, the resident is focusing on group process. The two aspects of being a member of the group and being a leader of the group are skills that they need to learn to be successful as residents. The effectiveness of a resident as teacher is a function of the situation, the group, the patients, and the members of the group. When a new group forms the members need to have the assurance of acceptance and recognition that they can contribute and they need to understand the distribution of authority. Every time a group meets it re-forms and all intervening events for each member continue to create a new group. This module will assist the residents in understanding both how groups form and the stages a group goes through as it develops, and they will be able to understand how to identify group member behaviors that can improve group function.

GOALS

1. To explore the dynamics of group process.
2. To participate in a case discussion.
3. To reflect on a variety of roles that contribute to effective groups.
4. To develop an understanding of how to use question/non-question teaching strategies.

FACILITATOR GUIDE: GROUP PROCESS MODULE



Introduction: (15 minutes)

1. Discuss the goals of the module. Remind everyone that we all have had experiences in groups, both as leaders and members, which we can use to learn. The goals of the module are to (a) understand the stages of group formation; (b) identify member behaviors that improve group function; and (c) reflect on personal experiences in group dynamics.

2. Allow everyone in the session to introduce themselves and to identify a question or problem or idea they have about group process. As group leader, use this time to become familiar with names and roles, writing them down if needed. This is also a time to model a way the group can form.

Case Discussion: (45 minutes)

1. Invite a member to read part I of the case. At the end, open discussion by inviting members to comment on what they see in the case.

2. Questions to stimulate discussion may include: What are your reactions to the case? What do you think Dr. X is thinking? What are the problems you see? What would you say to Dr. X? What could members in the group do to influence the group?

3. After about 30 minutes, invite a member to read part II. Once again, open up into discussion.

Stages of Group Development: (20 minutes)

1. Through reflection on the discussion, have the members review the stages of group development as outlined on handout. Emphasize the forming (part I) and storming (part II) stages as illustrated by the case.

2. Have the members read the group member behaviors and comment on what relates to them.

3. Invite members to go to the last page and write down behaviors (verbal and nonverbal) that they contributed to the group discussion just held. What role did you have in this group?

Summary and Wrap-Up: (10 minutes)

1. Reemphasize the stages and the members' behaviors that help groups function. Mention that groups often can revert to earlier stages, especially every time a new member joins.

2. Ask for final comments.

**AGENDA FOR THE EXERCISE:
AN EXERCISE FOR
TEACHING IN SMALL GROUPS**



A G E N D A

Stages of Group Development:

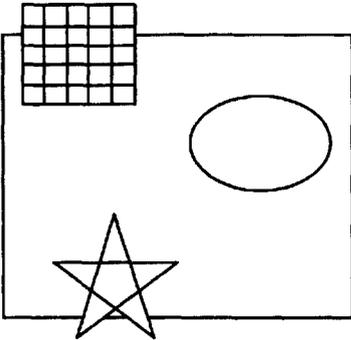
FORMING • STORMING • NORMING • PERFORMING

Participation in a Case Discussion

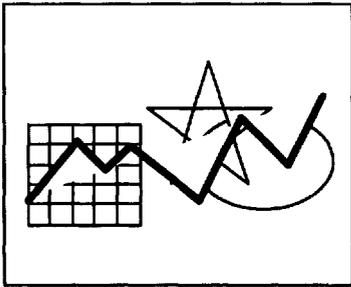
Roles that Contribute to Effective Groups

Analysis of the Discussion

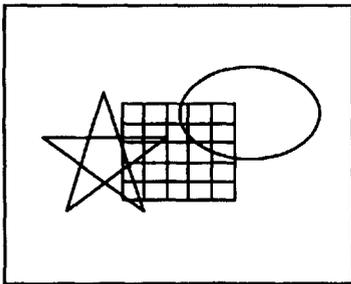
STAGES OF GROUP PROCESS AND DYNAMICS



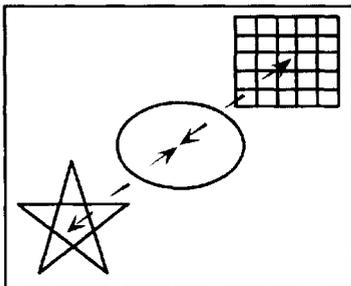
Forming



Storming



Norming



Performing

STAGES OF GROUP PROCESS AND DYNAMICS

Forming • Storming • Norming • Performing



FORMING: stage of group formation where individuals in the group come together and get to know one another. Roles and rules for the group are defined, and tasks that the group will undertake are acknowledged.

STORMING: stage of group formation where conflicts arise around differences in style. These differences are usually never highlighted at the forming stage, and so when encountered serve as a major source of conflict. Because conflict is usually not part of the forming stage, when storming occurs leaders and group members are often surprised, which may lead to more anxiety around perceptions of the severity of the conflict. Components necessary to survive and build the group during the storming phase are the following:

1. *Problem identification:* It must be clearly understood what the actual problem and conflict is and what are the various perspectives and views of the problem or conflict. The group leader and group members must somehow reach an understanding as to what the conflict is and how it impacts on the function of the group. Multiple perspectives must be solicited in order for group members to feel that their view is heard and appreciated.

2. *Negotiation:* Openness and willingness to negotiate an agreement that is mutually agreed upon. Borrowing strategies used by the Conflict Management Institute, the following aspects of a negotiation are guidelines to improve conflict outcomes.

- (a). Relationship—How can the group improve the interaction? Should this be done one-to-one or in a group?
- (b). Communication—Are we listening? Are we open to persuasion and compromise?
- (c). Interest—In whose best interest is the process going to help: ours? theirs? others'? Will it be shared? compatible? conflicting?
- (d). Alternatives—What are our alternatives? Can we improve them?
- (e). Options—Are we separating *inventing* from *deciding*, looking for joint gains, giving them an answer, not a problem? Can we change the choice? Should we create more possibilities?
- (f). Implementation—In trying a strategy, how can we evaluate its success?

NORMING: stage of overcoming differences through cooperation, negotiation, and problem solving. This process does not necessarily have to evolve out of the storming phase, but can be seen when any task is presented to the

group. As each group member is challenged to function in the role defined for the unit and as tasks are successfully completed, each group member is able to see his or her own individual importance and their relationship to others on the group. It is through the norming phase that individuals see how important they are to the group, but better yet how group work and group process is necessary for a group task to be accomplished.

PERFORMING: stage of group reorganization focused around its structure and function to perform tasks set by the group. It is during this stage that groups may find that roles and sometimes rules need to be redefined and issues that could result in conflicts addressed. It is during this stage that a balance between group content (and to some degree context) and group process are important to think about and try to balance.

GROUP PROCESS EFFECTIVE GROUP MEMBER BEHAVIORS



Types of behaviors relevant to the group's fulfillment of its task:

- | | |
|-----------------------------------|---|
| Initiating/orienting | Suggesting how the group might begin; posing questions the group might consider; suggesting new procedures or directions the group might pursue; redirecting discussion when the group departs from agreed upon procedures or directions. |
| Seeking information | Requesting facts or authoritative information: asking for opinions, beliefs, or suggestions about the issue at hand. |
| Giving information
or opinions | Contributing facts or authoritative information: stating one's own beliefs, opinions, ideas, or suggestions. |
| Clarifying | Restating the ideas of another in one's own terms to check that they are understood as the speaker intended them to be; providing examples or elaboration to help others clarify their ideas; explaining or interpreting ideas in different ways in an effort to help all members fully understand. |
| Summarizing | Restating ideas or suggestions for purposes of review; putting together related ideas and stating them in a single integrated form; reviewing where the group has been, where it is now, and where it seems to be going. |
| Consensus testing | Asking to see if the group is nearing a decision; stating a conclusion or decision and asking for the group's acceptance or rejection; sending up a <i>trial balloon</i> to test a possible conclusion. |

Types of behavior relevant to the group's remaining in good working order. Having a good climate for working and good relationships that permit maximum use of participant resources:

- | | |
|-------------|--|
| Gatekeeping | Attempting to keep communication channels open to all members suggesting procedures that permit sharing remarks; inviting less active members to participate; discouraging members who tend to monopolize discussion time. |
| Encouraging | Being friendly, warm, and responsive to others; demonstrating acceptance of others' ideas; giving recognition and praise; serving as an interested audience. |
| Harmonizing | Persuading members to analyze constructively their differences in opinion; searching for common elements in conflicts; trying to reconcile disagreements; attempting to reduce tensions or frustrations. |

GROUP PROCESS GROUP PROCESS BEHAVIOR ANALYSIS



The theory of shared leadership suggests that different members contribute in different ways to meeting the task and relationship needs of a group. As you look at the list of behaviors, try to identify which members performed each function for the group. Briefly describe the most frequent ways in which you and your group members contributed to the group process:

- (a) To get the work of the group done.
- (b) To promote good interpersonal communication among members.

Type of behaviors relevant to the group's fulfillment of its task:

- Initiating/orienting
- Seeking information
- Giving information
- Clarifying
- Summarizing
- Consensus testing

Types of behavior relevant to the group's remaining in good working order

- Gatekeeping
- Encouraging
- Harmonizing

TEACHING TIPS FOR A CASE DISCUSSION QUESTION/NON-QUESTION TECHNIQUES



Question techniques

Asking Questions, Not Giving Answers: Questions help sharpen critical thought and center the discussion among the students, moving the focus away from you. Your questions not only keep the discussion going but also reflect on you as a role model in the ability to develop questions.

OPEN a discussion by asking a starter question such as, “Where would you like to begin?” To *ENRICH* the discussion, use questions that allow a broad range of appropriate responses. The eight general types of questions below can help move the discussion from the general to the specific or vice versa. Changing the type often helps in moving to a student centered discussion:

1. Diagnosis: What’s going on?
2. Action: What would you do if you had been in this situation?
3. Information Gathering: How many? What happened?
4. Challenge: Why? How do you know that?
5. Extension: How is the present situation related to the case?
6. Priority.
7. Prediction.
8. Generalization.

PREPARE • Ask yourself “What is the question for?” and “Which question should I ask?”
question • Consider these typologies of questions: Knowledge — Comprehension — Application — Analysis — Synthesis

Before you ASK the question • Consider how you ask it; whether it is an open or closed question and what you would do with the answer. Generally, *open* promotes student-directed discussion; *closed* promotes teacher-centered discussion.
Open: What do you think is the most important problem facing this patient?
Closed: Which of these is the most important problem facing this patient?

If the discussion is bogged down, asking more abstract questions gives maneuvering room and allows change in direction. If the discussion is too vague, asking challenge questions helps to move to the less abstract, which limits speculation and forces concrete statements and use of facts. Whether a question is personalized or not has considerable effect: “How do you know

that?” or “Why do you want that information?” is very different from “How do you think that fact was discovered?”

- EVALUATE • How well did your questions work?
 • Did your questions do what you intended?

While there are many types that can be asked, Questions along with statements and silence (non-question techniques) all combine to enhance a discussion.

NON-QUESTION TECHNIQUES

1. SILENCE — an important aspect of which is listening.

LISTEN

- For content, logic, substantive facts, intellectual information. This is what is most obvious.
- For continuity: Listen over time to observe change. Remember who said what, and in what context, so that you can direct back to what was said.
- For assumptions *crucial* for arguments but left unstated.
- To mechanics. Which words are spoken loudly, which ones are mumbled?
- For a person’s capacity to listen.
- For emotion, especially:
 - a. *certitude*: are absolutes or conditionals used?
 - b. *depth of feeling*: voice tone, spoken words, latent feelings.

2. STATEMENTS

- Declarative.
- Reflective: repeating what has been said (stating again in the same form) and restating (stating again in a different or summary form).

3. SPEAKER REFERRAL

- Stating the relation between what the speaker has just said and what the previous speaker said.
- Stating the relation between what the speaker has just said and the case.

4. POLLING

- Posing the topic to other members of the group; e.g., “Let’s take a minute to hear what someone else is thinking.”

DISCUSSION DIMINISHES WHEN

- The teacher poses questions rapidly asking for factual information.
- The students ask the teacher questions and receive answers directly.
- There is less than a 1-second pause after a question.
- Responses are judged. For example, saying: “Good, John” or “That’s excellent, Sally” will decrease broad student participation in the discussion.

OPERATIONAL GUIDELINES

- Less is more. Maximize student-student interaction. Participate as an equal member of the group. If there are eight students and yourself, try and speak 1/9 of the time.
- Meet the group where it is: for example, encourage the advanced student to teach others, they won't always be more advanced.
- Right questions, not right answers. Answers are stopping points, questions keep the discussion going.
- Essentiality of duality: logic plus emotions. You cannot conduct the group only through the use of logic.
- Trust the students. When you get lost or in a pickle, ask the group for help. They always come through.
- Dual competence. You must be in command of both content and process.

Content: How are the case issues being addressed?

Process: Establish a contract. Part will be stated and part unstated, but don't change expectations suddenly without negotiating carefully with the group. Allow students to talk about their goals for the group, don't just stick to your goals. Will the group begin on time or 10 minutes later? How will the learning issues be distributed?

Try not to label students in your mind. Remember that there is no behavior without a context. Try to focus on the group dynamics, rather than on individual behavior. If the process feels stuck, return to those group activities which have worked in past sessions.

SUGGESTIONS FOR FURTHER READING

On Group Process:

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- Fleisher, D. S. (1968). Composition of small learning groups in medical education. *Journal of Medical Education*, 43, 349–355.
- Johnson, D. W., & Johnson, R. T. (1975). *Learning together and alone*. Englewood Cliffs, N.J.: Prentice-Hall.
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On Question/Non-Question Techniques:

Barnes, L. B., Christensen, C. R., & Hansen, A. J. (1994). (reproduced from Harvard Business Review, July-August, 1952) *Journal in the Harvard Business Review* V 69, p. 105–111, issue 6, Nov-Dec 1991. Cambridge, MA: Harvard Business School Press.

MODULE III: GIVING AND RECEIVING FEEDBACK

An essential component of teaching in medical education is the provision of feedback. Feedback is an objective, informed, non-evaluative appraisal of the goal of improvement of clinical skills (Ende, 1983; Rider & Longmaid, 1995a; Rider & Longmaid, 1995b). Feedback plays an important role in the medical training process and its instructional value is long recognized (Irby, 1986; Wilkerson, 1985).

Without feedback, good performance is not reinforced and mistakes can go uncorrected. Learners may drop positive behaviors, repeat errors, or misinterpret indirect references to performance. Constructive feedback improves performance, facilitates and enhances learning, and provides information on which to evaluate progress and devise methods of improvement (Iberty, 1985; Westberg & Jason, 1993). Constructive feedback significantly improves interviewing skills (Scheidt et al., 1986) and enables medical students to make faster and more accurate clinical diagnoses (Westberg & Jason, 1993; Wigton, Kashinath, & Hoellerich, 1986). Residents and medical students value constructive feedback and find it has significant educational value (Black & Harden, 1986; Mattern, Weinholtz, & Friedman, 1983; O'Sullivan, Pinsker, & Landau, 1991; Wolverton & Bosworth, 1985).

We designed the following curriculum to help residents develop skills in both giving and receiving feedback. Specific learning objectives include:

1. Developing a working definition of feedback.
2. Understanding the importance of setting a learning agenda for giving formative feedback.
3. Developing observation strategies to collect objective information for giving feedback.
4. Analyzing the effective components of giving and receiving feedback.
5. Developing skills in giving and receiving feedback.

The format of the feedback teaching module includes a reflective exercise called "What is feedback?" followed by a discussion and determination of the components of effective and ineffective feedback; a case simulation; and discussion of real cases of participants. Receiving feedback is taught through the use of a reflective exercise followed by discussion of experiences receiving feedback, barriers to receiving feedback, and identification of components and guidelines for receiving feedback.

FACILITATOR GUIDE: GIVING AND RECEIVING FEEDBACK



Welcome and Introduction

After a welcome and introductions, discuss the goals of the module, which is scheduled to last about an hour. You may want to use the two handouts that immediately follow as transparencies to introduce the difference between feedback and evaluation.

Reflective Exercise: What is Feedback?

1. Have the large group of participants gather in small groups of two or three. Distribute the handout “Reflective Exercise: What is Feedback?” (which follows) to all participants.
2. Using the handout, step through the exercise with participants.

Large Group Discussion: When all small groups have completed the task, engage all participants in a large group discussion, asking them to brainstorm and to help build a list of what they see as components of effective and ineffective feedback. Write their responses on flip charts or on a board. As the facilitator, use the handout (which follows), “Characteristics of Constructive Feedback,” to assist you in helping the participants generate their list. Distribute that handout some time *after* this exercise is complete.

Simulated Case Exercise: Have the large group of participants now gather in groups of three and distribute their respective materials (student, resident, and observer roles from the simulated case which follows). Then step them through the exercise for the sample case and then from an experience of their own.

Case 1 You’ve Got Something to Say (as below)

-
- 5 minutes* First decide who will perform which roles: student; resident; observer(s), and a timekeeper. Read the relevant case parts, respectively, and reflect on the roles in simulated case.
- 10 minutes* Participants give and receive feedback based on the case.
- 5 minutes* Observers give feedback to the resident on the feedback given in the simulated case.

Case 2 What are your own dilemmas?

-
- 10 minutes* Talk about difficult cases you have encountered. Select one of your own to simulate. Outline the case and set the task,

deciding on the roles — resident, student, observer and a timekeeper.

10 minutes Participants give and receive feedback based on the case.

5 minutes Observers give feedback to the resident on the feedback given in the case.

Receiving Feedback:

1. In the same small groups, have participants discuss what it was like to receive feedback, either in the simulated case discussions or in the first reflective exercise.
2. In the large group, have participants brainstorm to help build a list of what they see are barriers to receiving feedback and then develop guidelines for giving and receiving feedback.

Summary and Wrap-Up

1. Reemphasize the characteristics of giving and receiving feedback. Ask participants to think about trying to incorporate one new idea when they return home and to think about its effectiveness.
2. Ask for final comments and have them fill out the evaluation of the session.



Feedback

The process
of giving data back
to the student
for the purpose of
bringing about change



Evaluation

Summative—

—“summarizes” what happened

An evaluation
of a learner’s
achievement
and/or
performance

REFLECTIVE EXERCISE: WHAT IS FEEDBACK?



Goal

The goal of this exercise is to explore the process of giving and receiving feedback and the conditions under which they are stimulated.

Directions

Think for a few minutes about the myriad feedback experiences you've encountered over your lifetime. Consider ones both in and out of school, as a child, and as an adult. Don't limit yourself to experiences in your practice.

Now slowly narrow your focus and concentrate on re-creating one specific occasion that stands out as particularly powerful. In groups of two or three, describe that experience as fully as possible. While the story is about you and your reaction to the event, you should try to address the following questions directly or indirectly as your story unfolds:

1. In what context did this experience occur?
2. Who else was involved directly or indirectly?
3. How was the feedback given?
4. What components were effective?
5. What components were ineffective?

In the next part of this exercise, we will collaborate in the construction of general principles of giving and receiving feedback

CHARACTERISTICS OF CONSTRUCTIVE FEEDBACK



Definition: Feedback involves responding specifically to an event or occurrence, whether that event is good or bad. Positive and negative feedback should be distinguished from complimenting and criticizing.

1. Feedback should be undertaken with the teacher and trainee working as allies with *common goals*. The teacher-student relationship should begin with discussing respective expectations.
2. Feedback should be *descriptive* rather than evaluative.
3. Feedback should deal with *specific events* rather than generalizations.
4. Feedback should be *well-timed*, and expected, in close proximity to the event, but not when the recipient is post call or angry about the issue, when facts are missing, or when both sides of the situation have not been explored.
5. Feedback should be based on *firsthand data*.
6. Feedback should be *focused on behaviors that are amenable to change*.
7. Feedback should involve sharing of information rather than giving advice, leaving the receiver free to decide for themselves in accordance with their own goals and needs.
8. Feedback can be structured to *include subjective data*, as long as it is clearly labeled as such.
9. Feedback should be *checked to ensure clear communication* by having the receiver try to rephrase the feedback.
10. Feedback should be followed by *attention to the consequences of feedback*.

Taking the Plunge

1. Be clear about the purpose of the feedback session.
2. Get the receiver's perspective as to how things are going.
3. The *sandwich* technique isn't always reliable.
4. Ask the recipient to offer solutions.
5. Develop solutions to the problem and a plan to improve the situation.
6. Schedule a meeting to evaluate the effectiveness of your plan.

SIMULATED CASE: “YOU’VE GOT SOMETHING TO SAY?”

Observer Role:

This case seeks to simulate a resident giving feedback to help a student improve.

The observer role during the simulated case: to record objective data as you see the situation.

Record specific details about verbal behaviors For example, write: The resident asked, Where do you want to start? Don't write, He began by giving feedback.

Record specific details about nonverbal behaviors For example: The student looked directly in the resident's eyes and asked a question.

Record the time of specific events For example: 10:45—session began
10:45—student spoke

Try to keep your interpretation of specific events separate. After the simulated case in small groups you will discuss which feedback techniques you thought were effective and which were not.

YOU'VE GOT SOMETHING TO SAY

Resident Role:

Jerry has been on the rotation for 3 weeks now and has 3 weeks left. Things have been going well except for one or two things that have been bothering the resident.

First, Jerry has been taking long periods of time seeing patients. As part of an agreement made early in the rotation by both you and Jerry, it was agreed to allow him to go in first and see the patient. Although initially you stated how much time it should ideally take to see patients, he has exceeded the limit. You are also concerned that he is missing important physical findings. Jerry has made appropriate minor pickups, but you are troubled by consistent misses on important findings. On several occasions you were unable to see the patients because of the amount of time Jerry spent doing the initial exam and history. When that happened, patients were exhausted when you arrived and in the cases of some of the pediatric patients, the parents refused to allow you to reexamine the child. Although Jerry is a superb student, this has been a persistent and progressive problem. You recognize that he is very effective in bonding with his patients (the children) and especially with their parents. Reports made directly to you by several families have been complimentary in this aspect of Jerry's performance. However, those important physical findings he missed delayed further testing to confirm several diagnoses. You need to address Jerry's progress during the rotation, the ongoing issues of taking too much time during the initial work-up, and his missing important physical findings. You have to address the issue now.

YOU'VE GOT SOMETHING TO SAY

Student Role:

This is the 3rd week of the rotation, and you think things have been going pretty well. You enjoy the fact that the resident allows you to see patients alone and initiate the work-up of the patient on your own. Despite your initial fear of seeing patients, you have become very comfortable with your physical exam skills. You also enjoy the children and parents you have had a chance to work with and you were touched by the homemade cookies you received from one family. You have enjoyed working with the staff in the clinic and appreciate their input and expertise. You feel the rotation is going well. Things are going so well with the staff and the resident you work with that you are convinced you will receive honors. The resident, though, has something to say to you about how things are going as part of the feedback process.

**TIPS ON PLANNING INDIVIDUAL
FEEDBACK SESSIONS**

-
- SET GOALS WITH THE LEARNER
-
- PLAN THE SESSION AHEAD OF TIME
-
- FOCUS ON SPECIFICS
-
- ASK THE STUDENT FOR THEIR ASSESSMENT OF THEIR
PROGRESS
-
- GIVE THE FEEDBACK WITH SPECIFIC EXAMPLES
-
- DISCUSS AND PLAN CHANGES TOGETHER
-
- AGREE ON A REEVALUATION PLAN

SUGGESTIONS FOR FURTHER READING

On Characteristics of Constructive Feedback:

- Rider, E. A., & Longmaid, H. E. (1995). Giving constructive feedback. *Journal of the American Medical Association*, 274, 867.
- Weinholtz, D., & Edwards, J. C. (1992). *Teaching during rounds*. Baltimore: Johns Hopkins University Press.
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SECTION C

Teaching-Skills Modules

JOAN A. FRIEDLAND

This chapter, as the others in this section of the book, provides some ready-made tools for putting the concepts from chapter 5 to work.

The session on “Introduction to Teaching Clinical Procedures” can be used with various levels of learners, from clinical student to resident. This module uses interactive large group discussion (which includes some didactic material) and live or video demonstration, small group experiential learning, and handouts.

The “Work Rounds” module introduces the skills in management, leadership, teaching, and communication that are necessary for successful team practice as a resident. Schedule a 60- or 90- minute session with a small group of residents and facilitate a discussion of the topic by asking initially, “What do you do on work rounds?” Include a pertinent scenario (such as those in the work rounds section in part II, section A) or a short video clip, in order to stimulate further discussion. The handout “Work-Rounds Steps” can be distributed at the end of the session or can be used independently. This module is ideal for use by attendings and chief residents who are working with new upper level residents and their teams.

“Role Play for 1:1 Teaching with a Patient” is a module for developing techniques for correcting errors and giving constructive feedback when teaching with the patient. This can be used in conjunction with other teaching strategies as total time is about 30 minutes. Spend only 5 to 10 minutes on the actual “play,” first explaining role-playing and then afterwards facilitating feedback and debriefing of the players.

An excellent resource on role-play is Y. Steinert’s (1993) “Twelve tips for using role-plays in clinical teaching.” *Medical Teacher*, 15, 283–291.

INTRODUCTION TO TEACHING CLINICAL PROCEDURES

INTRODUCTION TO TEACHING CLINICAL PROCEDURES

A Two-hour Session

1. *Introduction (30 Minutes) Large Group*

Interactive chalkboard discussion

Identify needs for successfully teaching procedures

List obstacles to teaching

List obstacles to learning

Discuss spectrum of competence

Unconsciously incompetent

Consciously incompetent

Consciously competent

Unconsciously competent

Demonstration or video tape of teaching a procedure (brief)

Discussion of difficulties encountered

Procedure not broken down

No idea about student's level of ability

No description of procedure

Inadequate demonstration

Inadequate feedback

Summarize

2. *Teaching Methods (15 Minutes) Large Group*

Contrast expert and coach methods

Three phases of teaching procedures (handout with phases and steps)

Give instructions for small group activities. Hand out specific step-by-step instructions for how to perform a simple procedure such as giving an injection. Go over instructions for role-playing and giving feedback.

3. *Small Group Activities*

Teaching a Simple Procedure (15 Minutes)

Practice coach method-trainees (working in groups of three): Take the role of teacher, student or observer/patient and practice teaching how to give an injection. Participants take turns in different roles.

Discuss how it went and give teacher feedback.

Teaching a Complex Procedure (30 Minutes)

Repeat practice of coach method (trainees in pairs): Teach each other how to tie a surgical knot.

4. *Wrap-Up Discussion (20–30 Minutes)*

Review group experiences: How did you feel as the teacher, the student?

List characteristics of good procedure teachers.

Discuss handling complications, special problems.

During the active practice sessions, faculty observe groups for teaching behaviors, both positive and negative, and can use a checklist to highlight points observed for the discussion.

See “Overview: Phases of Teaching” handout in this module; Role play instructions in this chapter and “Tips on Feedback” in part II, Section B.

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This module was developed with Kathleen R. Liscum, MD, Baylor College of Medicine, Department of Surgery.

HANDOUT**TEACHING PROCEDURES****OVERVIEW: PHASES OF TEACHING****INTRODUCTORY PHASE**

Determine learner's ability

State the objective

Describe/demonstrate complete procedure

PRACTICE PHASE

Make supportive, constructive, specific comments

Master individual steps in succession (when possible)

Intervene when necessary (guidance vs. discovery)

PERFECTING PHASE

Present/simulate unusual situations for skill performance

Minimal prompting

Feedback on fine points

WHAT DO YOU DO ON WORK ROUNDS?

WHAT DO YOU DO ON WORK ROUNDS?

1. Plan and organize the work rounds
Plan and organize and delegate specific work
2. Communicate with the patient
Social interaction
Explain progress, team discussion, and plans
3. Assess the patients' current and new problems
By evaluation of pertinent history, physical, and chart
4. Teach on Work rounds by
 - (a) describing what you are doing
 - (b) describing what you are thinking
 - (c) problem solving out loud
 - (d) asking questions
 - (e) including all team members in the assessment and encouraging them to think aloud
5. Teach others how to teach and learn by
 - (a) identifying learning issues
 - (b) acknowledging limitations and uncertainty
 - (c) respecting all team members' opinions and findings
 - (d) giving feedback
6. Improve team relationships and doctor-patient relationships by
 - (a) respecting others
 - (b) being sensitive to others' feelings
 - (c) enhancing others' credibility
 - (d) including all team members and the patient in the work rounds activity

This module was developed with Donald Wesson, MD.

HANDOUT

WORK ROUNDS STEPS

Begin by gathering all team members and all charts

AT EACH BEDSIDE

1. Visit with the patient
2. Review problems and plans
3. Gather Data
 - Check results of treatment and observation by reevaluating:
 - Pertinent history
 - Pertinent physical
 - Pertinent chart/computer for:
 - recent orders
 - progress notes
 - consults
 - nursing data sheets
 - medication data sheets
 - Check results of available tests
 - Evaluate any new problems
4. Think, discuss, communicate
5. Revise problems and plans
6. Record
 - Progress note
 - Orders
 - Work list
7. Visit with the patient

These steps must take place consistently, daily and for every hospitalized patient. This establishes a lifelong habit that is essential for excellence in the practice of medicine and teaches this to others.

ROLE-PLAY FOR 1:1 TEACHING WITH A PATIENT

STUDENT ROLE:

You are a junior on core medicine. You did a great workup and discussion on Mr. Bean, who is in for chemo for his lymphoma. No one has gone over your H & P with you yet. Your resident suggests that you reexamine the patient's chest together. You are surprised because the chest exam was pretty normal.

At the resident's request, do your usual exam of the chest, which consists of listening to breath sounds in 2–3 locations bilaterally and then percussing in 1–2 interspaces bilaterally—*No more*.

TEACHER'S ROLE

Suggest to your student that you noticed on the Px, which was overall very thorough, that Mr. Bean's chest was described as clear and that you think it would be good for you to go to the patient's room together and recheck it.

At the bedside, ask the student to demonstrate the exam. Work with the student to improve the exam of the chest. Be sure the exam includes thorough percussion and auscultation, since this patient actually has dullness in both bases as well as decreased breath sounds.

Communicate your plans to the patient.

PATIENT ROLE

Be very cooperative and friendly, despite the fact that you are somewhat short of breath. Be sure to thank both “docs” when they are leaving.

ROLE-PLAY INSTRUCTIONS

HERE ARE SOME THINGS YOU NEED TO KNOW ABOUT ROLE-PLAYING:

1. Pay attention to the instructions. You are playing a part so concentrate on that. Watch for details. The instructions have specific goals that will be apparent later. (If role involves physical exam, there is no need to disrobe: pretend.)
2. Try to stay in the role and proceed; try to think like the person described in the part.
3. Do not take anything personally—the purpose is to learn education techniques from re-creating some of our common situations and their problems and working with them.
4. When giving feedback, be positive:

Describe helpful behaviors you saw

Do not criticize

Make constructive suggestions

SECTION D

Forms for Evaluation of Resident Teaching-Skills Programs and Resident Performance

DEBRA A. DAROSA

This section is included for readers interested in reviewing options for evaluation form layouts, scales, open-ended question types, and item wording. The forms represent examples of evaluation forms, some of which were developed by the author, while others likely reflect bits and pieces seen on other forms encountered over the years. Readers are free to copy all parts or all the forms desired for their own use in program evaluation. Inclusion of these forms does not imply that they are recommended for use, or that their use will ensure evaluation forms that reflect adequate properties of reliability or validity. These properties need to be established by the individual users based on their learners and context of use.

RESIDENT AS TEACHER FEEDBACK FORM

Instructions: Please rate each session based on your perceptions of its value to you and quality of presentation.

Value of Unit Topic

- EV = Extremely Valuable
- VV = Very Valuable
- V = Valuable
- SV = Slightly Valuable
- NV = Not Valuable

Quality of Presentation

- E = Excellent
- VG = Very Good
- OK = Okay
- F = Fair
- T = Tomatoes

	Value of Topic (circle one)					Quality of Presentation (circle one)				
Title of Session	EV	VV	V	SV	NV	E	VG	OK	F	T
Title of Session	EV	VV	V	SV	NV	E	VG	OK	F	T
Title of Session	EV	VV	V	SV	NV	E	VG	OK	F	T
Title of Session	EV	VV	V	SV	NV	E	VG	OK	F	T
Overall Assessment	EV	VV	V	SV	NV	E	VG	OK	F	T

Comments:

What components/features would you recommend remain in future workshops?

What components/features would you recommend be changed in future workshops?

Please use back

Date: ___/___/___

COURSE EVALUATION FORM

Instructions: Please rate each of the following aspects of the workshop on a 9-point scale by circling the number that best describes your feelings.

1. Facilities/setting	<u>9</u>	<u>8</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>
	Excellent			Adequate			Poor		

Comments:

2. Learning Objectives	<u>9</u>	<u>8</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>
	Clearly stated and useful to me			Generally clear and occasionally helpful			Not apparent or inappropriate		

Comments:

3. Faculty	<u>9</u>	<u>8</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>
	Highly competent and interesting			Average ability, some limitations			Ill prepared and uninteresting		

Comments:

Fellow Participants	<u>9</u>	<u>8</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>
	A congenial group that enhanced this experience			Were neither a positive nor negative factor for this workshop			Hard to relate to, detracted from this experience		

Comments:

5. Learning Activities	<u>9 8 7</u>	<u>6 5 4</u>	<u>3 2 1</u>
	Very appropriate for workshop goals, rewarding	Most okay, a few inappropriate or of limited value	Not very helpful, uninteresting, vague

Comments:

6. Cost	<u>9 8 7</u>	<u>6 5 4</u>	<u>3 2 1</u>
	Well worth the money, a real bargain	Moderately reasonable	A waste of time and money

Comments:

7. Outcomes	<u>9 8 7</u>	<u>6 5 4</u>	<u>3 2 1</u>
	I feel I learned a great deal	I've learned a few new things	Nothing new learned of any value

Comments:

8. Organization	<u>9 8 7</u>	<u>6 5 4</u>	<u>3 2 1</u>
	Very organized	Adequate organization	Unorganized

Comments:

Overall Rating:	Excellent	Good	Poor
	5 4	3 2	1

Attachment C

SURGEONS AS EDUCATORS GRADUATE FOLLOW-UP SURVEY

Name: _____

Telephone: _____ E-Mail: _____

This follow-up study is aimed at assessing the short term impact of the Surgeons as Educators course which you attended in July, 1994. A second longitudinal survey will be mailed to you in 1 year to capture any additional educational developments you pursued that may have been prompted by attendance to the course.

Please answer the questions below and feel free to use the reverse side if additional space is needed. I may telephone you to further clarify responses. Please feel free to call me at (phone #) or E-mail at (email address) should you have questions you wish to discuss. Thank you in advance for your cooperation.

Name

1. Describe any actions you have taken related to *curriculum planning/development/documentation, performance/program evaluation, teaching, and/or educational administration/management* that you would attribute to attending the Surgeons as Educators course.

2. What, if anything, are you doing differently in your role as a surgical educator that can be attributed to something learned in the course?

3. Which "action plans" outlined in one or more of your Advance Organizers have you pursued or plan to pursue (if any)?

4. Did you listen to the audiotaped presentation that was given to you at the course?

Yes

No

A. If yes, how useful was it? (circle one)

Extremely useful to hear how I sound to others when presenting		Somewhat useful		Not useful to hear how I sound to others when presenting
5	4	3	2	1

B. If no, why not?

5. Please rate the post-course usefulness of the various books/materials distributed before or at the course.

	Very Useful		Somewhat Useful		Not Useful
Preparing instructional objectives	5	4	3	2	1
Leadership as an art	5	4	3	2	1
Articles on measurement (pre-course)	5	4	3	2	1

6. Would you like to have additional courses offered to graduates?

Yes

No

If yes, on what topics?

7. General comments, random thoughts, brilliant revelations (use reverse side if needed):

Return to: Name, address

EVALUATION OF SENIOR RESIDENTS

Name of Senior Resident _____

Date of Evaluation _____

Level of evaluator (Circle one) I, II, III, IV

Instructions: Please evaluate the above chief resident based on your recent experiences. Circle the appropriate responses. Use the following criteria for evaluation:

Criteria: 3 - Demonstrates this trait regularly
 2 - Demonstrates this trait occasionally
 1 - Never or almost never demonstrates this trait

- | | | | |
|---|---|---|---|
| • Teaches effectively during daily rounds | 3 | 2 | 1 |
| • Conducts daily rounds in an efficient, organized manner | 3 | 2 | 1 |
| • Teaches effectively in the OR including instruction on improvement of technical skills | 3 | 2 | 1 |
| • Demonstrates strong fund of knowledge and decision-making ability expected of a senior resident | 3 | 2 | 1 |
| • Stimulates a strong team approach to patient care | 3 | 2 | 1 |
| • Delegates an appropriate level of responsibility to house staff | 3 | 2 | 1 |
| • Provides feedback to house staff about their performance | 3 | 2 | 1 |
| • Provides a role model for professional and caring interaction with patients | 3 | 2 | 1 |
| • Demonstrates concern for my personal growth, welfare and my personal development | 3 | 2 | 1 |
| • Overall performance of senior resident is exemplary | 3 | 2 | 1 |

Comments (strengths and weaknesses):

Taught effectively in the clinic:

Learners were actively involved

Assessed my learning needs

Taught general principles

Asked questions to probe clinical reasoning

Thought aloud so learner could understand basis for decisions

Provided feedback on learner's performance

Provided for brief discussion of learning points

Your perception of resident's clinic teaching abilities 1 2 3 4 5 NA

Feedback:

Communicated to learner areas of strengths and weaknesses

Corrected mistakes without belittling

Gives positive reinforcement for good contributions,
observations, or performance

Made helpful suggestions for improvement

Your perception of resident's ability to provide feedback 1 2 3 4 5 NA

OVERALL EVALUATION OF THE RESIDENT AS
TEACHER

1 2 3 4 5 NA

Feel free to add any comments on the reverse side.

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Index

- Absenteeism, 62
- Accountability, 62, 101
- Accreditation, 116, 149
- Accreditation Council for Graduate Medical Education (ACGME), 116
- Active learning, 88, 90, 188
- Agenda:
 - teaching-skills improvement program, 92–93
 - for work rounds, 27
- Alcohol use, 177
- Altruism, 30
- Amphetamines, abuse of, 177
- Apprenticeship, 24, 122–123
- Art of medicine, 10–11
- Art of Teaching. The* (Highet), 4–5
- Assessment methods. *see* Evaluation; Needs assessment
- Association, as cognitive technique, 48
- Association for American Medical Colleges (AAMC), 115–116
- Assumptions, 76–77
- Attendance, 92–93
- Attending interactions:
 - attending rounds, 143–146
 - excellent attendings, features of, 146
 - negotiation skills, 146–148
 - performance evaluations and, 62
 - work rounds with, 149
- Attending physician:
 - role of, 20, 22, 40
 - success characteristics, 146
 - work rounds with, 149. *See also* Attending interactions
- Attention, 21
- Attitude:
 - evaluation of, 62
 - significance of, 28–30, 78, 152, 168
- Attribution, 43–44
- Audiovisual materials, 51, 86, 88–89, 122, 192
- Barbiturates, abuse of, 177
- Bedside teaching, 6, 9–12, 144–145, 149
- Beginning decompensation phase, residency stress, 172
- Behavior formation process, 21–22
- Belief systems, 26–27
- Benzodiazepines, abuse of, 176–177
- Best Evidence in Resident Education (BERE), 118–120
- Blockley Hospital, clerkship system, 9–10
- Bloom's Taxonomy*, 152
- Body language, 78
- Boerhaave, Herman, 10–11
- Booster sessions, 90, 119
- Burnout, 13, 172, 174
- Card-flipping, 145
- Case-based learning, 24, 53–54
- Case discussion, teaching tips:
 - non-question techniques, 207
 - operational guidelines, 208
 - question techniques, 206–207
- Case presentations, 52–53
- Chief resident, as facilitator, 87–88, 91
- Clarifying, in group process, 204–205
- Clerkship, 9–10, 40, 46, 95, 109–110, 121
- Clerkship director, role of, 41
- Clinical competence, 18, 116
- Clinical learning environment, role of, 19, 29
- Clinical learning process, 18
- Clinical performance, 19–22
- Clinical practice processes, 22–24
- Clinical procedures, teaching module:
 - handout, 225
 - role-play, 228–232
 - two-hour session, 223–225
- Clinical reasoning, 51, 55
- Clinical rotation, 40
- Clinical skills, teaching strategies, 56–58

- Clinical teaching techniques:
 - cognitive, 39, 44–61
 - management, 38–41
 - motivation, 39, 41–44
 - performance evaluation, 39, 61–63
- Closed questions, 49–50
- Cochrane Library, The, 61
- Cognitive dissonance, 43
- Cognitive processing, 20
- Cognitive techniques:
 - clinical skills, teaching, 56–58
 - evidence-based medicine (EBM), 59–61
 - feedback, 58–59
 - knowledge network, 46–51
 - overview, 44–46
 - patient case studies, 46
 - problem-based learning (PBL), 55–56
 - problem-solving strategies, 51–55
- Collaborative relationships, 60
- Commitment:
 - learner, 154, 156
 - significance of, 14–15
- Communication:
 - conditions of, 77
 - in evaluation, 168
 - nonverbal, 78
 - of objectives, 40–41
 - skills development, 121
 - teaching clinical skills, 56–57
- Compassionate care, 5, 7
- Compensation phase, residency stress, 172
- Competition, 44
- Conflict:
 - as motivation, 43
 - resolution strategies, 30, 171–174
- Consensus testing, 204–205
- Constructive feedback, 105, 169, 210, 216
- Contract, student-teacher, 189–190, 208
- Cooperation, development strategies, 40
- Coping mechanisms, 25
- Coping skills, 86
- Course development, 132
- Course schedule:
 - importance of, 27
 - sample, 131
- Critical needs, 31
- Critical thinking, 16, 87
- Criticism, 166
- Cummings, Martin, 13
- Curriculum development, *see* Course development; Teaching materials, pediatric residents
- Cushing, Harvey, 4
- Data collection, 8, 24, 53, 102–103, 111–112
- Data processing skills, 78
- Data recording skills, 78
- Data repository, 54–55
- Davison, Wilbert C., 4
- Day-to-day routines, 40–41
- Declarative knowledge, 56–57, 61
- Deprofessionalization, 30
- Deteriorating case, teaching strategy, 85
- Dewey, John, 67–68
- Differential diagnosis, 68–69
- Diligence, importance of, 41, 62
- Direct observation, 29, 117
- Direct patient care, 23
- Documentation:
 - performance evaluations and, 62
 - of procedures, 123
 - progress notes, 9
- Double-blind controlled trials, 60
- Dual-code theory, 44
- Early practice development, 22
- Education roles, in physician development, 25–26
- Elaboration, 46–48, 68
- Emotions, dealing with, 19, 46
- Encouragement, in group process, 204–205
- Enhanced learning, 108–110, 121, 152
- Enthusiasm, importance of, 139
- Environmental factors, impact on learning, 19, 27
- Errors:
 - coping strategies, 58, 62, 73
 - prevention strategies, 27
 - types of, 62
- Ethical dilemmas, 30
- Evaluation:
 - attitude and, 168
 - communications, 168
 - components of, 163, 168–171
 - criteria, 40–41
 - defined, 214
 - due process, 62
 - feedback distinguished from, 163, 169, 213–214
 - forms, *see* Evaluation forms management, 40–41
 - of outcomes, 108–109
 - of programs, 100–113
 - research, 121
 - resident teaching skills, 112
 - self-, 19
 - suggestions for, 169
 - student performance, 61–63
 - videotapes, 107–108
- Evaluation forms:
 - end-of-clerkship, 109
 - observations, 106
 - reaction evaluation, 104–105

- resident as teacher, 234, 240–242
- senior residents, 239
- surgeon as educator, 235–238
- Evidence-based medicine (EBM), 59–61, 118
- Examinations, 13, 105–106, 108
- Expanding the case, as teaching strategy, 85–86
- Expectations, impact of, 19, 22, 30–31, 43–44, 167
- Explaining techniques, 51
- Exposure, importance of, 53–54
- External validity, 60
- Faculty:
 - development of, 31–32
 - observations, in evaluation process, 107–108
 - selection, 87–88
- Failure, dealing with, 43
- Feedback:
 - components of, 165
 - constructive, 105, 169, 210, 216
 - defined, 211, 213, 215
 - evaluation vs., 163–169, 214
 - evaluation forms, 234–241
 - giving and receiving, 145. *See also* Feedback teaching module
 - how to give, 145, 165–166
 - importance of, 28–29, 54, 57–59, 76, 84, 87, 89, 119, 140
 - individual sessions tips, 220
 - learner, 105, 107, 117
 - learning, relationship with, 164–165
 - “on-the-spot,” 164
 - positive, 155, 159, 166, 232
 - receiving, 167
 - simulated cases, 217–219
 - summary of, 167
 - timing of, 166
- Feedback teaching module:
 - constructive feedback, 216
 - evaluation, feedback distinguished from, 213–214
 - facilitation guide, 211–212
 - format, 210
 - learning objectives, 210
 - planning individual feedback sessions, 220
 - reflective exercise, 215
 - role play, 218–219
 - simulated case, 217
- Field notes, 78–79
- Focus groups, 121
- Follow-up sessions, 90, 93
- Format:
 - student-teacher relationship module, 190
 - of teaching sessions, 90–91
- Forming, in group process, 202
- Frame of reference, 77
- Free time, 148
- Gatekeeping, in group process, 204–205
- Gender discrimination, 180
- General rules, teaching of, 155, 158
- Generalization, 60, 68
- Goal-setting, 82, 134, 165, 190
- Grading criteria, 170–171
- Graduate medical education (GME), 115–116
- Graduate programs, generally, 22, 24
- Group teaching techniques, 48, 86. *See also* Small group teaching module
- Groupthink, 53
- Harmonizing, in group process, 204–205
- Health care environment, changes in, 115–116
- Hidden curriculum, 29–30
- Hierarchical teams, 30. *See also* Team(s)
- Higher order questions, 152–153
- High-frequency probing, 49
- History taking, 23–24
- Holman, Emile, 4–5
- Holmes, Oliver Wendell, 14
- Homework, 89
- Honesty, importance of, 41, 62
- Humanistic values, importance of, 11, 15
- Humor, benefits of, 93
- Hypothetical cases, 53–54
- Hypothetical-deductive reasoning, 51–52, 67
- Identity, development of, 24–25
- Imagery, 44, 46, 57
- Impaired physician:
 - categories of, 177
 - defined, 177
 - personality and behavior traits, 178
 - substance abuse, development of, 177–178
 - warning signs of, 178–179
- Implementation:
 - of learning, 79
 - resident teaching-skills improvement program, 81–93
- Improvement programs. *see* Teaching-skills improvement program
- Independence, significance of, 7–9
- Independent student work, 53
- Indirect patient care, 23
- Informal curriculum, 30
- Informal teaching, 118
- Information gathering, 69. *See also* Data collection

- Information Mastery, 60
- Information-processing system, 44
- Information seeking, in group process, 204–205
- Information sources, in group process, 204–205
- Informative learning, 76
- Initiating, in group process, 204–205
- Insight, 78
- Instructional Skills Evaluation Instrument (INSE), 108
- Instructional interactions, opportunities for, 74–75
- Interactive group discussions, 88
- Intermediate level questions, 152
- Internal validity, 60
- Internet, as information resource, 120–121
- Internship:
 - characteristics of, generally, 23, 25, 30, 40
 - stress of, 130
 - transition to residency, 133–134
- Interpersonal skills, 62
- Interviews, program evaluation, 107–108
- Intrinsic motivators, 28
- Johns Hopkins Hospital, 3–4, 11
- Journals:
 - feedback and, 90
 - field notes, 78
- Knowledge base, generally:
 - importance of, 19
 - network, 46–51
 - organization, 47–48
- Language use, 12, 166
- Leadership:
 - skills, 17, 130
 - styles, 136
- Learner feedback, 105, 107, 117
- Learning, generally:
 - determinants of, 151–154
 - enhanced, 108–110, 121, 152
 - environment, 25–26, 29, 121, 151
 - facilitation strategies, 69–70
 - feedback and, 164–165
 - line of action, 77
 - by observation, 69–70, 76
 - reflective exercise in, 70–72
 - setting, 27, 84–85
 - styles, 84–85
 - theories, 67–68
 - teaching and, 68–69
 - transformative, 67, 69
- Lectures, 86, 89, 119, 144–145
- Length of teaching session, 90–91
- Liaison Committee on Medical Education (LCME) Standards, 116
- Listening skills:
 - development exercises, 191–193
 - importance of, 174, 207
- Literature, knowledge of, 48, 122. *See also* Medical literature
- Location, learning environment, 29, 91, 119, 151
- Logbooks, 90, 118
- Logical propositions, 44–45
- Lower order questions, 151–152
- Low-frequency probing, 49
- Managed care organizations, 122
- Management, *see* Team management
 - clinical teaching techniques, 39–41
 - leadership styles, 136
 - style, 134
 - of team members, 135–136
 - techniques, *see* Management techniques
 - time, 40, 86
- Management techniques:
 - cooperation, 40
 - evaluation criteria, 40–41
 - objectives, communication of, 40–41
 - one-minute manager, 134–135
 - overview, 38–40
- Mark, Dr. Bertha, 100, 103
- Medical education process:
 - early practice development, 22
 - observational learning process model, 21
- Medical literature:
 - review of, 122
 - validity of, 60–61
- Medical pedagogy, 9
- Medicare funding, 116
- Medium-frequency probing, 49
- Memory, neural network, 45–47
- Mental health consultation, 175
- Microskills of teaching:
 - demonstration case, 161–162
 - feedback, positive, 155, 159
 - general rules, 155, 158
 - learner commitment, 154, 156
 - mistakes, correction of, 155, 160, 164–165
 - practice cases, 155, 162–163
 - reasoning, 154, 157
 - supporting evidence, 154, 157
- Microteaching exercises, 88–89
- Mistakes, correction of, 141, 155, 160, 164–165. *See also* Errors
- Morale, 171–174
- Morning reports, 41
- Motivation:
 - attribution, 43–44
 - conflicting thoughts, 43
 - expectations and, 43–44

- interests, appeal to, 42–43
- intrinsic, 28
- sources of, 21, 30–31, 41–42
- Multiple-station examinations, 105, 117
- Near-peer teaching, 95
- Needs assessment, 83–84
- Negative attitude, impact of, 29–30
- Negotiation skills, 146–148
- Nickel-in-the-slot attitude, 8
- Nonfacilitating teacher behaviors, 151
- Non-physician medical educators, 87
- Nonverbal communication, 78
- Normative errors, 62
- Norming, in group process, 202–203
- Note-taking, 61, 78–79
- Objectives:
 - communication of, 40–41
 - teaching improvement program, 87, 95
- Objective Structured Clinical Examinations (OSCE), 117
- Objective Structured Teaching Examinations (OSTE), 117, 120–121
- Observation(s):
 - checklist for, 79–80
 - direct, 29, 117
 - learning by, 69–70, 76
 - participation, 78
 - records of, 8
 - RTS program evaluation, 107–108
 - skills development, 77–80
- Observational learning:
 - defined, 18
 - model, 20–22
- One-minute management, 134–135
- “On-the-spot” feedback, 164
- Open-ended questions, 50, 153
- Opiates, 177
- Opinions, in group process, 204
- Opportunistic teaching, 95
- Orienting, in group process, 204–205
- Osler, Sir William:
 - accomplishments of, 3–5
 - bedside teaching, 9–11
 - economy of words, 12
 - independent learners, 7–9
 - passions of, 12–15
 - patients, relationship with, 11–12
 - philosophy of life, 13–15
 - priorities of, 12–15
 - as role model, 42
 - students, relationship with, 6–7
 - teacher characteristics, 5–6
- Outcome studies, 108–109, 111–112
- Participant selection, 82–83
- Participation observation, 78
- Patient, generally:
 - relationship with, 11–12
 - use in teaching, 46
- Patient care:
 - history-taking, 9, 23–24
 - pattern of, 22
 - physician performance, 23
 - supervision, work rounds, 137–143
- Patient-centered reading, 48
- Patient education, 110–111, 121
- Patient evaluation, 24
- Pediatric residents, *see* Teaching materials, pediatric residents
- Peer relationships, 28
- Peer review, 107–108
- Perception, importance of, 21
- Performance evaluation, 61–63. *See also* Evaluation
- Performing, in group process, 203
- Personal development:
 - influences on, 29–30
 - in physician performance, 24–25
- Personal growth, in physician performance, 24–25
- Personal identity, 24–25
- Philosophy of life, 13
- Physician performance, development of:
 - overview, 22–27
 - social learning theory applications, 27–28
- Piaget, Jean, 67
- Planning committee, 82
- POEM (Patient-Oriented Evidence that Matters), 60
- Polling, 207
- Positive feedback, 166
- Post-call day, work rounds, 149
- Posttests, 105–106
- Prescription drug abuse, 177
- Presentations, as teaching strategy, 88–89
- Principled negotiation, 146–148
- Principles and Practice of Medicine, The* (Osler), 11
- Priorities, 12–15
- Problem-based learning (PBL), 55–56
- Problem behaviors, in residents, 171–175
- Problem-solving strategies:
 - data repository, as information resource, 54–55
 - hypothetical cases, 53–54
 - hypothetical-deductive, 67
 - independent student work, 53
 - overview, 51–53, 152
 - questioning styles, 48–49
 - thinking aloud, 53
 - verbalization, 29

- Procedural skills, teaching techniques, 57–58
- Procedures:
 documentation, 123
 hands-on teaching, 87
 skills training, 57
- Process-of-care tasks, 27
- Professional development, 27
- Professional growth, 78
- Professional identity, 24–25
- Program directors:
 advancement of, 117
 role of, 82–84, 88, 117, 119
- Program planning:
 assessing residents' learning needs, 83–84
 barriers to, overcoming, 94–96
 faculty selection, 87–88
 information resources, identification of, 82
 participant selection, 82–83
 planning group formation, 82
 program goals, 82
 support identification, 82
- Progress notes, 9
- Proposition networks, 44–45
- Quality of care, 109
- Questioning styles, 48–50, 57
- Questionnaires, *see* Surveys
- Questions, *see* Questioning styles
 classification of, 152
 closed, 49–50
 follow-up, 75
 instructional interactions, 74–75
 open, 50, 153
- research, 123
 techniques, teaching tips, 206–207
- Reaction evaluation method, 104–105, 112
- Reading, encouragement of, 48, 122
- Reasoning, clarification of, 154, 157
- Reciprocal determinism, 19
- Reflection, in learning process, 67, 70–72
- Reflective observation, 78
- Reflective thinking, 67–68, 70–72
- Reinforcement, 19, 21, 28, 164, 166
- Relationship(s):
 collaborative, 60
 doctor-patient, 226
 with patients, 11–12
 peer, 28
 resident-student, 62
 staff-patient, 28
 with students, 6–9
 student-teacher (module I), 189–196
 team, 226
- Reliability, of program evaluations, 112
- Remodeling, 27
- Reports, program evaluations, 111–112
- Research evaluation, 121–123
- Residency review committees (RRC), 115, 123
- Residency stress:
 interventions, 173–174
 reduction strategies, 175
 symptoms of, 172–173
- Residents as teachers, *see* Resident teaching-skills (RTS) programs
- clinical teaching techniques, 38–63
- conflicts, 30
- critical needs, 31
- development of, faculty and institutional responsibilities, 31–32
- expectations, 30–31
- key role of, 151
- motivation, 30–31
- responsibilities, 30
- self-reflection, 30–31
- team management, 133–137
- Resident teaching-skills (RTS) program:
 applications of, 112
 evaluation forms, 234–239
 evaluation system, evaluation of, 112
 importance of program, 102
 improvement strategies, 101–102
 learning, evaluation of, 105–108
 outcomes, evaluation of, 108–111
 planning steps, *see* Program planning
 program impact, determination of, 101
 purpose of, 101–102
 reaction evaluation, 104–105
 resources justification, 101–103
 results, analysis, summary, and interpretation, 111–112
- Resource(s):
 justification of, 101
 negotiation of, 103
 utilization of, 40
 verification of, 102–103
- Respect, importance of, 29
- Responsibilities, types of, 30
- Retreats, 93
- Richardson, E. H., 7
- Role models:
 historical, 29, 42
 importance of, 19, 42, 139
 power of, 28
 teaching strategies, 89
- Role play:
 benefits of, 89, 119
 feedback teaching module, 218–219
 student-teacher relationship module, 195–196

- teaching with a patient, 228–232
- Rounds. *see* Work rounds
- Saiki, Dr. Hezekiah, 9
- Sandwich technique, 216
- Scaffolding, 54, 122
- Scenarios, as teaching strategy, 89
- Schemas, 45
- Self-assessment surveys, 105–107, 117
- Self-control, 19
- Self-directed learning skills, 26, 28, 30, 32, 55, 59
- Self-education, 7–8
- Self-efficacy, 19, 26
- Self-esteem, 7
- Self-evaluation, 19
- Self-image, 77
- Selflessness, importance of, 41
- Self-monitoring, 19, 53
- Self-motivation, 19, 26, 30
- Self-perception, 94
- Self-reflection, 26, 30–32, 77–78
- Self-reinforcement, 29–30
- Semantic networks, 45, 47
- Senior resident, role of:
 - attending interactions, 143–154
 - consulting, 91
 - course background and evaluation, 130–131
 - course description, 131
 - evaluation, 163, 168–171
 - feedback, 163–167
 - gender discrimination, 180
 - grading criteria, 170–171
 - microskills of teaching, 154–163
 - needs assessment, 84
 - patient care supervision, 137–143
 - problem behaviors in residents, 171–175
 - resident teaching-skills course,
 - development of, 132
 - sexual harassment, 180
 - substance use, 175–179
 - teaching course manual, 133–137
 - team management, 133–137
- Sessions, format, length, and location of, 90–92, 119
- Sexual harassment, 180
- Simulations, teaching strategy, 44, 85, 120, 122
- Skill(s) development:
 - clinical, 56–58
 - communication, 121
 - coping, 86
 - data processing/recording, 78
 - demonstrations, 119
 - generally, 139
 - interpersonal, 62
 - leadership, 17, 130
 - listening, 174, 191–193, 207
 - negotiation, 146–148
 - observation, 77–80
 - procedural, 57–58
 - time management, 40, 86
- Small groups teaching module:
 - effective group member behaviors, 204
 - encouraging involvement, 153
 - exercises for, 200
 - facilitator guide (module II), 153, 199
 - format of, 93
 - goals of, 198
 - group process and dynamics, 201–203
 - group process behavior analysis, 205
 - non-question techniques, 207
 - operational guidelines, 208
 - question techniques, 206–207
 - size of group, significance of, 153–154, 201–208
 - teaching strategies, 153–154
- Social learning theory:
 - clinical performance, 19–22
 - developing physician performance, 22–28
 - overview, 19
 - professional socialization, 28–28
 - resulant resident teacher, 30–32
- Sociocultural theories, 122
- Speaker referral, 207
- Specialties, 43, 83, 118–119
- Stanford Faculty Development Program, 119
- Statements, in case discussions, 207
- Storming, in group process, 202
- Stress management, 86
- Students:
 - independence of, 7–9
 - relationship with, 6–9
- Student-teacher relationship module:
 - case studies, 195–196
 - characteristics of, 194
 - facilitator guide, 191–193
 - goals, 190
 - impact of, generally, 189–190
 - role play, 195–198
- Substance abuse:
 - development of, 177
 - early signs of, 176
 - getting help, resources for, 179
 - impaired physicians, 177–178
 - incidence of, 177
 - interventions, 176–177
 - problem drugs, types of, 176
 - resources for, 179
 - warning signs, 178–179
- Summarizing, in group process, 204–205

- Summary reports, program evaluations, 111–112
- Supervision:
 - importance of, 57
 - patient care, 137–143
 - support from, 27
 - of team members, 135–136
- Supporting evidence, 157
- Surgery subskills, 58
- Surveys, 83–84, 105–107, 117
- Tacit knowledge, 68
- Teachable moments, 84, 134, 160
- Teacher(s):
 - characteristics of, 5–6
 - as facilitator, 70
 - relationships with students, 6–7
 - resident as, *see* Residents as teachers
- Teaching, generally:
 - assessment, 117–120
 - bedside, 9–12
 - checklist for, 79–80
 - as clinical competence, 116
 - learning process and, 68–69
 - microskills of, 154–163
 - new approaches to, 110, 120–124
 - plan, sample, 92
 - resident opportunities, 73–76
 - strategies, *see* Teaching strategies
 - style, 14
- Teaching materials modules, pediatric residents:
 - feedback, giving and receiving (module III), 210–220
 - student-teacher relationship (module I), 189–196
 - teaching in small groups (module II), 198–208
- Teaching-skills improvement program:
 - agenda, 92–93
 - content, 84–87
 - effectiveness, evaluation of, 93–94
 - faculty selection, 87–88
 - materials, 92–93
 - objectives, 84–87
 - participant selection, 82–83
 - planning, *see* Program planning
 - program goals, 82
 - sessions, format, length, and location of, 90–92
 - social learning program, 29
 - structure of, 84–93
 - teaching strategies, selection of, 88–90
 - tips for, 92–93
- Teaching-skills modules:
 - role play, teaching with a patient, 228–232
 - teaching clinical procedures, two-hour session, 223–225
 - work rounds, 226–227
- Teaching strategies:
 - selection of, 88–90
 - types of, 85–86
- Team(s):
 - management, 133–137, 226
 - morale, 171–174
- Thinking aloud, 53
- Time/timing, generally:
 - constraints, 27–28
 - management skills, 40, 86
 - shortage, 48
 - utilization, 40
- Total decompensation, 173
- Transformative learning, 67, 69
- Triggers teaching strategy, 85, 89
- Undergraduate clinical work, 22
- Validity, 60, 112
- Verbal information, 44
- Verbal modeling, 27
- Videotapes:
 - in program evaluation, 107–108
 - in teaching assessment, 117
 - as teaching strategy, 51, 88–89, 122
- Video vignettes, 190, 192
- Visual images, 44, 46
- Vygotsky, 54
- Ward resident, role of, 174
- Ward team, 26, 47
- Wolf, Stewart G., 6
- Work list, 41
- Work organization, 24
- Work rounds:
 - agenda for, 27
 - attending, 143–146
 - resident responsibility for, 145
 - teaching module, 226–227
- Workshops, 90, 93
- Written examinations, 105–106
- Zone of proximal development, 54