The Clinician-Educator's Handbook

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Dedication

This book is dedicated to our spouses—
John Turner,
John William Fulkman III (Palazzi),
Phebe Chen (Ward),
and Nadira Lorin

our children—
Scott and Chris Turner;
John William Fulkman IV (Palazzi);
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and our grandchildren—
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Preface

While the authors would be delighted if the user were to read this handbook from cover to cover, the book is designed so that most chapters can be read free-standing and can be used as a reference when looking for specific information. Readers unfamiliar with the science of medical education will find it helpful to read chapters 1 through 5 before addressing the rest of the book. As many educational principles apply to teaching in more than one setting, some redundancy among chapters is inevitable. The authors have tried to minimize this, by separating some general teaching techniques (such as establishing goals and objectives, setting curriculum, and asking questions) into their own chapters, distinct from setting-specific chapters.

Osler said "It is much simpler to buy books than to read them, and easier to read them than to absorb their contents." The authors hope that the dedicated clinician-educators who pick up this book will delve into it and not only assimilate but also apply what they find therein.

This book addresses a wide variety of issues of clinical education and looks at many different settings in which clinical teaching takes place. The ultimate goal of clinical teaching is to improve patient care, and this handbook is designed to help the clinician-educator do the best possible job of teaching. Culling the literature on educational psychology and medical education, and drawing from their own observations and experiences, as well as those of many renowned clinician-teachers whom they observed and interviewed, the authors have created a physician-friendly work, written more in the language of the clinician than of the educational theorist.

The authors acknowledge that they have neither the experience nor the expertise to address issues involved in teaching surgical skills or in teaching in certain environments such as the operating room or the intensive care unit, so these areas are not covered in this book. While the authors are pediatricians, they believe that this book will be of interest to all physicians who wish to improve their teaching skills and hope that all readers will find this book enlightening, challenging, and useful.

Throughout the book, we refer to individual teachers and learners as he rather than he or she. This is for simplicity of style and ease of reading and should not be construed as gender bias.

Teri L. Turner, MD, MPH, MEd
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"Experience teaches slowly, and at the cost of mistakes."
James A Froude, 1818-1894, was an English writer and historian.

"Experience is a hard teacher because she gives the test first, the lesson afterwards."
Vernon Sanders Law is a retired major league baseball pitcher, who earned the nickname "Deacon" for his clean Mormon lifestyle.

"Good judgment comes from experience, and often experience comes from bad judgment."
Rita Mae Brown is a prolific American writer of fiction.

Chapter 2

"*Benevolence alone will not make a teacher, nor will learning alone do it. The gift of teaching is a peculiar talent, and implies a need and a craving in the teacher himself."*
John J. Chapman, 1862-1933, was an American poet. The quote was from his Memories and Milestones, 1915.

Chapter 3

"If you don't know where you're going, you might not get there"
Yogi Berra was a catcher, and later a coach, for the New York Yankees.

Chapter 4

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H. Jerome Freiberg, is an educator and author.

Chapter 5

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Author unknown.

Chapter 6

"I desire no other epitaph (than) that I taught medical students in the wards, as I regard this as by far the most important work I have been called upon to do."
Sir William Osler, 1849-1919, has been called the father of modern medicine. As a professor at McGill University, he organized the first formal journal club. He went on to become Chair of Clinical Medicine at the University of Pennsylvania, then the first chief of staff at Johns Hopkins Hospital, and finally Chair of Medicine at Oxford, where he remained until his death.

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"A single conversation with a wise man is better than ten years of study."
Chinese Proverb.

Chapter 8

"Leadership and learning are indispensable to each other."
John F. Kennedy, 1917-1963, in a speech prepared for delivery in Dallas the day of his assassination, November 22, 1963. Kennedy was the 35th president of the United States, from 1961 to 1963.

Chapter 9

"There should be no teaching without the patient for a text… "
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"We learn by practice and the best practice is to follow a model of the virtuous person."

Aristotle, 384-322 BC, famed Greek philosopher, was a student of Plato and a teacher of Alexander the Great.

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G. Brown and M. Manogue, 2001. Faculty at University of Nottingham and University of Leeds, UK, respectively. Authors of the AMEE Medical Education Guide No 22.

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Isaac Stern, 1920-2001, was an American violin virtuoso.

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Claude Levi-Strauss was a French philosopher and anthropologist of the 20th century.

Chapter 15
"Discussion is an exchange of knowledge; argument an exchange of ignorance."
Robert Quillen, 1887-1948, was an American humorist, journalist, and cartoonist.

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"It usually takes more than three weeks to prepare a good impromptu speech."
Mark Twain (Samuel Langhorne Clemens), 1835-1910, American humanist, humorist, satirist, lecturer and writer.

Chapter 17
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Nancy Protheroe, an educational administrator.

Chapter 18
"Originality is the essence of true scholarship. Creativity is the soul of the true scholar."
Nnamdi Azikiwe, 1904-1996, was the first president of Nigeria.

Chapter 19
"*He who dares to teach must never cease to learn*."
John Cotton Dana, 1856-1929, influential American librarian and museum director.

"Don't reinvent the wheel, just realign it"
Anthony J. D'Angelo is an entrepreneurial visionary who founded EmPower X!, a team of young adults dedicated to empowering other young adults.

A group of Centurians were gathered at the base of the cross, and one said, "I understand that he was a great teacher." To which another added, "Yes, but what has he published?"
Source unknown.

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"A good teacher is like a candle - it consumes itself to light the way for others."
Unknown

Chapter 1

Introduction to Clinical Teaching: Why a Handbook for Clinician Educators

"Anybody who believes that all you have to do to be a good teacher is to love to teach also has to believe that all you have to do to become a good surgeon is to love to cut." Laura Mansnerus.

The word doctor derives from the Latin *docere*, to teach, and it is therefore appropriate that so many clinicians consider teaching to be one of their major responsibilities. While it is possible to be a very adequate clinical teacher without special training in education, it is difficult to be a superb teacher without some guidance or special experiences. Until recently, most clinicians have had little or no formal training in teaching, and while exceptional clinical teaching doesn't necessitate a degree in education, it does require investing time to learn about the science of adult education and investing effort to examine, evaluate, and improve one's teaching techniques. It also requires practice and is greatly facilitated by peer-review and self-reflection.

As the discipline of general education has advanced, so has the field of medical education, and clinician-educators now have a wealth of educational information and an arsenal of teaching tools at their disposal. The competition for promotion as a medical educator is becoming more and more formalized, with defined expectations and explicit criteria, and others in your field may have the advantage of specific educational training. Babe Ruth was a "natural" and established a home run record of 714 that lasted for 39 years, despite a dissolute life style and often missing training. Few are so gifted. Today, successful sports figures invest an enormous amount of their time training. Politicians are tutored in public speaking. Even criminal defendants are instructed in how to act in court. Now, it is almost impossible to get to the top without training.

It is time for clinician-educators to take advantage of the educational resources that can help make them better, more effective teachers. Neher et al. have reviewed data showing that "untrained clinical teachers tend to give mini-lectures rather than conduct discussions, provide inadequate feedback to learners, and allow residents to present haphazardly or bluff their way through presentations."

Experience is a powerful teacher, but as many authors have pointed out, there are dangers associated with learning in this way. "Experience teaches slowly, and at the cost of mistakes." (James A. Froude) "Experience is a hard teacher because she gives the test first, the lesson afterwards." (Vernon

Sanders Law) "Good judgment comes from experience, and often experience comes from bad judgment." (Rita Mae Brown) "Experience is what you get by not having it when you need it." (Unknown) "Wisdom is recognizing a mistake when you make it again." (Unknown)

Clinical experience must be acquired safely. Physicians in training rely on the knowledge, judgment, and experience of their teachers. When learning by experience hurts only the learner, that's life. If you overstep your ability and wipe out on the ski slope—you have taken a lesson in the school of hard knocks but have hurt only yourself. In medicine, it is the patient who suffers from the misjudgment or error of the learner. Physicians in training need teachers who are both clinically and educationally competent.

A review of the literature by Gerrity and coworkers delineated what clinicians saw as the rewards of medical teaching. The intrinsic satisfaction of teaching and the stimulation of working with students and residents were the major items. Many clinicians reported a renewed sense of importance of their work and found that teaching helped keep them abreast of current changes in medicine. Some appreciated that their learners helped with patient care. Finally, clinicians noted that teaching facilitated recruiting learners into their own specialties or their own practices.

On the downside, the authors identified challenges and problems with teaching in the clinical setting. Most notable was concern that teaching takes time and can decrease productivity. In certain settings, patients may not accept being seen by a learner and may be less open with the attending physician in the presence of a learner. A number of clinicians felt that the presence of a student interfered with the physician-patient relationship. Some clinicians were uncertain of their teaching skills, as well as their ability to accurately evaluate learners, while others noted that providing feedback to problematic learners was unpleasant, intimidating and dissatisfying.

In his book, *There Is No Gene for Good Teaching: a handbook on lecturing for medical teachers*, Neal Whitman, Ed.D., says "Good teachers are made, not born." As an example, Whitman relates how Thomas Huxley, a renowned lecturer felt during his first lecture: "I did feel most amazingly uncomfortable." On that occasion, Huxley was criticized for running his words together and pouring out new and unfamiliar matter at breakneck speed. Judging by Huxley's ultimate esteem as a lecturer, improvement is possible, but it takes commitment and a conscious effort to strengthen your skill, not just in lecturing, but in all aspects of teaching.

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Chapter 2

From Competent Teacher to Master Teacher

"Benevolence alone will not make a teacher, nor will learning alone do it. The gift of teaching is a peculiar talent, and implies a need and a craving in the teacher himself." John J. Chapman.

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OBJECTIVES

After studying this chapter, the reader should be able to

- list and discuss the minimum requirements of a competent clinical teacher
- describe the differences between a competent and a master clinical teacher
- list, describe, and emulate some of the characteristics and behaviors of a master clinical teacher

INTRODUCTION

It has been said that excellent teaching is like pornography—hard to define, but we know it when we see it. In reality, not only can excellent teaching be defined, it can be understood, analyzed, taught, and evaluated. We all have had the privilege of learning from wonderful teachers, as well as the experience

of suffering the indifference or ineptitude of poor teachers. We have had teachers who stimulated us and whetted our appetites to learn more, and others who put us to sleep. We have learned from clinicians who helped us understand what, how, and why, but we also have been instructed by those who simply told us what to do and did not care whether or not we understood or learned. In short, we all have had experiences with good teachers and with poor teachers. What makes the difference? What makes a teacher outstanding? Are great teachers born or made?

There are certain personality traits that make someone a better teacher than others who lack these characteristics, for example: patience, compassion, respect for others, and logical thinking. It is equally clear that certain other characteristics make for a poor teacher: irritability, egocentricity, irrationality, and disorganization. Some successful instructors are more gifted at explaining things; others have especially clear and attention-getting speech. While these characteristics can make one a good teacher, just as strong eye-hand coordination can make one a good tennis player, it is only with effort, training, and practice that one can be superb. Teaching is a skill, and progression from competency to mastery takes instruction, experience, and commitment. You do not need extensive formal training or a degree in education to be an effective medical teacher, but you do need some knowledge of educational principles and some understanding of adult learning theory to be a truly superb teacher. And to be *academically* successful as a clinician-educator, you also will need to be involved in scholarly educational activities.

MINIMUM REQUIREMENTS OF A COMPETENT CLINICAL TEACHER

The basic requirements for successful clinical teaching include clinical competence, a willingness to teach, and respect for learners. Add to these, reasonable organizational skills and the ability to communicate and explain things, and you have a pretty strong teacher. These five items (clinical competence, willingness to teach, respect for learners, organizational skill, and ability to communicate) are essential to the successful clinical educator, but it takes more to make a master teacher.

Clinical competence

Highly respected clinical teachers are clinically competent and proficient. They are knowledgeable about their fields, skillful and professional, concerned about patient welfare, and sensitive to patients and their families. They are able to perform an efficient, yet thorough, history and physical examination, formulate a logical and organized differential diagnosis, and make appropriate diagnostic and therapeutic decisions.

Willingness to teach

If the instructor is not willing to teach, effective teaching is unlikely to occur.

The quality teacher wants to teach and is prepared to take the time to do so. For the busy clinician, time is money, and the willingness to take the time to teach is a testament to the commitment of the successful clinician-educator.

Respect for learners

Respect for learners is a critical ingredient for successful teaching. Respect empowers the learners and facilitates honest, two-way communication. It encourages learner-centered teaching. Lack of respect poisons the milieu and makes learning difficult. Lack of respect short-changes the learners, confuses them, and turns them away from learning.

Organizational skills

Regardless of how well-meaning a teacher may be, if disorganized, his teaching is unlikely to be successful. Teachers do not have to be ultra-efficient, machine-like paragons of organization, but they do have to be able to organize their tasks well enough to provide time for teaching. They also need to be able to organize their thoughts well enough to explain them to the learners.

The ability to communicate and explain things

Effective clinical teachers can answer questions and explain difficult concepts clearly, but the ability to communicate and explain goes beyond clarity. It includes the ability to judge how well the learner comprehends and the ability to take another approach if the learner is confused.

Table 1.
Behaviors that Contribute to Teaching Excellence

Prepares for teaching sessions
Sets goals and objectives
Orients team, clarifies ground rules, discusses expectations
Is punctual (starts and stops on time)
Asks questions and listens to answers
Helps learners develop clinical reasoning skills
Effectively directs and leads sessions and discussions
Focuses on important, basic and practical issues
Emphasizes concepts
Conducts sessions interactively
Involves the entire group
Keeps the discussion moving and in the right direction
Lets individuals and the team make some of the decisions
Provides constructive feedback without embarrassing learner

BEYOND THE COMPETENT TEACHER, TO THE MASTER TEACHER

A number of studies, as well as interviews conducted by the authors of this book, have identified *characteristics* that both learners and educators associate with teaching excellence, characteristics that move the teacher from competent and proficient to expert and, finally, to master. Educational psychologists, as well as acclaimed clinical educators, have recommended specific educational *behaviors* that are successful in the clinical setting. Characteristics and behaviors are intertwined and cannot be separated. Characteristics are evident through the behaviors they produce, and behaviors are driven by characteristics.

A study by Buchel and Edwards looked at what residents and faculty considered characteristics of the effective clinical teacher. Both groups agreed that clinical competence and enthusiasm were at the top of the list. However, residents rated teacher role modeling as least important, while faculty rated role modeling as one of the top three characteristics. Residents considered respect for their autonomy and independence as very important, while faculty considered this as one of the least important characteristics.

A paper by Hesketh et al, in the United Kingdom, suggested specific competencies for the excellent physician-educator. In addition to the ability to teach in large and small groups and in the clinical setting, their recommendations included competencies in planning, facilitating and managing learning, developing and working with learning resources, and assessing trainees. While Hesketh and coworkers included evaluating courses and doing educational research in their list of competencies, these skills are important for the academic clinician looking towards promotion based on teaching but would be optional for the clinician-educator in the field who considers education important, but not his primary career direction.

Clinical and educational competence

Branch and coworkers have explained why exemplary clinician-educators need to be superior clinicians as well as superior teachers. As one of the major tasks of clinician-educators is to impart knowledge, they must be knowledgeable about their fields, including the current literature. For the generalist, this is especially challenging. Clinician-educators also need to model exemplary clinical judgment and skills and can do this only if they possess such judgment and skills.

Today's outstanding clinical teachers know much more than diseases and treatments. They understand the medical system—its economics, resources, problems and disparities. They appreciate the complex relationship between culture and health. They are aware of recommendations for educational goals such as the core competencies of the American Council on Graduate Medical Education and the educational standards of the Liaison Committee on Medical Education.

Today's master clinical teachers, as well as the leaders in this field, have an appreciation for the science of education and have an understanding of the tenets of adult learning and the principles of educational psychology. They understand how adults learn. They recognize the importance of learner involvement and know that the most successful teaching is at the level of the learner and learner-centered. Master teachers recognize that the more immediate and applicable the material is to the learner, the more likely it is to be learned.

Passion to teach

Branch and coworkers also reported that dedication to teaching was a characteristic included in a consensus definition of the successful teacher-educator. Dedication goes beyond willingness. It is not only the amount of time given to teaching that makes the distinction; it is also the commitment to doing it well. It is the desire to learn about teaching. It is the willingness to prepare for teaching, and it is the courage to seek evaluation of your teaching by feedback, by reflection and by peer coaching (see below). The best teachers are willing to go beyond their own interests to address issues of importance to the learners. They are willing to go beyond their own knowledge and work with learners to obtain the information needed to answer relevant questions.

The very best teachers are passionate about teaching. They exude intellectual excitement and motivate their learners to share in that excitement. In an article titled *Pearls of Wisdom for Clinical Teaching: expert educators reflect*, J.E. Thompson, a renowned midwife, said, "I teach because I love to share what I have learned with others and continue learning with those who want to be the best clinicians and teachers they can be."

Respect for, and understanding of, learners

Superior teaching requires more than just respect for learners. It requires that the teacher be concerned that his students learn what they need to, in a safe and supportive environment, and that they also grow and develop. Superior teachers see their students as individuals, with different levels of competency, and to the degree possible, they adjust their teaching strategies to the needs of individual learners.

The best teachers are respectful of each learner's age, gender, culture, and individuality. They are respectful of the learner's time. They are punctual—*starting* and *ending* rounds on time—and they utilize every available moment and every opportunity for teaching.

Organizational proficiency

Master teachers must be sufficiently well organized that they are able to carry a large clinical load while still providing sufficient time to accommodate the needs of their learners. They must be able to organize patient care in a way to

utilize maximally the clinical abilities of students and residents and organize teaching activities in a way to minimize any slowing patient care. They must be so methodical that teaching and patient care are coordinated and run smoothly and synchronously. Master teachers can keep track of both patients and learners and "diagnose" both (Irby, 1992).

The ability to communicate and to provide meaningful feedback

Outstanding teachers articulate their ideas clearly. Their discussions are logical, well thought-out, and structured clearly. They ask appropriate questions, listen to answers, and respond constructively. They actively direct or lead the session and keep the discussion moving in the right direction. They involve the entire group. Outstanding teachers provide information, but even more, they emphasize concepts. They focus on important, basic, and practical issues.

William Arthur Ward, a well-known college administrator, said that a mediocre teacher *tells*, a good teacher *explains*, a superior teacher *demonstrates,* and a great teacher *inspires*. Note the progression from imparting knowledge, to teaching understanding, to fostering self-learning. Appreciate the transition from a passive to an active technique and the shift of focus from teacher to student.

The best teachers are learner-centered rather than teacher-centered. They make an effort to determine where the learner is and what he needs to learn. Effective teachers orient their learners. They set goals, objectives, expectations, and ground rules and encourage their students to do the same.

Communication includes providing meaningful feedback in a timely and constructive manner. (See Chapter 17) If you wait until the last day of a rotation to point out problems or weaknesses, the learner has no opportunity to incorporate your suggestions and show you that he can do better.

Reflection exercise #1. Answers at end of chapter.
Below are the 5 major requirements of the competent clinical teacher. Explain how each expands in regards to the master teacher.
Clinical competence -
Willingness to teach -
Respect for learners -
Organizational skills -
The ability to communicate and explain -

Other characteristics and behaviors of the master clinician- teacher

The best teachers are dynamic, exciting and stimulating. They are enthusiastic, challenging, inspiring, and motivating. They are friendly and non-threatening. They are objective, fair, and supportive. The strongest teacher is the one who leads the learner to solve the problem and inspires the learner to

teach himself.

The best teachers act as role models—from washing their hands before examining a patient to drawing out the history from an upset patient or confused parent. They help learners develop their clinical reasoning skills, as well as increase their fund of knowledge. They demonstrate how to determine what knowledge is needed in order to make a sound clinical decision and how to find and analyze that information. They foster self-learning and encourage their students to be life-long learners.

The most highly rated teachers have strong interpersonal skills. They are accessible, available, and approachable. They are empathic, understanding, and non-judgmental and can provide constructive feedback without embarrassing the learners. They also are strong leaders. Whenever possible, they permit individuals and the team to make decisions. They are consistent yet flexible.

The best teachers are skillful with a variety of instructional activities. They are interested in learning new techniques and strategies. The best teachers reflect on their teaching, are willing to change, and seek ways to improve their skills.

Achieving these qualities is within the reach of most dedicated clinician-educators, but it takes time, effort, and self-reflection.

Table 2.
Characteristics of the Competent and the Master Clinician-Educator

The competent clinician-educator	The master clinician-educator
Clinically competent and knowledgeable	Also educationally competent and knowledgeable
	Highly professional; strong role model
	Technically proficient
Willing to teach	Anxious to teach; passionate about teaching; dedicated to teaching
Respectful of learners	Respectful of, and interested in, learners; considers their strengths and weaknesses and what they need to learn
	Concerned and sensitive
Organized	Highly organized and efficient
	Prepared for teaching sessions
Clear communicator	Communicates very clearly, logically, and at an appropriate level for the learner
Interesting	Stimulating, challenging, motivating, and inspiring
Personable	Friendly and non-threatening

	Fair and nonjudgmental
	Available and approachable
	Consistent yet flexible
Able to provide constructive feedback	Reliable about providing helpful feedback in a timely, sensitive, and constructive manner

IMPROVING TEACHING SKILLS: THE JOURNEY TO MASTERY

As with any other skill, improving your teaching requires experience and practice. Achieving mastery requires even more. You will need to become a student of teaching and learn about educational principles. You will need to read, attend classes, and go to conferences about medical education. Many medical schools provide these activities as part of faculty development, and several now offer Master Teachers Programs and formal degrees in medical education (Gruppen).

Two important techniques for improving one's teaching abilities are peer coaching and self-reflection. Peer coaching has been used in general education for sometime and is now being applied to medical education. The process involves one teacher (the coach) observing another (the observed teacher) and then providing feedback in a constructive, non-judgmental manner, emphasizing what the observed teacher might do to improve his teaching. The process can be rewarding for both physicians involved. In "co-teaching," a variation of peer coaching, two teachers alternate being teacher and observer over a period of time (Orlander). A similar process has also been referred to as "having critical friends." All forms of peer coaching encourage self-reflection and provide an avenue for improvement of teaching skills. For example, Beckman reported that peer coaching revealed a high prevalence of missed opportunities to provide feedback to learners even among dedicated teachers.

Peer coaching is a completely voluntary collaboration that requires trust and candor. It involves identification of specific goals, focused observation, and supportive feedback. While it can provoke anxiety, it usually evolves quickly into a comfortable interaction.

Reflection is the act of reviewing and examining an experience objectively, analytically, and non-judgmentally. Reflective practice is an important component of professionalism, as well as an essential tool for self-improvement of clinical and educational skills. While reflection is commonly triggered by an adverse event, that need not be the case. Robertson suggested that physicians and educators also should deliberately select routine events for self-reflection and noted that reflection can be used as part of the planning process for an anticipated event, such as a teaching session. Self-reflection involves an examination of knowledge and feelings that result in a new perspective on the situation and the individual's relation to that situation.

Significant event analysis (SEA) is a similar objective, nonjudgmental analysis triggered by an important event (almost always a negative event). Significant event analysis is usually undertaken by a group or team rather than by a single individual and is generally more concerned with failed processes rather than personal performance. It has, however, been used with self-reflection as part of medical students' portfolios (Grant).

Mindful practice is another process closely related to reflection. Mindful practice includes, but goes beyond, reflection, and unlike reflection, which is looking back at an experience and learning from it, mindful practice is ongoing, a real-time process. As Epstein puts it, "Mindful practitioners attend in a nonjudgmental way to their own physical and mental processes during ordinary, everyday tasks."

SUMMARY

The five essential features of a good clinical teacher are clinical competence, willingness to teach, respect for the learner, organizational skill, and ability to communicate effectively.

Teacher characteristics that go beyond the good to the excellent include educational competence, enthusiasm for teaching, interest in the learner, superior organization, and clarity of communication. Teaching behaviors that make for excellence include preparation, setting goals and objectives, listening and providing feedback. The most effective teaching is learner-centered rather than teacher-centered. The best teachers emphasize concepts in addition to facts, and they encourage self-learning. The journey of the clinician-educator from competency to mastery takes time, effort, and self-reflection.

ACTION STEPS

- Identify characteristics and behaviors of the excellent teacher
- Emulate characteristics and behaviors of the excellent teacher
- Prepare for teaching sessions
- Orient learners
- Encourage self-learning
- Evaluate learners
- Provide constructive feedback in a timely manner
- Work to improve your teaching skills

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Answers to reflection exercises

#1.
Clinical competence expands to clinical and educational competence
Willingness to teach becomes the passion to teach
Respect for learners grows to include understanding of learners
Organizational skills expand to organizational proficiency
The ability to communicate and explain now includes the ability to provide meaningful feedback

Chapter 3

Setting Goals and Objectives

"If you don't know where you're going, you might not get there" Yogi Berra.

CHAPTER OUTLINE
OBJECTIVES
INTRODUCTION
DEFINITIONS
IMPORTANCE OF LEARNING OBJECTIVES
TYPES OF LEARNING OBJECTIVES
Cognitive objectives
Psychomotor objectives
Affective objectives
COMPONENTS OF LEARNING OBJECTIVES
SUMMARY
ACTION STEPS
RESOURCES

OBJECTIVES
After studying this chapter, the reader should be able to:

- distinguish between goals and objectives
- recommend two reasons for writing goals and objectives
- transform lower level thinking objectives to higher levels, using Bloom's taxonomy for cognitive objectives
- identify the components of a well written objective
- write an objective for each of the three domains of learning: knowledge, skills and attitudes.

INTRODUCTION

Although Yogi Berra was not a medical educator, he understood the importance of objectives. For any educational activity, it is critical to state clearly what the learner should be able to do when he has completed the activity. Without this clear statement, the learner might roam aimlessly and not end up where you expect him to. Robert F. Mager stated, "Instruction is effective to the degree that it succeeds in changing students in desired directions and not in undesired directions." Setting goals and objectives is one of the first steps in this process.

DEFINITIONS

Although one may hear the words *goals* and *objectives* used interchangeably, they really are quite different. A goal is a general statement that communicates the overall purpose of instruction. Goal statements tend to be broad and vague. An example of a goal would be, "The student will be familiar with the management of otitis media." Objectives, on the other hand, are specific and measurable. An objective for the above goal might be, "At the end of the session, the student will be able to outline at least two options for the management of acute otitis media in a 3-year-old child." Another way to differentiate between goals and objectives is to compare a goal to a zip code and an objective to a street address. If we wanted the learner to come to our clinic and told him to drive to 77030, the likelihood of him getting there without any further directions would be slim. However, if we told him to drive to 6621 Fannin Street, Houston, TX, we would know that he achieved this objective when he arrived at the front door.

Objectives are referred to by many different names, including instructional objectives, educational objectives, behavioral objectives, learning objectives, performance objectives, and intended learning outcomes. No matter which of these terms is used, an objective can by defined as "a statement in specific and measurable terms that describes what the learner will know or be able to do as a result of engaging in a learning activity" (Baker).

Reflection exercise #1. Answers at end of chapter.
Determine if the following are goals (G) or objectives (O) and circle the appropriate choice

a) The learner will understand the management of congestive heart failure. **G O**

b) The learner will list and discuss at least 8 of the 11 diagnostic criteria for systemic lupus erythematosus. **G O**

c) The learner will critique antibacterial choices for sinusitis based on palatability of liquid suspensions. **G O**

d) The learner will internalize the concepts of professionalism. **G O**

e) The learner will interpret arterial blood gas values. **G O**

IMPORTANCE OF LEARNING OBJECTIVES

Why is determining learning objectives important? According to Guilbert, "learning objectives are not an end but a means." McNeil pointed out that some studies of objectives have shown a positive effect on outcome, but an equal number have not. While research has not demonstrated a consistent link between writing objectives and student achievement, when learning objectives are lacking, there is no direction for selecting educational materials, content, or

methods and no framework for evaluating the success of the activity. Objectives guide the teacher in the planning and delivery of instruction and in the evaluation of achievement. Explicitly stated objectives help learners know what is expected of them and provide a model for them to develop their own learning objectives. Learners at all career stages are increasingly being asked to develop their own set of learning objectives and to determine what they personally would like to achieve from the educational experience. Some studies have shown a positive effect on learning outcomes when students set their own goals and objectives within the larger context of those established by the teacher (Marzano).

Preparing objectives helps make teaching more focused, relevant, organized, and efficient. Stated objectives drive the teacher to emphasize some content areas over others and show prioritization to the learner. This reduces non-essential material and allows the learners to focus on those objectives deemed most relevant. Written objectives aid the learner in knowing what is expected of him and allow more efficient utilization of study time. Finally, learning objectives provide the teacher with a template to develop tests or other evaluation tools that assess whether the learners have achieved the desired knowledge, skills or attitudes. Teachers must be careful not to get caught up in the process of writing objectives just to say that they have them. Objectives need to be translated into appropriate learning experiences and compared with measured outcomes. Engel summarized this philosophy quite well: "Objectives should be occasional signposts, not the constant hand that leads the blind."

Reflection exercise #2. Answers at end of chapter.
A colleague tells you about the new rules and regulations for a course she is directing. She is upset that she must write objectives for the course and does not see the value in this "exercise". List two reasons you would share with her to explain the importance of objectives.

TYPES OF LEARNING OBJECTIVES

The three domains of learning objectives are: 1) cognitive-knowing, 2) psychomotor-doing, and 3) affective-feeling. These three domains have also been referred to as knowledge, skills, and attitudes. Instructors are most familiar with knowledge objectives, and one rarely sees objectives written for the affective domain.

Cognitive Objectives

A pitfall in writing objectives is to focus on memorization of facts. Bloom and associates developed a stepwise taxonomy for classifying educational objectives in the cognitive domain. This taxonomy moves the learner up a series of steps from knowledge to evaluation. Below is the hierarchical model

of Bloom's categorization with relevant verbs that can be used in writing objectives at each of these levels. The model is in increasing order of complexity, and each successive step prepares the student for learning at the next level.

Table 3.
Bloom's Taxonomy for Objectives in the Cognitive Domain

Level	Cognitive process	Verbs
Lower level objectives		
Knowledge	Remembering learned material	define, list, state, name
Comprehension	Explaining material that has been learned	identify, explain, recognize, discuss
Higher level objectives		
Application	Using knowledge to find or develop new solutions	apply, demonstrate, illustrate, interpret
Analysis	The ability to break down material into parts so that its organizational structure can be understood	analyze, categorize, compare, differentiate
Synthesis	Using end results to develop general rules	design, formulate, plan, manage
Evaluation	Judging the value of something for a given purpose	choose, critique, rate, appraise

After Waller K.V.

Bloom's taxonomy of cognitive objectives can be divided into lower and higher level objectives (see table above). Lower level objectives are knowledge and comprehension. The ability to think is fostered not through lower level recall of knowledge alone but through application, analysis, synthesis, and evaluation. Unfortunately, research shows that the lower levels of learning (knowledge and comprehension) are where much of the emphasis of objectives in medical education is found. A lower level objective such as, "The learner will list the signs and symptoms of ulcerative colitis and Crohn's disease," can be transformed into a higher level objective such as, "The learner will differentiate the two major types of inflammatory bowel disease based on pathophysiologic findings." Other verbs for Bloom's taxonomy can be found in the resources listed at the end of this chapter. When writing objectives, higher levels of learning should be stressed whenever possible.

Reflection exercise #3. Answers at end of chapter.
Transform the following knowledge objectives from lower level recall objectives to higher level objectives. (Hint – you may use the verbs listed in the table

above. Other verb choices can be found in the resources listed at the end of the chapter)
a) The learner will state the 3 most common causes of abdominal pain in an adolescent female.

b) The learner will list the most common pathogens that cause pneumonia in a neonate, infant, and school aged child.

c) The learner will recognize the skin findings of tinea corporis.

Psychomotor objectives

The psychomotor domain also can be divided into a hierarchy of levels of performance. Psychomotor (skill) objectives are easier to measure than affective or cognitive objectives because they are readily observable, e.g. "The resident will place a femoral line," "the student will demonstrate how to auscultate the heart," "The learner will perform cardiopulmonary resuscitation on a mannequin." It is important to delineate the degree or standard of performance expected. For example, if the skill is intubating a patient, what level of competence is expected of the learner? Certainly, it will be expected that the tube will be correctly positioned in the trachea, without breaking or dislodging any teeth, but in how many attempts? An example of this objective would be, "The learner will intubate a child older than one year of age who does not have underlying airway problems utilizing a curved blade. The outcome will be considered successful if the learner performs the task within two attempts, does not break or dislodge any teeth, and positions the tip of the endotracheal tube 5-15 mm above the carina." The degrees for performance of psychomotor objectives tend to be very explicit to allow the learners (and evaluators) to know if the objectives were achieved relative to standards. In many cases, these standards are contained and referenced by a performance checklist, e.g. "The learner will perform cardiopulmonary resuscitation achieving 85% competency in accordance with the cardiopulmonary resuscitation performance checklist."

People learn at different rates, especially in skill acquisition. One-on-one instruction improves learner outcomes but may not be feasible in all situations. However, every individual needs time to practice, and research has demonstrated that mastering a skill requires practice. Based on a synthesis of research in cognitive psychology, Marzano et al. suggested that students must practice at least 24 times to reach a level of competency that is 80% of complete mastery. While this exact number will not apply to all medical skills, it is clear that the adage, "see one, do one, teach one," is not a practical model for achieving competence.

Affective objectives

The affective domain involves attitudes, feelings, values, and beliefs. While

this domain is very important, it is also the most difficult to teach. Krathwohl et al developed a taxonomy of objectives for the affective domain that consists of five major categories organized in a hierarchy. This taxonomy presents a hierarchy of levels for developing a value system that leads toward the ultimate goal of self-actualization (Krathwohl). These five levels form a continuum of attitudinal behavior, from awareness and acceptance to, ultimately, internalization. Once mastered, these attitudes become part of the individual's value system (Maier-Lorentz). Verbs that can be utilized for the affective domain include: *show* sensitivity to, *accept* responsibility for, b*e willing to, a*nd *demonstrate* commitment to. Some examples of affective objectives include, "The student will listen while others express their points of view on the effects of religious beliefs on medical outcomes in cancer," or "The resident will habitually abide by a set of legal and ethical standards." Objectives in the affective domain are often difficult to measure.

Table 4.
Krathwohl's Taxonomy for Objectives in the Affective Domain

Level	**Judgment**	**Examples of objectives**
Receiving (attending)	Learners are willing to receive the subject matter	The physician will listen attentively while the patient expresses his beliefs about the cause of his illness
Responding	Learners prefer the subject matter	The resident will answer a call for volunteers to work with patients displaced by Hurricane Katrina
Valuing	Learners are committed to the subject matter	The physician will express appreciation for the contributions of all team members in the care of his patients
Organization	Learners are forming a life philosophy	The medical student will choose to eat nutritious food over food obtained from the snack machines while in the hospital
Characterization by value or value complex	The learners' values consistently guide their behaviors without conscious forethought	The physician will habitually abide by the standards outlined in the Hippocratic Oath

After Brightman H.J.

Because objectives for the affective domain involve attitudes, beliefs, and values, they are difficult to write and difficult to measure. Despite these limitations, every effort should be made to include affective objectives when

possible.

COMPONENTS OF LEARNING OBJECTIVES:

Learning objectives typically are composed of four parts, also known as the ABCD's of objective writing (Ferguson):

A = audience	who
B = behavior	will do what
C = condition	under what conditions
D = degree	how much, or how well, or both

The audience is usually predefined or stated, for example, "The learner will be able to …" It is important to write objectives in terms of what the learner will do, not how the instructor proposes to teach the material. It is incorrect to say, "The learner will complete five case scenarios on causes of respiratory distress in infancy." The correct way to write this objective would be, "The learner, utilizing five case scenarios, will be able to compare and contrast the three major causes of respiratory distress in infancy." It is also incorrect to say what the instructor will teach. "The differences between nephritic and nephrotic syndrome will be taught to the students," is not a valid learning objective. The objective should be stated in terms of what the student will be able to do once he has completed the instruction, "The student will be able to describe the differences in the laboratory findings between nephritic and nephrotic syndromes and link these to their respective pathophysiologic mechanisms."

One of the most challenging aspects of writing objectives is to delineate what the learner will be able to do in *measurable* terms. Most people have encountered objectives with terms such as "understand", "know", "learn", or "believe" but how does one measure "understand"? These are called fuzzy or cloudy verbs and should not be used when writing objectives. They are, however, appropriate for goals, as these verbs are very broad and general. The most important component of a learning objective is the action verb that specifies the performance required. When creating objectives, the more precise the action verb the better. When choosing verbs for objectives, the emphasis is on using verbs that are specific and unambiguous.

The degree specifies the criterion for acceptable performance. For example, "The learner will be able to successfully draw a venous blood sample on the first attempt 80% of the time." Often the conditions are not specified, although it may be useful to do so if it will make the objective clearer. The condition details items such as environmental factors, equipment, and supplies. For example, "The learner will be able to successfully draw a venous blood sample from cooperative children over 5 years of age, on the first attempt, 80% of the time, using a tourniquet, butterfly needle, and syringe." A mnemonic that

can help one remember how to be SMARTER when writing objectives is as follows:

S = Specific (objectives should have a specific, not broad, outcome)
M = Measurable
A = Action oriented
R = Relevant to the material being studied
T = Time limited or time specific
E = can be Evaluated
R = Realistic

Whenever possible, include objectives from all three domains of learning: knowledge, skills, and attitude. Identify both lower and higher level cognitive objectives, and place a greater emphasis on higher levels of cognitive learning (application, analysis, synthesis, and evaluation). For learning objectives to be most effective, they should help in identifying appropriate learning activities and describe, clearly and precisely, what the learner will do to demonstrate achievement. Use of the ABCD mnemonic for learning objectives is helpful in stating learning objectives in an acceptable format. Setting goals and objectives aids both the student and the teacher in navigating through the mass of material that must be learned in today's medical environment. Robert Mager, the educator who led the movement for behavioral objectives, adapted the words of Yogi Berra and said, "If you are not sure where you are going, you are likely to end up some place else – and not even know it." Goals and objectives provided the learner with signposts to direct him along the path to success.

Reflection exercises #4 and #5. Answers at end of chapter.

4. Review the following objectives and identify the audience, behavior, condition, and degree for each of the objectives. Draw a line under the audience, draw a squiggly line under the behavior, place parentheses around the (condition), and square brackets around the [degree].

a) The learner will discuss with each family at every well child visit at least 2 different topics related to injury prevention.

b) Using the given rubric, learners will demonstrate during video observation how to use a metered dose inhaler correctly without missing a single step.

c) The resident will chose to exercise 20 minutes three times a week on those rotations that do not require overnight call.

5. Write one learning objective for each of the following domains:

a) Knowledge

b) Skills c) Attitudes

SUMMARY

Goals and objectives are critical to planning educational experiences. A goal is a general description of what the learner will gain from instruction; an objective is a statement in specific and measurable terms that describes what the learner will know or be able to do as a result of the learning activity. Objectives serve as guides in planning, delivering, and evaluating instruction. They help learners know what is expected of them and help them prioritize content. They provide a template for tests and other evaluation tools. The three domains of learning objectives are: cognitive (knowledge), psychomotor (skill), and affective (attitude).

ACTION STEPS

- Prepare goals and learning objectives for your teaching sessions
- Utilize Bloom's taxonomy to format cognitive objectives at as high a level as possible, striving to go beyond comprehension
- Evaluate to see if your learners have achieved the objectives

RESOURCES

Objectives that have been written by national organizations

Ambulatory Pediatric Association Educational Guidelines for Pediatric Residency Training. Available at www.ambpeds.org/edwebnew. Accessed August 12, 2007

Council on Medical Student Education in Pediatrics. Available at http://www.unmc.edu/Community/comsep/. Accessed August 12, 2007

Content Specifications and PREP® Study Guide. PREP® The Curriculum. The American Academy of Pediatrics.

Verb lists

http://www.teachervision.fen.com/page/2172.html. Accessed August 12, 2007

http://www.coun.uvic.ca/learn/program/hndouts/bloom.html. Accessed August 12, 2007

http://www.stedwards.edu/cte/resources/BloomPolygon.pdf. Accessed August 12, 2007

http://www.csus.edu/uccs/training/online/design/bloom.doc. Accessed August 12, 2007

https://www.uwsp.edu/education/lwilson/curric/affectiv.htm. Accessed August 12, 2007

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Answers to reflection exercises

1 a) goal, b) objective, c) objective, d) goal, e) objective

2. Guides in planning, delivery and evaluation of instruction, helps direct the learners to know what is expected of them, prioritizes and values some content over others, provides a template for tests and other evaluation tools, and helps make teaching more focused and organized

3.
a) The learner will compare and contrast the three most common causes of abdominal pain in an adolescent female.
b) The learner will choose an antibiotic for the most common cause of bacterial pneumonia in a neonate, an infant, and a school aged child and provide a rationale for each of the choices.
c) Using the digital images provided, the learner will differentiate tinea corporis from other common skin conditions that mimic this disorder.

4.
a) The learner will discuss (with each family at every well child visit) [at least 2 different topics related to injury prevention].
b) Using the given rubric, learners will demonstrate (during video observation) how to use a metered dose inhaler [correctly without missing a single step].
c) The resident will chose to exercise [20 minutes three times a week] (on those rotations that they do not take overnight call).

5.

a) The learner will debate in 10 minutes or less, the pro's and con's of writing objectives, including four of the five stated advantages listed in the chapter.

b) The learner will develop a teaching module, utilizing PowerPoint® only, on writing goals and objectives by the end of the academic year.

c) The learner will integrate goals and objectives into every lecture given for the following year.

Chapter 4

Designing Educational Experiences

"If you fail to plan, then you plan to fail." H. Jerome Freiberg.

CHAPTER OUTLINE
OBJECTIVES
INTRODUCTION
DEFINITIONS
THE DESIGN PROCESS
GOALS
NEEDS ASSESSMENT
OBJECTIVES
METHODS
Knowledge
Skills
Attitudes
EVALUATION
Evaluation of learners
Evaluation of program
Educational planning
SUMMARY
ACTION STEPS

OBJECTIVES
After studying this chapter, the reader should be able to:

- list the five steps of the educational planning process
- discuss two reasons to be systematic in organizing educational experiences
- identify methods to collect data for a needs assessment
- match teaching methods to learning objectives
- list the four components of program evaluation and design an evaluation question for each of these areas

INTRODUCTION

"Research during the past 40 years on teaching effectiveness supports what most experienced teachers have concluded: effective teaching is not a haphazard process" (Freiberg). All educational experiences should be organized in a systematic fashion. Most faculty have not received training in

curriculum development or instructional design and tend to stumble along, utilizing the examples set forth by their predecessors. Rear Admiral Grace Hopper stated it quite eloquently, "The most damaging phrase in the language is 'It's always been done that way'." The goal of this chapter is to introduce a method that can be used to organize all learning activities systematically.

DEFINITIONS

While the terms "curriculum" and "instruction" often are used interchangeably, they are quite different. Curriculum is that which is taught, and instruction is the method used to teach the curriculum. Luann Wilkerson, a medical educator, defines curriculum as "a series of events and materials undertaken by learners for the purpose of acquiring specific competencies." Instruction is the means to accomplish this. Over the last few decades, there has been a shift in medical education from teacher-centered to learner-centered curricula. Traditionally, the instructor's role has been to teach the material. In this conventional model of teaching, the student tends to take a passive role in the learning process (like a tourist), and the teacher is viewed as the expert dispenser of knowledge (tour guide). The teacher knows what is best for the learner in regard to knowledge. In a student centered model, the student is an active participant in the learning process, while the teacher functions as a facilitator of learning.

THE DESIGN PROCESS

A mnemonic, GNOME, developed by a clinician-educator, Dr. Kenneth Roberts, has been used to describe the organization of educational experiences.

G = goals
N = needs assessment
O = objectives
M = methods
E = evaluation

The educational design process can be compared to patient care. The goal of both is to identify what needs to be done and to do it. The starting point is the needs assessment. The needs assessment in teaching is the process of gathering information about the gap between what the learners already know and what they should know. If you compare this to patient care, it is similar to the history and physical examination. The needs assessment in patient care allows you to broaden your differential diagnosis and look at the problem from many different angles. The more you know about your learners and their problems, the more effective your teaching. The objectives of teaching are specific and measurable: what the learner should be able to do after the

learning experience. (See Chapter 3) This is comparable to patient care, where the objective is the desired patient outcome outlined through a specific management plan. For example, the patient will lose five pounds within the next thirty days. The patient could use a variety of methods to achieve this objective, avoiding sweetened drinks, decreasing the volume of food intake, or increasing the amount of exercise. The teacher also has a variety of methods to use to promote learning, including lectures, small group discussion, and role-playing. In patient care, follow-up is essential to determine whether or not the patient has achieved the desired outcome. The same is true in teaching; the only way you can know whether or not the student achieved the objectives is to follow-up through evaluation. Techniques that can be used include testing, questioning, and observation.

The design of an educational experience should be ordered and methodical. Developing a systematic process for all learning activities will allow you to focus time and effort on the best solution to meet the goals and objectives of the experience. It may also help achieve buy-in from other people affected by the instruction or curriculum if you are developing a formal course or rotation. The adage, "Changing a (college) curriculum is like moving a graveyard—you never know how many friends the dead have until you try to move them," has been attributed to both Calvin Coolidge and Woodrow Wilson. A systematic approach to organizing educational experiences can lend credibility to the process and to its outcomes, no matter whether a single lecture or a formal course. A systematic approach also can help make a work scholarly and can lead to continued refinement of the experience.

Table 5.
The GNOME Planning Process for Different Teaching Venues

	Course or rotation	**Planned single lecture or group meeting**	**Single, patient-centered teaching encounter**
Goals	Broad input, achieve consensus	Input from learners and others would be ideal, however most of the time the goals have already been set	Teacher can have non-content based, general goals for such encounters
Needs assessment	Broad input from learners and others, as well as data from the literature and experience with other courses and rotations	Ideally, input from learners and others; often from literature and teacher's own experience	Input from the learner is helpful to identify individual needs, oftentimes this is extemporaneous, based on teacher's experiences
Objectives	Critical. Should be carefully thought out, utilizing data collected from the needs assessment	Critical. Should be carefully thought out, with input from learners and others	Content based objectives are determined by teacher instantaneously, based on his/her experiences with that clinical problem
Methods	Important to utilize the most appropriate methods to achieve the objectives; multiple methods and innovation. but don't re-invent the wheel	Options for format often limited, but options for strategies, styles, and techniques usually open	Options usually limited, include techniques such as SNAPPS (see Chapter 7)
Evaluations	Important to evaluate both learner and activity	Routinely get feedback on teaching; if possible, evaluate what learners have learned (e.g. pre- and post-tests)	Evaluation of learner as time permits

Reflection exercise #1. Answers at end of chapter.
A colleague is discussing his plans to develop a curriculum in health literacy. He does not have an organized method to design the curriculum.
a) What are the five steps of the GNOME educational planning process?

b) List two reasons why your colleague should be systematic in developing his curriculum.

GOALS

The first step in the five step educational planning process (GNOME) is to develop goals. A goal is a general statement of the overall purpose of the educational experience. Goals tend to be broad and vague, e.g. "The learner will know the treatment options for migraine headaches," or "The student will understand the pathophysiology of septic shock." Vincent van Gogh said; "The thing has already taken form in my mind before I start it. The first attempts are absolutely unbearable. I say this because I want you to know that if you see something worthwhile in what I am doing, it is not by accident but because of real direction and purpose." Every learning experience should have one or more goals. Goals define the purpose of the experience and provide a global perspective of what the student should learn. Goals also can define the boundaries of the educational experience. All subsequent objectives, teaching methods, and evaluation strategies are directed toward achieving the stated goals. (See Chapter 3)

NEEDS ASSESSMENT

Joe Harless, a behavioral psychologist known for his performance improvement process, wrote, "An ounce of analysis is worth a pound of objectives." Before designing an educational experience, data should be generated to answer questions crucial to the success of the experience. A needs assessment is the systematic process of gathering this information from a variety of sources and using it to determine what instructional solutions will close the gap between what learners currently know or do and what you would like them to know or do. Once the gap has been identified, some teachers assume that implementing a lecture will solve the problem. This is not always the case. The needs assessment allows you to determine the best method to fill the gap and achieve the desired outcome. It also allows you to determine the proper focus of the educational experience, prioritize the content material that will be taught, and identify the resources needed to fill the gap.

The needs assessment gathers data from a variety of sources. Ask yourself what information you need before you start developing the educational experience. Categorize the questions by content, learners, and resources. Examples of content questions include: What problem does the educational

experience address? How important is this knowledge, skill, or attitude for the learner's future practice? Is this content taught anywhere else? Questions related to the learners might include: who are the intended learners, what are their preferred learning styles, and what is the current skill level of the learners who will take part in the educational activity? In regard to resources, consider questions such as: how much time is available for teaching, will other faculty be required, and is there a need for special equipment? Another important question in regard to resources is whether or not existing materials are available, and if so, can they be adapted? As Anthony J. D'Angelo, a motivational writer and speaker, said, "Don't reinvent the wheel, just realign it."

The best information on content, learners, and resources is provided by those affected by the educational experience and those who may be affected by, or involved in, closing the identified gap. The most credible sources of information are those closest to the gap and its identified needs. A variety of people other than learners and faculty involved in the curriculum can serve as sources of information, e.g. recent graduates, patients, faculty at other institutions, physicians in the community, and community representatives. Frequently neglected sources of valuable information for certain learning gaps include current or future employers. Data also can be gathered from the literature, as well from as the Internet. Gathering data from a variety of sources allows you to better understand how to fill the gap between where the learners currently are and where you would like them to be.

There are multiple techniques to obtain data for a needs assessment. Examples include a survey of graduates of the program, informal discussions with faculty, and structured individual or group discussions (i.e. focus groups). Additional methods include literature reviews and analysis of existing data, such as in-service exams, exit surveys, or chart reviews. You could observe learners to determine their competence level. Observing a wide variety of learners at various levels along the learning continuum, from novice to expert, will provide you a picture of where your learners are and where you would like them to be. Professional societies like the American Academy of Pediatrics, the Accreditation Council for Graduate Medical Education, the American Board of Medical Specialties, and the American Association of Medical Colleges are valuable sources of data. If possible, use more than one method to gather data and utilize a stepwise process in collecting the information, e.g. a literature review before the focus groups. Repeated contact with interviewees improves clarification of ideas. You should obtain data on the three domains of learning: knowledge, skills, and attitudes. If there are no available data and you cannot obtain input from learners and others, you will have to rely on your own experience and best judgment.

As part of the needs assessment, you should determine and prioritize the major content areas of the curriculum. It is not possible to teach or learn everything, and therefore, essential areas must be identified. Review the data

from your needs assessment, including the literature review and opinions from colleagues, previous learners, content experts, and professional societies. One method of prioritization is to allocate 100 points among the major topics, so as to identify the relative importance of one topic in comparison to another. This allows you to reexamine those areas receiving only a small proportion of points, to determine whether or not they should be included in the allotted curriculum time. Another method of prioritization is to label topics as essential, important but not essential, and nice to know. This facilitates judgments about the distribution of time among the various components of the curriculum.

Reflection exercise #2. Answers at end of chapter.
You have been asked to develop an interdisciplinary curriculum for 1st year medical students on the cardiovascular system.
a) What data do you want to gather for your needs assessment?

b) List one question for each of the three categories: content, learners, and resources.

OBJECTIVES

Objectives are the engines that drive the educational planning process. They are specific and measurable. Objectives tell the learners what is expected of them and provide a template for measuring whether the desired outcome is achieved. The science of setting and using objectives is explored in detailed in Chapter 3.

METHODS

Once the objectives for an educational activity have been determined, the next step is to develop the teaching methods by which these objectives will be achieved. These educational strategies are the heart of the planning process. It is helpful to construct a blueprint of the planning process, the complexity of which will depend on the activity, the need for communication with others, and the amount of material. Examples of blueprints include syllabi, lesson plans, and teaching scripts. (See Chapter 5.)

When choosing teaching methods, it is important to maintain congruence between the objectives and the methods. If you want the learner to demonstrate a skill, you would not choose, as your main teaching method, reading about the skill. You would want the learner to practice the skill through simulation or real-life experiences. When selecting a teaching method, consider how well the method matches the student behavior called for in the learning objective. Another general principle is to use multiple educational methods when designing an educational experience. Some objectives only require one teaching method, others require multiple methods. Individuals also have different preferences for learning; these are referred to as learning styles.

Some people prefer to hear information, others to see it, and some to experience it. It is generally accepted that learners retain more of what they see *and* hear than what they see *or* hear. Edgar Dale developed a "Cone of Experience" which provided an intuitive model of how well audio-visual material was retained depending on the medium. He theorized that a learner would retain more information from what he did than from what he heard, read, or observed. The key concept is that people learn and process information in multiple ways, called learning styles, and it is imperative when designing a curriculum to use multiple educational techniques to maximize learning for all participants. The ACGME Outcome Project recently developed an Instructional Strategies Toolbox, which can be found on their website at http://www.acgme.org/outcome under "implementation". A learner needs to practice or apply what he has learned to increase retention of the material. This may be done through simulated or real-life experiences. As Confucius said, "I hear, I know. I see, I remember. I do, I understand."

Motivation is a key component to successful instruction. Teachers know that when learners have little motivation, learning is almost impossible. John Keller, an educator, developed a model of the types of motivation necessary for successful learning. According to Keller's ARCS model, there are four major categories of motivational strategies: attention, relevance, confidence, and satisfaction. These factors should be taken into account when designing educational experiences. To gain attention, use novel techniques, vary the types of instruction, and stimulate information seeking behavior in the learner. The use of different teaching methods maintains interest, overcomes the problem of different learning styles, and provides opportunities for reinforcement of learning. Instruction should be relevant to what the learner needs to know or needs to be able to do. There should be expectancy for success (both on the part of the learner and the teacher), steps or multiple end points, and feedback to the learner to maximize his confidence. Determining what the learner would like to learn increases satisfaction and enhances motivation to learn. When designing educational activities, think outside the box and do not depend only on traditional methods, such as lectures and assigned readings. Finally, provide opportunities for the learner to use the newly acquired knowledge or skills with feedback and reinforcement from the teacher to sustain the desired behavior.

Noted psychologist, Abraham Maslow, observed many years ago, "If the only tool you have is a hammer, all problems begin to look like nails." Master a variety of teaching methods, and while limitations of resources may constrain the ideal approach, dream big and select the best methods possible.

Table 6.
Partial List of Methods that Can Be Used in Educational Activities

Method and description	Attributes or qualities for effectiveness	Examples
Lecture A talk by a single speaker	Should contain material that is either synthesized for the learner or not readily available (See Chapter 11)	A lecture based on the latest research or a synthesis of the current literature
Readings Learners are assigned chapters, articles, or other written material	Learner should be held accountable for the material	Review an article on allergic rhinitis and write one examination question on the most significant learning point
Site visit The learner goes to the site to see or experience the processes firsthand	There should be a defined, expected outcome from the experience	Take a shopping trip for baby food – list prices, sizes of jars, differences between 1st, 2nd and 3rd stage foods etc. Go to the operating room and describe methods by which the sterile field is maintained
Small group discussions Groups of 10 or fewer learners address a question or issue under the guidance of a discussion leader	To be effective the leader needs to be skilled in working with groups and facilitating participation. Problem based learning is a type of small group discussion. It is student-directed and allows the learners to choose concepts they would like to explore further to aid in group understanding; effectiveness depends on participation, self-	Discussion of ethical issues related to adolescents, work-up and management of a patient with thrombocytopenia, including issues related to health economics, access to care, alternative and complimentary medicine, and cultural aspects

	motivation, and a well formed and functioning group	
Team learning Preparatory readings are assigned and the learners comes prepared to demonstrate their knowledge of the material first as individuals and then as a group. The group then applies this knowledge to selected problems	Both the individual learner and the team should be held accountable for the material. Discussion material should stimulate problem solving and not focus on rote memory	A group of students assigned to the core medicine rotation discuss and apply current management strategies in the treatment of HIV
Demonstrations The instructor demonstrates a procedure so the learner can observe the action performed correctly	Directions should be given to the learners on what they should observe during the procedure; procedural steps should be discussed prior to demonstration	Suturing or physical examination skills
Prepared Audio/visual materials The use of visual and auditory media such as pictures, diagrams, slides, movies, and sounds	Material chosen should help the learner achieve the outcome and not just entertain	Websites with heart and lung sounds; using portions of movies to demonstrate concepts or as attention getters
Role plays Learner acts out a scenario and the experience is analyzed by members of the group	Most effective when there is a high level of motivation and participation among individuals and the group	Counseling techniques dealing with the difficult patient or with breaking bad news

Simulation The learner practices skills on a simulated patient, either a trained actor (standardized patient) or a mannequin	Simulations should be life like to maximize the benefits (outcomes) to expense ratio	Intubation of mannequins, gynecologic exams on simulator that records pressure and location of touch; history taking skills on standardized patient
Computer-assisted Any instruction that makes use of a computer	Instruction should be linked to learning objectives and evaluation	X-ray diagnosis, games, patient simulations (see resources at end of chapter)
Case presentations Oral presentations of history, physical, and laboratory findings, with subsequent discussion of case, including differential diagnosis; if diagnosis is known, may include discussion of that entity; more advanced learners will also delineate a management plan	To be effective, requires a skilled leader to facilitate problem-solving	Typical learning activity utilized on inpatient rounds as well as in the outpatient setting; can be used for large or small groups; multiple types of one-on-one teaching models;
Learning activities and projects Specific tasks directed toward a predetermined outcome or product related to the learner's needs or application of recent knowledge and skills	To achieve maximal outcomes requires highly motivated learner and lots of instructor support	Create a resource handout for parents; chart review for current practice habits with subsequent plan for improvement; peer teaching

Real life experiences The learner interviews or examines a patient or performs a procedure on a real patient	Experiences should be linked to educational outcomes and previous activities should have been provided to give the learner the necessary skills to perform the task; content is dependent on the availability of patients	Interviewing, examining, counseling, and performing procedures; also can be used in the context of performing a non-traditional interview focusing on the costs of the disease to the patient, economically and emotionally
Prepared cases Group discussion of a case under the direction of a discussion leader: deductive case discussion is where the learner begins with general concepts about the case and proceeds to the specific components (starts with unknown diagnosis); inductive discussion proceeds in the opposite direction, specific to general rules (starts with known diagnosis)	Prepared cases can fill curriculum gaps to provide uniformity across learning sites.	Deductive case discussion of a patient with fever that ultimately progresses to a differential and a probable diagnosis; an inductive case discussion would be a subspecialty case conference or morbidity and mortality rounds where a specific case is discussed and generalizations are made in regard to the information generated
Programmed instruction Textbooks or computers that present material in a sequential method, allowing learners to proceed at their own pace, identify their own deficiencies, set their own objectives and receive immediate feedback, without direct human oversight	Requires motivation and an individualized learning plan to achieve the desired outcome.	Pediatrics Review and Education Program (PREP) or specifically prepared readings with questions and patient case scenarios

After Kern et al.

In choosing educational methods, it can be helpful to group the objectives into the three domains of learning (knowledge, skill, and attitude) and select activities most likely to be effective for each type of objective. For more information on these three domains, see Chapter 3, *Setting Goals and Objectives*.

Knowledge

Methods that are commonly used to achieve knowledge objectives include readings, lectures, individual learning projects, programmed learning, and team learning. The combination of lecture and small group discussion can be especially effective in teaching medical facts, as well as the higher-order cognitive skills of assessment and integration.

Skills

To achieve objectives in the skill domain, the learner must have both cognitive knowledge and the ability to practice the skill under supervision with feedback. Medical educators can no longer depend on the "see one—do one—teach one" approach to ensure competency. According to Kern, the learning of a skill can be enhanced when a learner:

1. Receives an introduction to the skills by lectures, demonstration or modeling, and discussion.
2. Practices the skills with artificial models, role-playing, simulated patients, or real patients.
3. Reflects upon his performance. Audio or visual review of performance may enhance the learner's understanding of what was done right and what could be improved.
4. Receives feedback about his performance from the instructor
5. Repeats steps 2-4 until competence (or mastery) is achieved

As this type of experience requires the learner to expose his strengths and weaknesses to the teacher, creation of a safe and supportive environment is imperative. Methods to accomplish a safe and supportive learning climate begin with the development of faculty-learner rapport, often facilitated by the disclosure by the instructor of his own difficulties with the material. This is followed by explicit recognition and reinforcement of the learner's strengths and then provision of feedback about deficiencies in a factual, nonjudgmental, helpful, and positive manner.

Attitudes

Attitudes are very difficult to measure, let alone change. Methods that can be used to achieve affective objectives include exposure through readings, discussions, and observations of role models (see Chapter 10). Attitudinal change is most likely to be influenced by the use of facilitation techniques that promote openness, introspection, and reflection.

Reflection exercise #3. Answers at end of chapter.
a) You are designing a course on "Delivering Bad News" and would like the learners to demonstrate how to tell a patient that he has a terminal illness. What method(s) would you use to teach this skill?

b) You are designing a course on cultural sensitivity and would like the learners to be attentive to patients who do not speak English and the inherent issues associated with obtaining health care under these circumstances. What method(s) would you use to teach this attitude?

c) You are charged with the development of student knowledge in regards to leadership. What method(s) would you use to teach this topic?

EVALUATION

Evaluation is the cornerstone of curricular development. It reveals whether or not the learner achieved the stated objectives and ultimately the effectiveness of the curriculum. Two processes are necessary to evaluate the curricular intervention: learner evaluation, and program evaluation. The purpose of learner evaluation is to see if the student achieved the stated objectives. The purpose of program evaluation is to assess the effectiveness of the curriculum in regards to content, process, participants, and outcomes.

Evaluation of learners

The current emphasis in medical education is on the assessment of competency. Competency-based education focuses on learner performance (learning outcomes) in reaching specific objectives. The Accreditation Council for Graduate Medical Education (ACGME) and the American Board of Medical Specialties (ABMS) have joined forces on the ACGME Outcomes Project and have identified six general competencies for residency education. These competencies are:

- Medical Knowledge
- Patient Care
- Interpersonal and Communication Skills
- Professionalism
- Practice-Based Learning and Improvement
- Systems Based Practice
-

The ACGME website has a "Toolbox of Assessment Methods" that describes a variety of evaluation methods that can be used to assess the learner (www.acgme.org – select "Outcome Project" and then "Assessment"). When choosing evaluation strategies, you need to match the assessment

method to the objective domains (knowledge, skills, attitudes), just as you did for educational methods.

Some suggested methods for evaluating knowledge include written or oral examinations, chart review, case presentations, and case studies. When evaluating attitudes you could use standardized patients, direct observation, or a 360º global rating. When assessing skills the following techniques can be helpful: direct observation with checklists, videotape reviews, objective structured clinical examinations, and clinical performance examinations. (See Chapter 17, *Evaluation and Feedback*) Whenever possible, use multiple methods. Chose the evaluation strategies that best match the behaviors. Select evaluation instruments that have sound measurement properties (reliability and validity), and most importantly, do not overwhelm the learner with the evaluation process.

Evaluation of program

Gall defines program evaluation as the process of making judgments about the merit, value, or worth of an educational program. Program evaluation is the process of collecting data to assess the effectiveness of various components and products of the curriculum. Program evaluation serves multiple purposes. It is a tool for oversight. It can be used to assure compliance, guide program improvement, and assess particular aspects of the program. According to Anderson and Henry, there are four main components of curriculum evaluation: content, process, participants, and outcomes. In the realm of content it would be important to evaluate how well the content of the curriculum adequately addresses the needs of the learners and whether the content is relevant to what the learners need to know in order to be competent. Further, is the content complete in regard to addressing each of the competency areas? In evaluating processes, you want to know if the methods are appropriate for the achievement of the objectives and if there were sufficient resources to sustain the curriculum. You want to determine whether there were too few, too many, or just enough objectives for the allotted time frame. In regard to the area of participants, you want to know if the learners were satisfied with the curriculum, what impact the curriculum had on attitudinal change, and what the level of participation was among the learners. Finally, in assessing the outcomes of the curriculum, you want to know whether or not the objectives were achieved and, if the current curriculum replaces a previous one, how well the learners performed in comparison to those who experienced the prior curriculum.

The process of program evaluation is similar to the needs assessment. The first step is to determine what questions to ask about the curriculum, the second is to decide to whom to ask the questions (learner, faculty, staff, subject matter experts), and the third step is to decide how to pose these questions (rating forms, interviews, direct observation, logbooks, exam performance). Prior to performing program evaluation, think about who is going to see the finished

report and how the data will be used. Collect objective data where possible, and be as comprehensive in the program evaluation as is economically feasible.

Reflection exercise #4. Answers at end of chapter.
Reflect on a curriculum you have developed or are developing. If you do not have one, think about a curriculum or program in which you were a participant, as either learner or teacher. List the four components of program evaluation and provide a sample question for each of these components.

Educational planning

The educational planning process is a cyclical activity that should not be carried out in isolation. It is most effective when it is comprehensive and systematic in its design. Prior buy-in by key individuals is essential to the success of the curriculum. A curriculum that sits on a shelf and is never utilized is a waste of time and energy. Peter F. Oliva in his book *Developing the Curriculum* states, "Curriculum change results from changes in people". Oliva believes that curriculum developers should begin with an attempt to change the people who must ultimately effect curricular change. The educator, A. Miel, wrote, "To change the curriculum of the school is to change the factors interacting to shape the curriculum. In each instance this means bringing about changes in people—in their desires, beliefs, and attitudes, in their knowledge and skill. . . . In short, the nature of curriculum change should be seen for what it really is—a type of social change, change in people, not mere change on paper."

SUMMARY

The five steps of the educational planning process (GNOME) are: goals, needs assessment, objectives, methods, and evaluation. A systematic approach to planning educational experiences focuses time and effort on the right solutions to meet the goals and objectives, lends credibility to the process and its outcomes, can facilitate refinement of the experience, can induce buy-in from others affected by the instruction or curriculum, and can help make the work scholarly. A properly designed needs assessment is key to an effective curriculum or educational experience. The four main components of curriculum evaluation are content, process, participants, and outcomes.

ACTION STEPS

- Determine the reason for the educational experience
- Perform a needs assessment
- Write goals and objectives based on results of needs assessment
- Select content appropriate to the goals and objectives

- Determine best methods to achieve the goals and objectives
- Evaluate the program (as well as the learners)
- Use results of evaluation to fine-tune and improve program

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Answers to reflection exercises

1.
a) GNOME – Goals, Needs, Objectives, Methods, Evaluation.

b) A systematic approach to teaching can lend credibility to the process and its outcomes (scholarly work) and can lead to further refinement of teaching and, hopefully, improvement in learning.

2.
a) You want to know what was previously taught about the cardiovascular system and what examination data are available from previous classes of learners. Have other institutions developed interdisciplinary curriculum and what have been their experiences? Are there national requirements, deficits identified by other faculty, or needs identified by the previous learners?

b) Content: what should a medical student know about the cardiovascular system to manage patients with cardiovascular complaints? Learners: what is the average medical student's skill in cardiac auscultation? Resources: will there be sufficient resources available to pair basic scientists and clinicians if small group breakouts are utilized?

3.
a) Role play, simulated experiences

b) Small group discussion; a panel discussion with actual patients where the learners could ask questions and the panel members can discuss their experiences; video; learning activity where the learners are provided with a simulated experience of forms written in a language they were not familiar with; role-plays with simulated patients and staff as they try to make appointments and tell about their symptoms.

c) A combination of case discussions, readings, lectures, and role-plays. Create learning activities where the learners have to work together as a team and switch roles of team leader, so that everyone has a chance to practice.

4.
Content: is the content of the elective relevant to the needs of both the primary care physician and the subspecialist?

Process: did the participants have sufficient opportunity to visualize and outline a management plan for the most common conditions as outlined in the objectives?

Participants: were the learners satisfied with the feedback received on their management plans during the elective?

Outcomes: how did the participants score on the post-test in comparison to other learners who did not take this elective?

Chapter 5

Creating a Blueprint for Effective and Efficient Instruction

"Teaching without a lesson plan is akin to building a house without a blueprint; if you just start building without a plan, chances are something will be overlooked."
Author unknown.

CHAPTER OUTLINE
OBJECTIVES
INTRODUCTION
THE LESSON PLAN AND ITS PURPOSE
LESSON PLAN FORMAT
COMPONENTS OF A LESSON PLAN
SUMMARY
ACTION STEPS

OBJECTIVES
After studying this chapter, the reader should be able to:

- discuss two reasons for utilizing a lesson plan for instruction
- list the two components that should be included in all lesson plans
- list three tasks that can be accomplished with an effective introduction to a teaching session
- describe one method that can be used during the conclusion of a teaching session to increase the learner's retention of the material

INTRODUCTION

Successful execution of a teaching activity requires careful and detailed planning. A lawyer spends hours preparing for a case before appearing in court. In anticipation of the game, the coach spends hours planning the plays to be used and observing and adjusting those plays as his team executes them in practice. Why then should we attempt such a complicated process as teaching with less attention than is given these other activities? In teaching, as in a variety of other activities, the quality of planning affects the quality of the results. Whether one is preparing for a small group discussion, a lecture, or a month on the inpatient service, planning is the key to success. One type of planning tool useful for effective and efficient instruction is the lesson plan.

THE LESSON PLAN AND ITS PURPOSE

A lesson plan is a format for organizing instruction. It provides a roadmap for teaching through clearly defined goals, objectives, and methods. It also can allow other teachers to use or build upon your work, thereby increasing dissemination of the material. A lesson plan provides consistency in teaching the same material repeatedly, by ensuring that the same objectives are covered in each teaching session. A lesson plan also improves efficiency when teaching the topic repeatedly, by organizing the material in a format that minimizes the time required to prepare the material and develop a strategy to teach it again. It also provides a more accurate record of your thoughts and materials than you are likely to remember a year later.

Reflection exercise #1. Answer at end of chapter.
A colleague is preparing to teach a group of medical students about immunizations. You tell him about your positive experiences with lesson plans. List two reasons you could give him for utilizing a lesson plan for instruction.

FORMAT

There is no single format for all lesson plans, but it is important that any format include at least two components: learner-centered goals and objectives and the methods to accomplish those goals and objectives. On the following pages is an example of a lesson plan for a one-hour, small group session. This format is also suitable for a presentation or a lecture.

Table 7.
Example of a Lesson Plan for a Small Group Session

Topic: The Red Eye

Goal: The learners will gain a basic understanding of the differential diagnosis and management of the red eye

Time allotted: 60 minutes Level of Learners: Pediatric Residents (all levels)

Number of learners: 10 or less (small group format)

Component	Examples
Beginning/ Introduction	1. present case of a child with “pink eye” or 2. have someone in the audience tell about a case of a child with “pink eye” that he has seen: this could be a specific case such as a bacterial or viral case of conjunctivitis or even an interesting case of a child with pink eye who did not have a bacterial, viral, or allergic cause, e.g. glaucoma

Objectives: *The learner will be able to:*	1. list 5 different causes of a red eye in children 2. compare and contrast the most commonly used antibiotics for bacterial conjunctivitis based on bacterial spectrum of coverage, ease of use, and cost 3. outline a management plan for allergic and for viral conjunctivitis 4. identify two findings that would require referral to an ophthalmologist
Activities or Methods	1. Case discussions (Objective #3) 2. Worksheet on ophthalmic preparations to be done individually and then shared in groups of two or more (objective #2) 3. 10-15 minute didactics including pictures of different causes of red eye interspersed throughout the other activities (objective #1) 4. Have participants list out loud causes of red eye and write their responses on a flipchart, overhead, or dry erase board. Repeat this procedure with objectives #2, 3, and 4.
Questions for discussion	1. What is the differential diagnosis of a child with red eye? (Objective #1) 2. If a 5 year old had bacterial conjunctivitis and the family had no insurance which antibiotic would you recommend and why? (Objective #2) 3. Which is easier to instill in a preschooler's eyes, drops or ointment? What other issues in regard to preparation are important to consider for the school aged child? (Objective #2) 4. What would be your management plan for viral conjunctivitis? Allergic conjunctivitis? (Objective #3) 5. Tell us about a case that you had that was particularly difficult to diagnose or manage and why it was difficult. (Objective #3 and 4)

	5. What clinical scenarios or diagnoses would you refer to an ophthalmologist and why? (Objective #4)
Summary/ Conclusion	Have each resident list on a 3 x 5 note card, one thing he will incorporate in his management of the child with red eye or that he learned about the management of the child with red eye.
References (Materials, articles, etc.)	1. Conjunctivitis in *Up-To-Date* (http://www.uptodate.com/) 2. Greenberg MF, Pollard ZF. The Red Eye in Childhood. *Pediatr Clin North Am.* 2003;50:105-124. 3. Gigliotti F. Acute Conjunctivitis. *Pediatr Rev.* 1995;16(6):203-208. 4. Hered R. Pediatric Viral Conjunctivitis (www.dcmsonline.org/jax-medicine/2002journals/augsept2002/conjuctivitis.htm) 5. Friedman LS, Kaufman LM. Guidelines for Pediatric Referrals to the Ophthalmologist. *Pediatr Clin North Am.* 2003;50(1):41-53.

Reflection exercise #2. Answer at end of chapter.
You have convinced your colleague to develop a lesson plan. He asks you where to start in developing the plan. What are the two main components of a lesson plan?

COMPONENTS OF A LESSON PLAN

As in the lesson plan above, every teaching session begins with an introduction. The introduction can be used to gain attention, motivate, and stimulate thinking. It can also describe the direction the session will take or determine what the learners already know about the topic. Sometimes it is desirable to utilize time designated for the introduction for a review of previously learned material or for learning activities not critical to the core content of the material. The term “sponge” activities, coined by Hunter, describes activities that sop up time waiting for the audience to settle and for latecomers to arrive, so they do not miss the key concepts of the session. Methods used as sponge activities include attention getters, reviews of previously learned material, stimulating audiovisual materials, or thought provoking questions that prepare the learner for the educational experience.

When developing a lesson plan, start with the goals and objectives. Think of a lesson plan as a roadmap to learning. When you teach, just like when you

start out on a trip, you need to know where you are going (goals), what you want to accomplish once you arrive (objectives), and how you are planning to get there (methods). To teach without a plan is to risk having the learners get lost.

The first step in this roadmap is to describe the goals for the learning session. It is imperative that the teacher have a clear idea where he would like the learner to be at the end of the teaching experience. Goals also provide the learners with an idea of what they should be learning from the session, directing their attention to these items. The next step is to describe what the learners should be able to do once the session is completed (objectives). These learning objectives should be written using verbs that can be measured or observed. Using verbs that describe observable behaviors allows you to evaluate whether the learners have achieved the objectives. Each chapter in this book begins with learning objectives specific for that chapter. One objective of this chapter is to list the two components that should be included in all lesson plans. You know you achieved this objective if you can list these components. Both goals and objectives should be written from the learner's point of view. What should the learner be able to do as a result of the educational experience? As a general rule, it is better to choose fewer objectives and teach them well than to choose many objectives and teach them superficially.

The other common component of all lesson plans is the methods section, which describes how the teaching will be accomplished. In general, interaction enhances retention, and multiple teaching methods allow different learner types to understand and incorporate the material. Oftentimes, there are multiple methods that can achieve the same endpoint. Choose those methods that most effectively achieve the outcome of the objective. To determine if the method chosen matches the intended learning outcome (knowledge, skill, attitude), label it with the number of the objective that corresponds directly to that particular method and verify that the method will allow achievement of the corresponding learning objective. (See Chapter 4)

Note that there is a component for questions in the lesson plan above. Questions can be used for a variety of purposes, e.g. to check for learner understanding of the material, to evaluate the effectiveness of the instruction, to increase learner participation, and to increase critical thinking. The majority of questions posed by teachers at the time of instruction only require a learner to recall facts. Preparing a broad range of both lower level (factual) and higher level (open-ended) questions prior to instruction encourages you to create questions that build on cognitive abilities. Questioning also puts into your lesson plan a monitoring device to evaluate learner understanding of the material.

In a study of medical students attending a series of hematology lectures, Stuart and Rutherford found that concentration was greatest in the first 20 minutes and decreased over the remaining 50 minutes. While Stuart and

Rutherford noted that some investigators had reported that attention increased at the end of the session, but they did not find this to be the case. It has been suggested that the last thing the teacher presents is often what students remember the most. That is one reason it is important to provide closure. Sometimes you will see a teacher hurrying to finish on time, rushing through the last of the material. One of the hardest things for many teachers to do is to leave enough time for closure. Consider using a timing device or asking one of the learners to signal you when there are five minutes left.

The term closure means "to pull together" as well as "to close." You provide closure for the learners when you repeat, review, and summarize the key points of the teaching session. You can also perform these same steps utilizing the educational objectives provided at the start of the session, to ensure that these objectives were understood and closure was accomplished. Closure helps the learner bring together the information and internalize what has just been taught. Engaging the learners in the review process can aid in retention of the material. Potential methods for fostering engagement include having the student write down two things learned during the session, develop a plan to apply learned material to day-to-day practice, or turn to another student in the audience and share one newly learned principle. Another method is to write the main points of the session on the board and divide the learners into groups. Each group then discusses and summarizes the main points in depth. If you have a small group, you can invite one of the learners to review the salient points of the teaching encounter. A questioning technique termed the "Go Around System" (Freiberg) can aid the teacher in facilitating closure by asking each learner in turn to tell one thing he learned from today's session, trying not to repeat another learner's answer." A learner is allowed to pass temporarily, but should hopefully give a response before the end of the session.

Reflection exercise #3. Answer at end of chapter.
Your colleague would like advice on his lesson plan. He has created clearly defined goals, objectives, and methods. In discussing how he will introduce and close his session, he asks how he could better use these times to improve instruction.
a) List three things that can be accomplished with an effective introduction.

b) Describe one method that can be used as closure to a teaching session that can increase the likelihood that the learner will retain the material.

The level of detail (as little as a sparse outline or as much as a word-for-word lesson plan, or something in between) and what kind of design you choose to use is dependent on your needs and preferences. Adjust your model to fit your organizational needs. Keeping a folder with reference material, the lesson plan outline, slides, and evaluation data from previous iterations of the

session, will improve your efficiency as well as the quality of the session when repeated. Improvement occurs through selective use of participant feedback, learner outcomes, and if available, peer feedback. You should use this data to determine if the chosen teaching methods achieved the intended outcomes. If the intended outcomes were achieved, the data can still help fine-tune the session to maximize attainment of learner-centered goals and objectives, and if not, the session should be changed, utilizing the most appropriate methods. For activities that are designed for others to use, a more detailed lesson plan or teaching syllabus may be necessary to maximize consistency. Some people find that noting the time when an activity should begin and end in a lesson plan is beneficial, both for themselves and for others teaching the same session. The example below is a partial time script for a session on teaching managed care. The packet for the other teachers of this session would include a detailed teaching syllabus for each of the individual sections, with examples, talking points, and further reading materials in case the presenter was not familiar with the topics outlined in the section.

Table 8.
Example of Part of a Lesson Plan for
a Small Group Session on Managed Care

Goal: The participants will gain an understanding of the concept of managed care

Objectives:

At the end of this session, participants will be able to:

1. Describe potential reasons for rising health care costs in the United States.
2. Compare and contrast a PPO and an HMO.

Number of learners: 3 (small group format)

Time allotted: 3 hours (*this sample is just for the first 35 minutes of the session*)

Time	Page number(s) in syllabus*	Objective number	Content
8:30–8:35	4		Introduction of class and participants (Specifically, what experience have they had with managed care)
8:35 – 8:45	5-12	1	Question: "What are the reasons for rising health care costs?"
8:45 – 9:05	13-28	2	Delivery systems from the patient's

			perspective. a. During this portion hand out the sheet labeled “Questions patients should ask about their healthcare plan” b. Distribute the learners’ own insurance plan summary sheet describing their benefits (This plan is a preferred provider organization or PPO) c. Go over each of the questions listed on the handout described in “a” d. Compare the learner’s answers with your own insurance plan (see syllabus for summary sheet of your insurance plan which is an HMO)

* This is a real lesson plan and refers to materials which would be available to the actual participants but are not provided here.

As you reflect on the lesson plans you develop, ask yourself the following questions: If I shared the plan with a colleague, would he be able to conduct the session and teach the material the same way? Would the learners meet the objectives at the end of the session? Do the objectives appropriately match the goal(s) of the session? Do the methods chosen match the intended outcomes of the objectives in terms of knowledge, skills, and attitudinal learning? Would the experience of the learners be similar? If the answers to these questions are “yes,” then you have developed an effective lesson plan.

SUMMARY

A lesson plan is an efficient and effective tool for organizing instruction, the purpose of which is to provide a roadmap for teaching through clearly defined goals, objectives, and methods. The plan is a blueprint which allows other teachers to use or build upon previously developed lessons, maximizing the likelihood that the same objectives are covered in each teaching session. All lesson plans should contain learner-centered goals and objectives and methods to accomplish these goals and objectives. Introductions can be effectively used within the lesson to gain attention, motivate, stimulate thought, describe the direction a lesson will take, and determine what the learners already know about the topic. Teaching sessions should provide closure that aids in the review process and fosters retention of the material. Methods to accomplish this include having the learners write down things they learned, develop action

plans, and teach their peers what they learned through summarization of main points.

ACTION STEPS

- Determine goals and objectives
- Develop a lesson plan, including goals, objectives and methods
- Determine content and methods for the introduction, body, and closure
- Implement the session
- Evaluate the session and use the feedback for improvement

References and other reading material

Freiberg HJ, Driscoll A. *Universal Teaching Strategies*. 3rd edition. Boston, MA. Allyn and Bacon. 2000.

Hunter M. *Mastery teaching: Increasing instructional effectiveness in secondary school, college and universities.* Thousand Oaks, CA. Corwin Press. 1982.

Lesson Planning, Lesson Plan Formats and Lesson Plan Ideas. Available at http://www.adprima.com/lesson.htm. Accessed September 16, 2007.

Stuart J, Rutherford RJ. Medical student concentration during lectures. Lancet. 1978;2:514-16.

Answers to reflection exercises

1. A lesson plan can provide a roadmap for teaching the material through clearly defined goals, objectives, and methods. It also makes it easier to teach the same topic a second time by providing a more accurate record of your strategies and the materials you used than you are likely to remember a year later.

2. The two main components of a lesson plan are learner-centered goals and objectives and methods.

3.

a. The introduction can be used to gain attention, to diagnose what the learners already know about the topic, or to review previously learned material related to the topic.

b. You can have the learners write down one thing they learned from the session and one way they will apply what they learned to patient care.

Chapter 6

Teaching on the Inpatient Service

"I desire no other epitaph (than) that I taught medical students in the wards, as I regard this as by far the most important work I have been called upon to do."
Sir William Osler.

CHAPTER OUTLINE
OBJECTIVES
INTRODUCTION
WARD ATTENDING PHYSICIAN
Rounds
Orientation
Conference room teaching
Bedside teaching
Homework
Evaluation and feedback
THE INPATIENT CONSULTANT
THE ADMITTING PHYSICIAN
SUMMARY
ACTION STEPS

OBJECTIVES
After studying this chapter, the reader should be able to:

- identify at least three items to include in the inpatient orientation
- discuss effective techniques for conducting ward rounds
- list and describe techniques for effective teaching away from the bedside
- list and discuss advantages of, indications for, and problems associated with teaching at the bedside
- discuss the principles of evaluation and feedback as applied to the inpatient setting

INTRODUCTION

There are at least three ways in which an attending physician assumes responsibility for teaching on an inpatient service: 1) a practicing physician (academic or private) may admit a child to a teaching hospital and either choose to, or be required to, teach students and residents helping to care for that patient; 2) a specialist may consult on that patient and be expected to teach learners on the ward as well as learners on his subspecialty team; 3) a clinician

may be assigned to the ward or other inpatient unit as the “ward attending” or the “teaching attending.” All these teachers interact with the team or with individual learners, but only the last, the ward attending, is responsible for the overall education of the entire team. Only the ward attending is responsible for that hallowed ceremony known as “ward rounds.” From the radiologist who may teach about a single aspect of a single patient to the ward attending who tries to cover all aspects of all patients, inpatient teaching is a challenge and each contributes in his own way. In this chapter we will focus on the ward attending and touch only briefly on the consultant and the admitting physician.

WARD ATTENDING PHYSICIAN

The attending physician for an inpatient team is many things: teacher, supervisor, leader, role-model, arbitrator, facilitator, and peacemaker. Teaching is paramount, and attending rounds are generally the major time during which the ward attending teaches. Sometimes rounds are purely a teaching exercise; more often, they are a combination of teaching and supervision of patient care. Even on “pure teaching rounds,” the house staff will expect the attending physician to help with difficult cases.

Learning is a social as well as an educational process. Help your team become a learning community and make learning part of the team culture. Acknowledge that you do not know all the answers. Get to know your learners, meet with them individually, give them assignments, and provide feedback. Do everything you can to make the month enjoyable as well as educational.

Attending is a balancing act: balancing the educational needs of learners at different levels, balancing the need for independent decision making by the learners with patient safety, and balancing the need for protected teaching time with responsibilities for patient care. Teaching on a busy inpatient service today is heavily impacted by issues of resident time, or more accurately, the lack thereof. Additionally, the number of patients to be cared for usually precludes spending a great deal of time in discussion about each patient.

On the ward, the attending physician may have to deal with logistical problems encountered less frequently in small group conferences: adventitious noise, insufficient space for the team, the need to stand rather than sit, and inadequate privacy. Interruptions are frequent, not just pagers and cell phones, but also real people (nurses and others) with urgent needs. The attending physician may have to mediate conflicts among learners and deal with friction between learners and others, including difficult patients and families.

One of the major differences between teaching on the inpatient and outpatient services is that the teacher in the outpatient setting is almost always the physician responsible for the care of the patient, whereas on many inpatient units, the teaching attending is not directly responsible for patient care. If the teaching attending is not the physician in charge of the patient, he must be

careful not to create confusion for the patient or friction with the staff when his opinions differ from those of the responsible physician.

In contrast to the outpatient setting, where most of the teaching is one-on-one, ward rounds involve learners at different levels (e.g. students, interns, and residents). It is a challenge to keep the discussion at a level appropriate and interesting to all.

On the other hand, the inpatient setting offers some advantages over the outpatient setting. The patient is available for a longer period of time, usually days rather than minutes or hours. The teacher and learner can follow the course of clinical events, monitoring everything from repeated vital sign checks to intake and output. They can return to the bedside repeatedly to confirm or re-evaluate findings. They can re-evaluate the patient and their own thinking after hearing the consultants' thoughts.

Kroenke has described the ward attending month as having five components. The month begins with a discussion of *expectations* and ends with *evaluation* of the learners. He refers to these two processes as the bookends of the rotation. The three central components are *conference room* teaching, *bedside* teaching, and *homework*. These five components are discussed below, after some comments about rounds.

Rounds

As the attending physician on an inpatient team, most of your teaching will take place during your rounds. The dictionary defines the noun "round(s)" as "a series of professional calls on hospital patients made by a doctor or nurse." The dictionary also defines rounds as "a route or circuit habitually covered; a sequence of recurring routine or repetitive actions; a musical canon sung in unison in which each part is continuously repeated; and a drink of liquor served at one time to each person in a group." Except for the last, these other definitions also have some application to ward rounds. Rounds can become habitual, routine, and repetitive, and if independent thinking is not encouraged or disagreement not tolerated, voices in unison simply repeat what the attending wants to hear. That is not what we want rounds to be.

Teaching on rounds involves more than just conducting a small group discussion. On rounds, the clinician has to teach not only knowledge, but also clinical reasoning, problem solving, and priority setting. He may want to demonstrate skills such as taking a history, performing and interpreting the physical examination, and dealing with patients and their relatives. He is expected to model professional attitudes and behaviors. Often, the teaching attending is required to supervise patient care, and in certain units, particularly intensive care units, the attending physician may need to teach procedures—from drawing an arterial blood sample to inserting a central venous line.

A study on an internal medicine inpatient service in 1983 found major differences between rounds on the *ward* service and the *private* service

(Maxwell). On the ward service, where there were no private patients, rounds were geared more to patient care supervision and less to teaching and the focus was more on patients than on topics. On the private unit, rounds were geared more to teaching, with a focus on topics rather than on individual patients. It is likely that this was because the "teaching attending" was not responsible for the patients on the private service and so avoided discussing their specific diagnoses and management. Obviously, this was only one institute, but it does highlight that rounds function differently on different services.

Dodek and Rabound demonstrated that an "explicit approach to rounds" in an adult ICU resulted in improved planning for individual patient care and more structured teaching on rounds. By explicit, they meant a strategic planning process by key medical and nursing personnel to determine specific items to be accomplished for every patient, and then the delineation of those items to all involved care givers. Even though the rounding structure in an intensive care unit is usually different from that on a general ward, the benefits of such an organized approach are obvious.

Rounds are neither the time nor the place for lectures. If *additional* time is available, the attending certainly can give a lecture, but this should be in addition to, not instead of, patient-oriented rounds. Three to 5 minute presentations (or mini-lectures) can be incorporated into rounds, but should be done infrequently, and preferably, the learners should be asked to do this. A study at a leading academic pediatric inpatient service in 1992 found that a large percentage of time on teaching rounds was devoted to preplanned, "canned", chalkboard presentations (Shulman). Today, these would probably be computer projected rather than on chalkboards. The authors of the study felt that these lectures were not an appropriate substitute for patient oriented discussion, and they initiated a faculty retreat and other measures to institute change.

In their book, *Ward Attending: the Forty Day Month*, published in 1991, Osborn and Whitman described four types of rounds: work rounds, morning report, attending rounds, and bedside rounds. According to the authors, work rounds are designed to keep individual team members aware of the status of all patients and should be as brief as possible, while morning report is to let the Chief-of-Service know who is in the hospital, provide quality assurance, and entertain discussion of differential diagnoses. (In our experience, morning report is usually institution wide rather than unit specific and often addresses only the more interesting patients. We do not believe that morning report should be considered rounds, and morning report will not discussed in this chapter.) Osborn and Whitman said that attending rounds are knowledge oriented and should be held in a comfortable room with a discussion format, and bedside rounds should be conducted only on selected patients, to demonstrate physical findings or model behaviors and skills. Today, many

services have different goals for these activities, and many combine different functions in a single activity. For example, work rounds and attending rounds may be combined. There is an emphasis on teaching problem solving rather than simply knowledge, and there is an increasing effort to increase the amount of bedside teaching.

Orientation

At the start of the rotation provide an orientation. Share your goals and expectations with the team and ask team members for theirs. Decide if there are particular items you or the team want to emphasize, for example, differential diagnosis, pathophysiology, or management. Do you want to include ethics, financial aspects, and social issues? Decide on the format of rounds, and whether you will conduct other teaching activities in addition to rounds. Who will present the patient, and how much detail should be included? Do you plan to go to the bedside? How often and for what purpose?

Decide how to handle pages, cell phone calls and other interruptions. You might suggest that the upper level resident answer all pages for the interns during rounds, so as not to interrupt their presentations and to maximize their learning experience. Point out to the resident that this will be appreciated by the interns, will enhance a feeling of goodwill between them and the resident, and will enhance the resident's stature as team leader. (See Chapter 8, *The Clinical Teacher as Team Leader*)

Assure the team that you are available outside of assigned teaching times to help with either patient care issues or problems with team dynamics, and provide contact information, including your cell phone and pager numbers. Clarify your own level of patient care responsibilities and whether you wish to be notified of changes in patients' conditions.

Decide on your own strategies for the month. Some attendings prefer to see the patients and review the charts before rounds. Others make a point of bringing articles and handouts. Will you check back with the team during the day to help with problems, or will you give the team maximum autonomy and check only during regularly scheduled times? It is highly desirable to spend additional time with the students without the house officers. Will you meet periodically with the supervising resident to exchange information on student and intern performance? Will you meet with all individuals at the midpoint of the rotation for feedback (highly desirable), or will you meet only with those having problems?

It can be helpful to meet with the supervising resident *prior* to the start of the rotation to discuss mutual goals, objectives, and strategies. Discuss your individual roles and how you can support and complement each other. Decide which clinical skills the two of you want to emphasize, if there is a specific curriculum you want to cover, and if there are specific articles or other reading

materials you want to distribute. Offer to provide constructive feedback about the resident's teaching.

Conference Room Teaching

The bulk of teaching on attending rounds in most medical school-affiliated residency programs takes place away from the bedside, in a conference room or hallway outside the patient's room. A study in one teaching hospital in 1992 found that 11% of time on attending rounds occurred at the bedside (Miller). A similar study at another teaching hospital in 1993 also found that 11% of medical rounds (an average of 10 minutes out of 90) was spent interacting with patients (Elliot). An article from England in 1997 suggested that bedside teaching had decreased from 75% of rounding time in the 1960's to less than 16% in the 1990's (LaCombe). However, a report from Cincinnati Children's Hospital in April, 2007 described their favorable experience with family-centered rounds (FCRs), where the entire team (physicians and nurses) discusses the patient, with the family, at the bedside (Muething). Although FCRs run approximately 20% longer than traditional rounds, most staff felt that it improved care and saved time later in the day. This may herald a return to bedside rounds and teaching. Bedside teaching will be discussed in the next section and more fully in Chapter 9.

The keys to successful inpatient teaching rounds include pacing the session, blending teaching with supervision, and helping individuals learn to think in a problem solving way. Appreciate that the house staff have many responsibilities. Keep track of the time and pace yourself so as to end on time. Realize that you usually do not have an hour to discuss just one case and that some of the ideals for a case discussion may be luxuries that you cannot afford in this setting. For example, while you certainly want everyone to contribute during the session, it is not practical to hear from everyone about every case, and while ideally you might want to discuss all aspects of all cases, time may not permit. There may be times when you have to explain the pathophysiology or provide the most likely diagnosis and best management without much discussion. In general, however, the more the learners are challenged to think and contribute, the better.

Teach problem solving. To paraphrase an old adage, "Solve a problem for an intern today, and you help that intern today. Teach an intern to solve problems, and you help that intern for a lifetime." Help the students and house staff analyze their cases and define the problems. Use of a problem list or problem oriented approach can be very helpful. If there are multiple findings or problems, show the learners how to think about possible relationships among these findings. Is one the cause of the other? Are all the result of the same condition? Are some symptoms the result of medications? Does the patient have more than one disorder? Consider a child with failure to thrive (FTT) who was admitted with fever. The fever might be a manifestation of the same

underlying disease that is causing the FTT (e.g. cystic fibrosis), it might be a complication of the FTT (e.g. pneumonia secondary to immunodeficiency from malnutrition), or it might be unrelated (an incidental viral infection).

The Residency Review Committees (RRCs) of the Accreditation Council for Graduate Medical Education (ACGME) have promulgated requirements for attending teaching rounds. The Pediatric RRC requires that "Regularly scheduled teaching/attending rounds that include all patients for whom the resident is responsible must be conducted by qualified teachers… The correlation of basic pathophysiologic principles with the disease process should be stressed. Rounds that focus on the educational objectives of inpatient care must be held at least three times per week and may not be replaced by rounds that are primarily work-oriented." Note the emphasis on pathophysiology and try to focus on that whenever possible.

The Internal Medicine RRC mandates that "Teaching or attending rounds must be patient-based sessions in which current cases are presented as a basis for discussion of such points as interpretation of clinical data, pathophysiology, differential diagnosis, specific management of the patient, the appropriate use of technology, the incorporation of evidence and patient values in clinical decision making, and disease prevention… Teaching rounds must include direct resident and attending interaction with the patient, and must include bedside teaching and the demonstration of interview and physical examination techniques." For both RRC's, the focus of rounds is the patients, not a didactic curriculum.

Ende contends that teaching is enabling learning. Knowledge is understanding, not just knowing. Knowledge is gained not simply by accumulation, but by extending and revising existing knowledge. Learning is construction rather than memorization. The best teachers don't just ask questions like "What are the most common causes of gallstones in a child?" They also ask probing questions, such as "What do you think is going on with this child? Why do you think he developed gallstones?" Use probing questions. Encourage thought and reflection. Students learn best when they are involved. Provide challenge and support. Stimulate interest and excitement. Encourage independent learning. However, one of the realities of rounding on a busy service is that there is not always enough time to explore the learners' level of knowledge. Sometimes, you just need to give the team the facts and move on to the next patient.

Irby analyzed the thinking process of six "distinguished teachers" in internal medicine on attending teaching rounds. The format of the study was a case oriented group discussion led by the attending physician and was artificial in that the house officer or student presented a case from a script rather than a real case on the ward. Analysis was by observation during the discussion and by interview after rounds. Irby found that the attending physicians analyzed the cases and the learners simultaneously, that is, they ran both a clinical and an

instructional differential diagnosis and plan simultaneously. In reality, this is a complex set of concurrent thought processes. Case analysis includes pattern recognition, differential diagnosis, pathophysiology, management, and economic and psychosocial dynamics. Analyzing the learners means not only assessing their knowledge and understanding but also being aware of their comfort level with the session and with group dynamics.

Many of the tools and techniques discussed in the chapter on teaching in the ambulatory setting (Chapter 7) can be applied to the inpatient setting, especially when you are working with a single learner, one-on-one. The RIME model for estimating the learner's level of function (**R**eporter, **I**nterpreter, **M**anager, **E**ducator) can easily be used on the inpatient service. The microskills and SNAPPS methods are also applicable to the inpatient setting. Demonstration, activated demonstration, and observation are useful techniques for inpatient teaching. These tools are discussed in detail in Chapter 7 and will be reviewed here only briefly.

Both the *microskills* and the SNAPPS models are based on a learner presenting a patient. The five steps in the microskills model are: 1) getting a commitment; 2) probing for supporting evidence; 3) teaching general rules; 4) reinforcing what was right and; 5) correcting mistakes. The final step, correcting deficiencies, requires more grace and finesse when done in a group than when done one-on-one. "It was great that you recognized how sick this child is, but you need to expand your differential diagnosis of the ill-appearing child to more than just sepsis," would be appropriate feedback one-on-one, but on rounds with a group, the feedback would be worded differently. Just changing two words can make a tremendous difference. "It was great that you recognized how sick this child is, but *we* need to expand *the* differential diagnosis of the ill-appearing child to more than just sepsis,"

The SNAPPS model is more learner-driven. The learner **S**ummarizes the history and physical examination, **N**arrows the differential diagnosis to the major possibilities, and **A**nalyzes these by comparing and contrasting them. Next, the learner **P**robes the teacher (rather than the reverse) in regard to any question or uncertainties he has and for alternative diagnoses or explanations. Then the learner develops a **P**lan for management of the patient, and finally, the learner **S**elects an aspect of the case for self-directed learning.

Demonstration and observation are usually done at the bedside, although to some degree, they can be accomplished through role-playing. These techniques are discussed below, under bedside teaching.

Another activity for teaching (as well as for evaluating) is reviewing the learner's notes and orders in the medical record. A survey of U.S. medical schools in 1988 found that while writing the history, physical, and progress notes were considered important skills, they were not being taught extensively (Yanoff). Time spent with the learner, reviewing, his admission note, history and physical, progress notes, and orders can be invaluable. As with any other

teaching activity, defining learning objectives is important. For example, the learner should be able to write a properly detailed, yet not excessively wordy, admission history and physical, an organized, properly focused progress note, and legible orders, timed and dated, without the use of any inappropriate abbreviations, without trailing zeros, and with correct pediatric doses. To be educationally useful, the notes and orders need to be reviewed with teacher and learner looking at the document simultaneously. Reviewing the material and telling the learner that he did a good job is not sufficient. Point out those things the learner did well and explain why. Point out a few items that could be done better and explain how, or ask the learner to suggest how to do it better. Do not overload the learner with a myriad of corrections and avoid "nitpicking." You can also use this opportunity to fill in knowledge about the patient's signs, symptoms, or diseases.

McGinn et al. demonstrated the utility and acceptance of a three step program for incorporating evidence-based medicine (EBM) into rounds. Each day one team member developed a searchable question relating to a patient. Team members searched appropriate databases (such as Medline and Cochrane) and presented their findings at rounds the following day. Fifty percent of the students and residents believed that the EBM process had impacted patient care, and 90% felt that it had "informed them about the disease process." You might choose to do this once a week or on a strictly *ad hoc* basis. If you do choose to follow this model, it is important that all team members be familiar with the principles of EBM, the concept of a searchable question, and the strategies for literature searching. Most core medical students and house staff are versed in the fundamentals of EBM, but a brief review when discussing your plans for this at the start of the rotation would be advisable.

Bedside Teaching

A study in an academic pediatric service at a children's hospital by Shulman found that too little bedside teaching was an important cause of house staff dissatisfaction with rounds. In contrast, Maxwell found that bedside visits were not viewed by the house staff as especially educational and noted that it was difficult to carry out "systematic instruction" at the bedside. Kronke reported that, on average, attendings felt that one third of time on rounds should be at the bedside, while residents wanted only one quarter—actually, not much of a difference. For a more complete discussion of bedside teaching, see Chapter 9.

Kronke suggested that the purposes of bedside rounds were to confirm physical findings, resolve conflicting data, assist in a difficult interview, or educate the patient. These are worded as patient care issues. To rephrase them as education strategies, we would say demonstrate physical findings,

teach data resolution, model how to interview a difficult patient, and model proper physician-patient communication.

Demonstration is an important teaching technique. When appropriate, the attending physician can demonstrate the techniques of interviewing and performing a physical examination, as well as demonstrating specific findings. The teacher should explain what he is modeling and point out the specific techniques or skills that the student should observe. Demonstration is a passive technique which can be made active by assessing the learner's knowledge relevant to the specific patient's problems, deciding and discussing what the team should learn from the demonstration, and providing guidelines for behavior during the demonstration, all before going to the bedside (Sarkin and Boorman). Activation also means introducing the team (not necessarily individually) and including one or more team members in the examination as well as in any discussion with the patient. After leaving the room, activation continues with a discussion of diagnosis and management and a review of the learning points of the demonstration and concludes with encouragement for further self-learning about the patient's signs, symptoms, or diagnosis.

Observation is a more learner-active technique than demonstration but also can be more stressful. The attending physician and team go to the bedside and observe one of the learners examine or interact with a patient. The learner may be asked to perform part of the physical examination. Before entering the patient's room, explain clearly what you want the learner to do, how you want him to do it, and what you will be looking for. If you have reason to anticipate any special difficulties or problems, warn the learner of your concerns. While the learner is demonstrating his technique, you can point out what is being done properly and, if necessary, constructively correct the learner's technique or suggest even better ways. The challenge is to do this in such a way as to not undermine the learner's credibility with the patient.

After leaving the room, review the learner's performance, emphasizing what he did well and what patient relevant data was obtained. A useful technique is to ask the learner to self-reflect on the experience and discuss what was done well and then explain, non-judgmentally, what could be done differently next time. It is critical that the entire team, including the attending physician, be completely supportive.

Homework

Assignments can be related to patient care (find data for the best therapeutic options for this patient) or to a specific topic (prepare a three minute presentation on the classification of febrile seizures). Be specific about the assignment and make the time limits clear to the learner; five minutes is a long time for presentation on rounds. Vary assignments. Rather than asking the learner to give a talk, you can ask him to prepare an open-ended or multiple choice question for the team, and then use that question as a focus for

discussion. This takes more time than a straightforward presentation, so do it only if sufficient time is available.

Be respectful of the learners' time and do not overload them with homework. One or two assignments per learner per month are adequate.

Thank the presenter and reinforce things done well. Correct mistakes constructively.

Reflection exercise #1. Answers at end of chapter.
A colleague wants to improve his teaching rounds. Suggest three aspects of his teaching that he might reflect on and how he might improve each.

Evaluation and Feedback

While evaluation and feedback should be ongoing, there usually is an expectation for a summative evaluation and feedback at the conclusion of the rotation. See Chapter 17 for a more comprehensive discussion of this area.

It is useful to keep notes about the individual learner's performance, including strengths and weaknesses with specific examples. This can be done on notepaper, 3X5 index cards, or a portable electronic device. This is especially helpful when working with a large team. It is also helpful to keep notes about certain patients and certain critical learning points, so that these can be reviewed at the end of the month.

If one of your goals is to help the students and interns improve their skills at presenting, you will want to critique their presentations or offer suggestions for improvements. Do so constructively and diplomatically, being careful of what you say in front of the team. It is one thing for an individual to not know the answer to a question; it is quite another to have someone point out that a presentation was lacking. Do not be judgmental. Do not say things like, "That wasn't well organized," or " You're disorganized." Better to say, "Let's try to look at that differently," or "Is there a more concise way to organize that information?" Rather than, "You left out the social history," say, "Is there anything that you want to add about social history?" If necessary, meet with individuals privately after rounds to give them feedback about problems. Don't dwell on problems with presentations in front of the group, but do point out when things are presented well and explain why the presentation was good.

The final session with the team should also include closure. Review the highlights, challenges, problems, and accomplishments of the month. If there is time, review a few key learning points. Thank the members for their hard work and sense of responsibility (hopefully, this will be true for everyone).

Table 9.
Timeline for Various Attending Teaching Tasks

Time	Tasks
Before rotation starts	Find out who your learners are Meet with supervising resident Plan curriculum and reading material
Beginning of rotation	Conduct orientation Get to know the team and your learners
Continuous	Asses learners' knowledge and skills Teach Evaluate and provide feedback
Midpoint of rotation	Assess progress of team and each learner Meet with supervising resident Consider having the supervising resident take over some of your teaching Provide learners with formative feedback
End of rotation	Review and reflect on the rotation Provide feedback to the group Ask for feedback about the experience and (anonymously) about your teaching Provide feedback to individual learners Thank the team and anyone else on the unit who helped you teach or care for the patients

THE INPATIENT CONSULTANT

Not much has been written about the consultant as a teacher. A medline search yielded very few articles directed to the consultant as a teacher, and most of these were from the British system, where a consultant is a specialist, such as an internist or pediatrician, as opposed to the U.S. system, where a consultant is usually a sub-specialist (e.g. rheumatologist or cardiologist). A study from the British system in 2000 (Wall) concluded that the top five areas in which "consultants" needed to improve their teaching skills were: giving constructive feedback, keeping up to date, building a good educational climate, assessing trainees, and assessing the trainees' learning needs.

In a teaching hospital, the consultant will usually work with his own subspecialty team, as well as the floor team. While this discussion focuses on the consultant's teaching of the ward team, his educational responsibility for learners on the consult service is real and should not be neglected. Lewis and colleagues described a schema for teaching residents assigned to an internal medicine consult service. The goal of their program was "the production of an effective, efficient, knowledgeable internal medicine consultant within a 1-month period," and their curriculum focused on knowledge and the ability to gather evidence-based information, but it also included clinical "consultative" skills.

The importance of this article is not the specific program described, but rather, the fact that such a program should be goal-driven and can be successful. Each consultative service would need to design its own program.

With the 30-hour rule, the residents' requirement to attend continuity clinic, and in many programs, inpatient house staff shift work, there is usually only a 50-50 chance that the intern who admitted the patient will be on the ward when the consulting attending rounds. Touch base with the team when you first come on service and agree on methods for communication, explaining the best way to reach you. Tell them to feel free to call you with any questions. Adding a few words to the daily consult note, as to why a test was ordered or why a medication was initiated or stopped, can be very enlightening to a puzzled team. If you make important decisions, call the intern and bring him up-to-date on your thinking. House staff and students will appreciate your commitment to teaching.

THE ADMITTING PHYSICIAN

The admitting physician, whether a private practitioner or part of an academic faculty, can contribute to the education of students and residents participating in the care of his patients. The most important determinant of success in this regard is a commitment to teaching. Willingness to let the learners share in the decision making process and taking time to explain your diagnostic reasoning, what you are doing and why you are doing it is often all that is needed to turn simply writing another history and physical into a valid learning experience for the student or house officer. Communication is the key to making the learner feel part of the team with responsibility for the patient's care. It is possible to listen to the learner's assessment and plans without abrogating your own responsibility or decision making authority.

SUMMARY

Inpatient teaching is challenging and requires an organized approach, starting with an orientation and concluding with reflection, evaluation, and feedback. Rounds are the center point of inpatient teaching, and while they may occur away from the bedside, bedside teaching should not be neglected.

ACTION STEPS

- Plan the rotation, as well as individual strategies such as rounds and other teaching activities
- Begin the rotation with an orientation
- Incorporate a variety of teaching techniques into rounds, including demonstration and observation, discussions, assignments, and evidence-based medicine

- During the month monitor the progress of the team, as well as the performance of each learner
- At the end of the rotation, provide feedback to the team as a unit and to each learner individually

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Answers to reflection exercises

Kroenke has described the ward attending month as having five components. You might remind your colleague of each and offer a corresponding suggestion for improvement.

The month begins with a discussion of *expectations.* Your colleague might reflect on his expectations for the learners, and he also might resolve to give his learners an opportunity to express their expectations for the rotation and for him as team leader.

Much teaching will probably take place in the *conference room.* Your colleague might decide to maximize the opportunity for his learners to express their thoughts before he gives "the answer."

Bedside teaching is an important, albeit neglected aspect of inpatient teaching. Your colleague might want to include some bedside teaching everyday. He should reflect on the goals and objectives of bedside teaching and decide when and how to incorporate bedside teaching into his teaching rounds.

According to Kroenke, the rotation ends with *evaluation* of the learners. Your colleague might reflect on how to incorporate evaluation and feedback into the entire month. He might want to focus on providing real-time feedback in a constructive manner.

Chapter 7

Teaching in the Ambulatory Setting

"A single conversation with a wise man is better than ten years of study." Chinese Proverb.

CHAPTER OUTLINE

OBJECTIVES

After studying this chapter, the reader should be able to:

- describe the RIME continuum for level of student function
- discuss how to prime the learner for the clinical encounter teaching session
- identify clinical scenarios in which to use the following techniques for effective teaching in a brief clinical encounter: One-Minute-Preceptor, modeling problem solving, pattern recognition, activated demonstration, and SNAPPS models
- describe the difference between shadowing and activated demonstration
- list at least one method to incorporate observation into the ambulatory setting

INTRODUCTION

The outpatient setting is an exciting and challenging milieu in which to teach. It is a fertile venue for instruction in basic clinical skills. According to McGee and Irby, the outpatient clinic offers a forum for teaching preventive medicine, medical interviewing, and psychosocial aspects of disease. In the ambulatory setting, teacher and learner usually work one-on-one to teach, learn, and solve clinical problems, all at the same time. After reviewing the literature, McGee and Irby concluded that medical students generally rate their outpatient experiences better than their inpatient experience, although formal testing revealed no differences in acquired knowledge.

Much of ambulatory teaching is molded by the brief and episodic nature of the patient contact and focuses on the teaching moment. Time is usually limited, and the ambulatory teacher must address the concerns of each patient while that patient is still in the clinic. Lesky and Borkan suggest that ambulatory teaching needs to accommodate brief, impromptu opportunities, and techniques for doing this include focusing on a limited teaching agenda for each encounter, using questions, role modeling, observing, and providing feedback.

THE PRECEPTOR

In the ambulatory setting, the teacher usually functions as a preceptor. Dictionaries offer several definitions of the word, “preceptor.” The first definition is usually simply “a teacher or tutor.” An alternate definition is “an expert or specialist, such as a physician, who gives practical experience and training to a student, especially of medicine or nursing.” In the clinical setting, the term “preceptor” implies certain specific conditions. First, the preceptor has a close, usually one-to-one, relationship with the learner, although this does not preclude the teacher from working with more than one learner during a given period of time. Another key feature is that the learning experience revolves around real patients for whose care the learner and preceptor share responsibility. Although demonstration can be a valid part of the preceptor’s teaching strategy, simply shadowing the preceptor is not a valid educational experience for a learner in the clinical years or beyond. Finally, the preceptor must be qualified in the area in which he is teaching. In summary, the preceptor is a clinician-educator who teaches one-on-one about, and with, a real patient. It is easy to see how precepting fits into the ambulatory milieu.

Sometimes preceptor and learner meet only once, perhaps in clinic or the emergency department, and sometimes the relationship is relatively long term, with multiple contacts, e.g. daily contact for a month or once a month contact for a year. The functionalities and accomplishments for these two relationships are quite different. For example, only with repeated contacts is it possible to establish a curriculum, complete an in-depth evaluation of the learner’s knowledge and abilities, judge the learner’s improvement, and evaluate the effectiveness of the preceptor’s teaching.

Table 10.
Characteristics of Single versus Multiple Ambulatory Teacher-Learner Encounters

	Teaching	Assessment and Evaluation
Single encounter	Content and analytic skills relevant to a single sign, symptom, or disease.	Narrow and focused. Difficult to know if a deficiency is isolated or part of a pattern.
Multiple encounters	Broad spectrum of complaints, findings, and diseases. Opportunity to build on prior teaching.	Can assess a variety of abilities, knowledge across a spectrum of disorders, and attitude in a range of circumstances. Opportunity to assess response to feedback.

Serving as a preceptor is not limited to full-time academic faculty. More and more physicians in private practice are becoming actively involved in medical teaching (Barazansky). One reason for this is the emphasis that many medical schools place on primary care and the attempts by these schools to get their students into the community early in their training. Additionally, a number of residency programs utilize community sites and private offices for continuity clinics as well as for elective block rotations.

While preceptor-based teaching can take place in either the inpatient or outpatient setting, classically, it has been associated with the ambulatory setting, where the patient is more likely to be seen by one learner and one teacher in immediate sequence. On the inpatient service, the patient may be seen by a student, intern, supervising resident, fellow, and multiple consultants, and the attending physician often sees the patient long before or after the learner. On the ward, communication between teacher and learner, unfortunately, may be by phone or by notes in the medical record, whereas in the ambulatory setting it is almost always face to face.

The preceptor can teach knowledge, ability (skill), and attitude. Ability includes not only how to perform a history and physical examination, but also how to analyze and interpret clinical and laboratory data. It also may include performing physical procedures ("psychomotor skills"), such as venipuncture or suturing. One model for teaching specific skills is demonstration-observation-feedback. It is important to provide appropriate practice opportunities and supervision, so that learners can grow and develop their abilities.

Knowledge is probably the easiest area to teach and attitude the hardest. Standard methods for teaching knowledge include direct instruction, mini-

lectures, and discussions. But we also can teach knowledge by giving the learner assignments which we then review. Such assignments foster self-learning.

George and Doto described a five-step method for teaching psychomotor skills. In the first step, the learner comes to understand the cognitive elements of the skill, from purpose to tools to technique. Next, the preceptor demonstrates and the learner observes the procedure or skill from start to finish, without narration or discussion. This gives the student a mental image of the procedure. Following this, the preceptor again demonstrates the skill, this time while narrating and discussing the procedure. Finally, the student performs the procedure with the teacher carefully observing and providing coaching and feedback. Following a successful attempt, the student should practice until achieving the appropriate level of competency.

A preceptor can teach attitude by role modeling and pointing out what he did and why. A preceptor also can discuss attitudes with the learner and foster reflection on clinical encounters and management decisions.

A useful model for one-on-one teaching is to assess-teach-assess. One assesses by observing and asking the learner questions. These steps can sometimes be combined by the use of role-playing. The preceptor says, "Pretend that I'm a high school basketball player with Osgood-Schlatter disease and you have to tell me to stop sports for a while." The preceptor responds to the learner as would a real patient.

If possible, the preceptor should select appropriate cases for the learner, providing a diversity of diseases and a spectrum of complexity and difficulty. Initially, the preceptor may need to protect the learner from too heavy a clinical load and from responsibilities for which he is not ready. In some circumstances, the preceptor may need to introduce the learner to the patients.

All the characteristics of a good teacher (see Chapter 2) apply to the preceptor, but some are especially important. It is vital that the preceptor establish rapport with the learner. The preceptor needs to be able to evaluate and correct the learner while remaining unbiased and non-judgmental. The preceptor should be easily approachable, and if this is not a one-time encounter, the preceptor should be available and accessible between sessions.

If the preceptor has multiple teaching encounters with the learner, he can evaluate the learner's level of function and help the learner progress to a higher level. Pangaro et al have described a model (RIME) for evaluating the learner's level of function in the ambulatory case-presentation setting. At the lowest level, the learner acts simply as a ***R****eporter*, obtaining data (history, physical, and laboratory), recording it in the medical record, and presenting it to the preceptor. As the learner progresses to the next level, he learns to ***I****nterpret* the data, analyzing, assessing, and judging the information. He makes and evaluates diagnostic hypotheses. At the next level, the learner functions as a ***M****anager*, utilizing what he has interpreted so as to generate a diagnostic or

therapeutic plan. Finally, at the highest level, the learner becomes an **E**ducator. He searches the literature for new evidence pertinent to the patient and teaches the patient and other health care professionals. The effective preceptor judges where along this continuum the learner is and helps him advance to the next level.

Reflection exercise #1. Answer at end of chapter.
You have just spent the day precepting a third year medical student. He is very good at gathering data from the patient and presenting it to you in an organized manner. He is also able to analyze and assess the data collected and is beginning to be able to formulate management plans. According to the RIME model described by Pangaro, at what level is this student functioning?

TIME LIMITS AND THE TEACHABLE MOMENT

Keeping within time limits

One of the biggest challenges of being a preceptor is that time is usually limited. It is a busy clinic and you have two other learners waiting to check out their patients, a social worker returning your page, and two drop-ins to be accommodated. You and the learner may have literally only a few minutes. Do not try to fit a quart of teaching into a one-ounce container. It will not work. You can only touch on the most important points. You may want to end with a suggestion for reading, or if practical, with a promise to go into more detail at the end of the clinic after all the patients have been taken care of, but be sure to keep that promise!

If you and the learner have a full five minutes, it will seem luxurious, and ten minutes is almost a session rather than just a *moment*. You have time to explore in detail what the leaner thinks about the patient or knows about the topic, and time to carefully decide what you need to teach. And you have time to ask the learner to summarize the key points of the discussion.

What is lost by the limited *quantity* of time can be made up by the *quality* of the time. Adult learners are problem oriented and most strongly motivated when trying to solve problems. Immediacy and relevance are built into teaching moments. Melding instruction and supervision, the teaching moment can be a paradigm of educational efficiency. An organized 5 minutes is better than a disorganized 30 minutes.

The teachable moment

Neither Medline nor Google searches could clarify when the terms "teachable moment" or "teaching moment" entered the medical vocabulary. Most clinician-educators consider a teaching moment as a brief, spontaneous, patient-centered teaching opportunity. James C. Leist, an Associate Dean for Continuing Education, wrote, "The teachable moment is the time when a learner is ready to accept new information for use conceptually or in practice." Thus,

the teachable moment is an opportunity for teaching that can be utilized by the teacher to maximize the probability of learning. Much of the literature about the teachable moment deals with *patient* education, for example, the opportunity to talk to a patient about smoking cessation or healthful nutrition. In this book, the teachable moment refers to the opportunity to use a patient encounter to teach a *student, resident, or other learner* clinical medicine. The patient encounter is the reason the student is ready to learn. Therefore, a teaching moment is a relatively brief teaching encounter focused on a real patient with whose care the teacher and learner are involved.

Of course, in addition to patient-focused moments, the consummate clinician- educator teaches whenever and wherever he can. The dedicated clinician-educator will never pass up an opportunity to teach—while the first patient gets checked in, during a lull in the clinic, or on the way to the laboratory or to diagnostic imaging. The consummate teacher always manages to drop some pearls, correct some misconceptions, or fill in some missing information. It only takes a pause in the conversation or an overheard question to trigger the teaching reflex and launch the consummate clinical-educator into instruction mode.

Table 11.
CATPAC: An Acronym for Structuring the Teaching Moment*

Acronym	Meaning
Capture	Capture the learner's attention and get his commitment.
Assess	Assess the learner's knowledge and understanding.
Teach	Teach, especially general rules. Explain. Give information. Encourage the learner to get further information.
Provide	Provide positive feedback about the learner's understanding, decision making, or anything else he did correctly.
And	And
Correct	Correct any errors or deficiencies in a constructive manner.

* Based on Neher et al, A five-step "microskills" model of clinical teaching.

ORGANIZING THE AMBULATORY TEACHING ENCOUNTER

Case-based teaching in a time-restricted or a hectic environment is difficult, and to do it well takes experience and dedication. It is not sufficient simply to talk quickly, and it is generally disconcerting for the learner to be the target of rapid-fire questions. The teaching moment, however brief, needs structure, and the teacher must continuously assess where the learner is and what he needs to learn. Time is a budget, and the teacher needs to set priorities and plan carefully. The learner needs to know enough to diagnose and treat the patient, but he does not need to know all the biochemical pathways involved or every rare complication of the disease.

Priming

Grover defined priming as orienting the learner to the patient and to the task that will be requested of him, prior to his entering the patient's room. Priming sets clear and realistic expectations based on the learner's level of experience. Priming is especially important for medical students who don't have the experience to recognize diagnostic patterns and therefore are not able to efficiently organize the history and physical examination. Sometimes the clinic schedule will permit the teacher to assign the student a patient who is not yet in a room and ask that student to read or search the Internet about that patient's diagnosis or complaint while waiting for the patient to be checked in.

Reflection exercise #2. Answer at end of chapter.
Think about a particularly complicated patient you have seen in the recent past. Describe how you would prime a learner for his clinical encounter with this patient.

The microskills or one-minute-preceptor (OMP) model

Neher et al proposed a five-step *microskills* model for teaching in a time limited setting: get a commitment, probe for supporting evidence, teach general rules, reinforce what was done right, and correct mistakes. This approach has been incorporated into a model called "the one-minute-preceptor" (Raskind, Sarkin).

The first microskill is to capture the learner's attention. "What do you think is going on?" "So, why do you think this child is… " This gets the learner to buy in to the discussion and gives the teacher a chance to assess the learner's current knowledge and understanding. If there is more than one learner, get them all involved. "Let's hear what Charles thinks and then what the rest of you can add."

The second step is to probe for supporting evidence. Give the learner an opportunity to explain his reasoning or justify his conclusions.

Third, teach general rules, emphasizing reasoning, focusing on concepts, and filling in any information the learner needs in order to care for the patient

properly. If possible, articulate a bottom-line or take-home message. Encourage the learner to reflect on the patient encounter and to learn more on his own.

Fourth, provide positive feedback and reinforcement for things done well. Furney found that in brief patient-oriented teaching encounters lack of feedback was the most common deficiency reported by learners. Identify and praise specific accomplishments. "That was a well organized presentation." "Very complete differential." "Excellent plan."

And fifth and finally, correct errors or deficiencies in the learner's thinking in a supportive and constructive manner. "It was great that you recognized the significance of the headache. Now you need to expand your differential diagnosis of headache to more than brain tumor." "You missed that end-expiratory wheeze, but that will come with more experience. Meanwhile you need to listen carefully throughout the breathing cycle, and there are some resources for auscultation on the Internet that can help you with this." To avoid undermining the learner's relationship with the patient, and to foster the supportive non-threatening environment necessary for effective feedback, extensive discussions about diagnosis or treatment should generally occur outside the patient's room.

Although getting all of this into 60 seconds is a near-impossible challenge, it is a useful way of organizing the patient focused teaching encounter. The term, "the one-minute-preceptor," should not be taken literally. Some of the same authors (Usatine et al) who coined the term, "one-minute-preceptor," found that the average time just for a student to present his case in an ambulatory setting was 2.2 minutes. Add to this the preceptor's input and some two-way discussion, and you are well past the five-minute mark. Furney et al reported that use of the OMP model improved resident teaching as perceived by medical students. Irby found that the OMP model shifted teaching away from generic clinical skills towards disease-specific teaching. Interestingly, this is in keeping with the recognition that clinical reasoning is context specific (Bowen).

Modeling problem solving

Sometimes, a case may be too complicated for the learner's skill level or you do not have enough time to allow the learner to progress through the steps of the OMP. A technique you could use in such a situation is to model your problem solving approach. This method involves the preceptor "thinking out loud" about the patient. The teacher discusses the differential diagnosis, the evidence that supports one diagnosis over another, and the rationale for the management plan. The disadvantage of this model is that it does not actively involve the learner in problem solving. However, it does provide role modeling of this skill by the preceptor. In a review article, Bowen et al. reported that clinical diagnostic reasoning requires both knowledge and experience. They recommend increasing content knowledge by modeling the thinking process.

Modeling how the teacher sees the patient's problem allows the learner to develop a repository of content-specific information that can be retrieved and utilized the next time the learner sees a patient with the same problem.

The SNAPPS model

Wolpaw et al developed a model (SNAPPS) for ambulatory teaching in the case presentation format. SNAPPS is not only learner-*centered*, it is learner-*driven* and pushes the learner beyond the reporter level of the RIME model. First, the learner briefly **S**ummarizes the results of the history and physical examination. Then the learner **N**arrows the differential diagnosis to three possibilities and **A**nalyzes these by comparing and contrasting them. Next, the learner **P**robes the teacher (rather than the reverse) in regard to any questions or uncertainties he has and for alternative diagnoses or explanations. Then the learner develops a **P**lan for management of the patient, and finally, the learner **S**elects an issue related to the case for self-directed learning.

Pattern recognition (The Aunt Minnie model)

Time is the most common barrier to teaching in the ambulatory setting. The "Aunt Minnie" model can be a time efficient and effective case based teaching method when the case is straightforward. The name was coined by Sackett et al. to describe a process of pattern recognition, i.e., if she walks, talks, and dresses like Aunt Minnie, then she probably is Aunt Minnie even if you cannot see her face. The learner performs a history and physical and then presents only the chief complaint and the most likely diagnosis. If the learner is at the level of formulating management plans, this is also presented. The learner is then asked to write the note while you evaluate the patient. If, after evaluating the patient, you agree with the learner's diagnosis and management plan, you can provide immediate feedback and ask the learner if he has any questions related to the case. These questions may be addressed immediately, if time permits, or they can be written down to be discussed at a later time. If however, you detect a discrepancy in the diagnosis or plan, you can take the learner through the OMP, or if time is short, you can give him feedback utilizing the modeling problem-solving case-based teaching method. With practice, the learner will be able to tell you whether the case is an "Aunt Minnie" or requires more discussion.

Pitfalls of case-based teaching

Case-based teaching is an indispensable part of the medical curriculum, but it needs to be done well. Here are five of the most common teacher errors in case-based teaching.

1. Taking over the case instead of probing further to find out what the learner knows. Under the pressure of a busy clinic, this is probably the most frequent error. It not only diminishes learner motivation, it deprives the learner of the

opportunity to articulate his thinking so that both he and the teacher can analyze it.
2. Not allowing sufficient time for the learner to respond to a question. Asking a question and answering it before the learner has a chance to do so is frustrating to the learner.
3. Giving information passively rather than stimulating problem solving and making the learner think. Monologues are less interesting than dialogues.
4. Focusing on questions that do not require problem solving or data synthesis. Knowledge is important, but so is the ability to reason and use that knowledge.
5. Pushing the learner past his ability. This can be recognized by observing the learner's verbal and non-verbal reactions to the question (e.g. like the stunned look of a deer in the headlights of an approaching automobile).

Demonstration and activated demonstration

Sometimes the learner will be an observer while the teacher models specific behaviors or skills. If there are insufficient numbers of patients, if the patient is too complex for the skill level of the learner, or if the preceptor needs to perform a procedure that the learner cannot or should not attempt, demonstration may be the best way to accomplish the educational goals. The student learns by observing the teacher.

The preceptor thinks out loud, points out clinical observations, and shares hypotheses, hunches, and insights. It is imperative for the teacher to explain what he is modeling and to identify the specific behavior he wants the student to observe. Reflective modeling means that both the learner and the teacher review and examine the experience. This requires the preceptor to be explicit regarding what is being modeled.

Even the inherently passive technique of demonstration can be made active, and several authors (Sarkin and Wilkerson, Boorman) have written about "activated demonstration." The process of activation begins before entering the patient's room by assessing the learner's knowledge and understanding relevant to the patient's problems. Then decide what the student should learn from the demonstration and share this with him. Provide the student with guidelines for his role and behavior during the demonstration. When you enter the room, introduce the learner, and include him in the examination of the patient and in any discussion with the patient. After leaving the room, discuss the patient's diagnosis and management and review the learning points of the demonstration. Finally, encourage further self-learning about the patient's signs, symptoms, or diagnosis.

Observation

Imagine that you are a piano instructor teaching a pupil how to play a specific melody. You would not ask him to go home, play the musical piece, and then come back and tell you how he did. You would need to observe his

movements on the keyboard and listen to him play in order to provide him with feedback on what he did well and how he could improve. It is no different for students learning to take a history, perform a physical examination, and interact with a patient. Unfortunately, researchers have identified lack of observation and feedback as the norm in medical education. Ferenchick et al. proposed a brief observation of the learner performing a specific skill (e.g. the HEENT examination) as an efficient strategy for observation in the outpatient setting. He titled this the "One Minute Observation." This method allows you to observe the learner without the commitment of large blocks of time. The first step is to discuss the purpose of the observation and the "modus operandi" or how the observation will take place. You also want to inform the patient of the purpose of the observation. Observe the interaction for a brief period of time as a "fly on the wall" then leave the room without disrupting the learner-patient interaction. After the learner is finished, provide immediate feedback and use the information gleaned from the observation as an agenda for future teaching. This kind of observation is different from bedside teaching (Chapter 9), where you generally do want to interact with the learner and patient in the room.

When employing observation as a teaching tool, some instructors use a checklist to improve the reliability of the observation. This focuses the preceptor on those items relevant to the specific skill and setting. Typical items include, asking open-ended questions, performing complete examinations of various organ systems, and using lay terminology to explain diagnoses. One way to keep track of your observations if you do not use a checklist is to use pocket cards—3x5 or 5x7 inch note cards that can be kept easily in your coat pocket. These can be used for immediate feedback and also kept for later use when completing written evaluations of the learners.

Reflection exercise #3. Answer at end of chapter.
Identify the case-based teaching model that would be best to use in each of the following clinical scenarios.
a. A third year pediatric resident evaluating a patient for diaper dermatitis

b. A second year medical student evaluating a completely unfamiliar case

c. A second year pediatric resident who has never performed tympanometry is evaluating a patient to determine the patency of pressure equalizing tubes using this technique

d. A first year pediatric resident evaluating a complex case of abdominal pain and rash

e. A fourth year medical student evaluating a previously well patient with low grade fever, rhinorrhea, and cough

Planning for the teaching encounter

Teaching in the ambulatory setting provides a unique environment for learning. Focus is on the patient and on "just in time learning," learning that takes place in order to most effectively manage the patient and maximize the outcome at the time of the visit. Despite the many impromptu teaching moments that arise, you still need to plan your teaching activities so they are a scheduled part of the day. When will you observe your learner? When and how will you provide feedback? If at all possible, plan time in your day for debriefing with the learner. Do not leave learning to chance. When, where, and how teaching fits into the day will be different for each teacher and for each setting. Resist the urge to cover everything. Set priorities. Keep track of teaching points and questions to address as time permits. Ask the learner what topics he would like to discuss. Have the learner carry a card or a notebook to record questions or observations that can later be used to frame a discussion at the end of the clinic session. Consider reviewing some cases in the examining room in front of the patient, as appropriate. This can save you time and allow you to observe the student interacting with the patient, as well as provide an avenue to teach both the learner and the patient at the same time. Patients report that bedside teaching helps them understand their illnesses better (Lehman). They want their doctors to ask permission prior to the teaching encounter, and they want everyone to introduce themselves. Make sure to ask the learner to discuss any sensitive issues or diagnoses prior to entering or after leaving the room. During the interaction, if possible, the patient, teacher and learner should all be seated and the patient should be free to interrupt at any time to ask questions about words or concepts he does not understand.

Another method to balance the competing demands of patient care and teaching is to allow others in your practice to teach, e.g. practice partners, nurses, physician assistants, administrators, billing and coding specialists, and health educators. Other team members can provide a different perspective and potentially broaden the learners' knowledge and skill acquisition. Consider weaving a theme throughout the day as a focus for discussion. Observe and provide feedback to your learners, not only on their examination skills but also on written documentation and oral communication. Encourage the learners to go further and seek more information and, ultimately, a better understanding about the patients they are seeing. As a teacher, whether you are aware of it or not, you are constantly role modeling skills, behaviors, and attitudes. Learners observe what you say and do, both positive and negative, and integrate this learning into their own set of actions. Role modeling should therefore be brought to the attention of the learners through activated demonstration, verbal modeling of problem solving, and talking through the steps of procedures. In addition, reflection and discussion about beliefs, values, and biases, should be integrated into teachable moments. Use activated demonstration to promote learning for behaviors that are not intuitive for the learner, such as self-

improvement, professionalism, and communication strategies with other health care team members.

Reflection exercise #4. Answers at end of chapter.
A. Describe to a colleague the differences between shadowing and activated demonstration, using a clinical example.

B. List one method by which you could incorporate observation into your ambulatory teaching.

IMPROVING THE LEARNING EXPERIENCE

At the beginning of any learning experience, review the objectives of the session and ask the learners about their previous clinical experience. Identify the learners' goals for the session and encourage them to read about the clinical conditions to be seen and be prepared to propose a differential diagnosis and management plan based on their level of experience. Encourage the learners to explain the reasoning behind their decisions and to seek feedback, not only on these decisions but also on history taking, physical examination, and communication skills. Develop an environment that encourages reflection-on-practice by discussing what went well during the clinical encounter and what could be changed in the future to improve the quality of care provided. These discussions should also include your own clinical encounters, not just the learners', thereby role modeling life-long learning skills.

SUMMARY

Teaching in the ambulatory setting is difficult and challenging. It requires a balance between the needs of the patient and learner in a time-limited setting. Ambulatory teaching is predominantly case-based and focuses on the patient encounter. It provides the learner a unique window into aspects of care often not emphasized in the inpatient setting, such as preventive medicine, care of chronic health problems, patient relationships, and psychosocial aspects of disease. The teachable moment is defined as a brief, patient-centered teaching opportunity. Time is the limiting factor, but the experience still should be based on objectives, should be well organized, and should provide appropriate feedback. Preceptors should use a variety of models for effective teaching in a brief clinical encounter, such as the OMP, Aunt Minnie approach, SNAPPS, activated demonstration, and observation. The RIME continuum can be used to evaluate the level of student functioning. Priming the learner orients him to the patient and to the task that will be requested of him. Shadowing is a passive learning experience, where the student is an observer as the teacher demonstrates clinical skills, while activated demonstration is an active learning experience, whereby the teacher provides learning guidelines based on the

learner's needs and experiences during the observation and discusses these after the encounter. Observation of the learner is crucial in evaluating and improving his skills.

ACTION STEPS

- Estimate the available amount of time
- Decide which techniques and strategies you will use
- Assess the learner's current knowledge and understanding about the problem
- Set priorities
- Teach
- Provide feedback and correct any errors in a constructive manner
- Encourage the learner to go further and seek more information and better understanding

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Answers to reflection exercises

1. Interpreter, although he is beginning to transition from an Interpreter to a Manager.

2. Jorge is here today for fever, rhinorrhea, and cough. He is a 5 year old male with partial DiGeorge syndrome and moderate persistent asthma. He is on an inhaled corticosteroid as well as a leukotriene inhibitor for prevention of asthma attacks and takes a bronchodilator as needed every two hours when he is experiencing acute symptoms. Due to his underlying immunosuppression and chronic asthma, he gets pneumonia frequently. I would like you to interview the patient and his family and complete a focused physical examination concentrating on the HEENT, cardiac and lung examinations and present your differential diagnosis for his current symptoms along with your management plan. Be able to defend your treatment plan based on the patient's history and your physical findings. We'll discuss this after you complete your examination.

3. a. Aunt Minnie, b. Modeling Problem Solving, c. Activated Demonstration, d. SNAPPS, e. Microskills model

4.
a. Shadowing is when you have the learner observe you performing a history and physical examination without any particular learning objective previously identified. Activated demonstration is when you have that same learner identify areas he would like to learn more about in regard to the history and physical, for example, obtaining a social history on a teenager using the HEADSS format

(Home, Education, Activities, Drugs, Sexuality, Suicide). You first ask the learner what he knows about the HEADSS format and what experience he has had with the technique. Based on his answers, you may choose to instruct the learner to pay particular attention to the manner in which you ask the questions. You also may have him report on the specific tone you took with the patient and the general areas in which you inquired of the teenager's social history that correlate to the HEADSS mnemonic. After you demonstrate this skill, you will follow-up with the learner and discuss what he observed in the room based on the learning needs that were identified prior to the clinical encounter.

b. Once a day, you could observe your learner providing information to a patient or family, using a checklist that documents the learner's ability to avoid medical jargon, to explain the diagnosis and management plan, to solicit questions and concerns, and to probe for patient and family understanding.

Chapter 8

The Clinical Teacher as Team Leader

"Leadership and learning are indispensable to each other." John F. Kennedy.

CHAPTER OUTLINE
OBJECTIVES
WHAT IS THE TEAM?
WHAT DOES IT TAKE TO BE A SUCCESSFUL TEAM LEADER?
Styles of leadership
Techniques of leadership
Tools of leadership
PROBLEMS AND OBSTACLES
Internal problems
External problems
LEADING THE TEAM
SUMMARY
ACTION STEPS

OBJECTIVES

After completing this chapter, the reader should be able to

- explain the differences between a group and a team
- list and describe at least three characteristics of an effective team leader
- list and compare at least two leadership styles
- list and compare at least three leadership techniques
- describe one example of an internal team problem and discuss how to deal with it
- describe one example of an external team problem and discuss how to approach it

WHAT IS THE TEAM?

The clinical teacher often has to function as a "the team leader." What exactly is "the team," and what does it take to be a successful "leader"? While any group of individuals working together might be considered a team, in this chapter we focus on a more restrictive definition. We consider the team to be teachers and learners working together with a shared vision that includes educational goals. Members of an effective team (including the leader) bond and grow together. They develop loyalty, pride, and trust. They watch out for

each other, help each other, and keep each other informed so that no one is out of the loop. Team members define their goals, identify obstacles, design and organize plans, take action, and evaluate what they have accomplished. A team, then, is much more than just a group.

In this chapter, we will focus on the clinical teaching-learning team. We are not talking about a group of learners coming together for a series of conferences. We are talking about a group of teachers and learners involved in delivering patient care. Typically, on the inpatient service this would include medical students, interns, an upper-level or supervising resident, and an attending physician. In special-care settings, such as the intensive care unit and on subspecialty and consultative services, there is likely to be a fellow rather than a supervising resident. In the ambulatory setting, teams vary in size and composition and may change on a daily basis, presenting unique challenges beyond the scope of this chapter. While the *patient care* team may include nurses, therapists, administrators, and others, these individuals may or may not be part of our *teacher-learners* team.

The clinical team differs from non-clinical teams (e.g. administrative, athletic, and military) in several ways. Many of the individuals on a typical inpatient or outpatient clinical team are assigned on the basis of randomly generated yearly schedules, and the team composition changes monthly. Assigned team members may or may not be interested in that particular rotation. Additionally, not all individuals rotate by the calendar month, and individual members may join the team late or leave early.

The team in this context, meaning a clinician-educator and clinical learners, should not be confused with the team referred to in “team learning.” Team learning is a very specific teaching strategy widely used in higher education. In this setting, an instructor gives assignments and evaluates and critiques what the team accomplishes. The team is a group of learners working together, *independent of the instructor*, to solve a problem or complete a project. If there is a team leader, it is one of the learners, not the teacher.

WHAT DOES IT TAKE TO BE A SUCCESSFUL TEAM LEADER?

While most of the literature on team building and leadership is from business, sports, and the military, much of what these disciplines have learned about teamwork and leadership can be applied to medicine. Additionally, there is some literature specifically in regard to clinical teams and education.

Stoller et al. reported on a 1-day retreat on team building and leadership for first year internal medicine residents. They had an “organizational development consultant” work with them in planning and implementing the retreat. Attendees felt that the retreat was a valuable experience. They even endorsed a “reef survival exercise,” suggesting that traditional team building activities with non-medical themes can be utilized successfully for house staff. Residents were impressed with how often team-based decisions were better than decisions

made by individual team members. Attendees at the retreat agreed that strong team leaders "challenged the process" and made decisions based on shared visions. They allowed others to act and recognized individual contributions. Finally, effective leaders served as good role models.

Levin pointed out that medical leadership is not something that is achieved and then remains. It is active, not static. Leadership is a continuing process, and team members are not simply blind followers. They are interacting, collaborating, sharing, and working towards a common goal. Ideally, members of a team are committed to the development and success of every team member.

The successful team leader needs many of the same characteristics as the successful teacher: clinical competence, willingness to teach (and willingness to lead), respect for learners, organizational skill, and ability to communicate effectively. Additional useful characteristics include enthusiasm, approachability, and self-confidence**.** Beyond these characteristics, leaders also need to have a basic leadership style, and they need to be skillful with an assortment of leadership techniques and tools. Below, we will examine styles of leadership, and some of the tools and techniques used for effective leadership.

Table 12.
Characteristics of the Effective Team Leader

Committed
Skillful with different leadership styles and able to choose the best one for each situation
Skillful with different techniques of leadership and able to choose the best one for each situation
Proficient in using the different tools of leadership
Prepared to sacrifice for the team

Styles of leadership

Leadership style refers to the primary and overall manner in which a leader gets his followers to do what he wants. It is his blend of the various leadership techniques available. It is the degree to which he uses the different tools of leadership and the way in which he uses them.

Clark described three major styles of leadership: participative, delegating, and authoritative. The *participative* style is open, inclusive, and democratic. All team members are encouraged to contribute ideas and suggestions, and they are permitted to participate in the decision making process. This does not mean free reign, and the leader is still accountable and cannot abrogate his supervisory responsibility.

A *delegating* style empowers individual team members and enhances their self-images. It also relieves the team leader of the need to do everything and

permits him to concentrate on the more critical issues. The successful team leader knows when and to whom to delegate tasks and authority. This can vary from asking a student or house officer to relay information to a patient to appointing a resident to conduct the team discussion of a patient or topic. Delegating does not mean "dumping," and the leader should never exploit team members. On a typical inpatient team, the attending needs to share leadership with the supervising resident and needs to do so in a supportive manner and with grace.

An *authoritative* or autocratic style should be used only when necessary. Authority does not engender teamwork or loyalty. However, there are times when the leader needs to set limits, for the safety of the learners as well as the patients. During a code or other emergencies, for example, the leader needs to delegate certain tasks and to make firm decisions; democracy and independent decision making are not suspended, but they take a back seat to expediency.

While Clark has classified leadership into the three styles listed above, many highly effective leaders describe their styles differently, usually based on emphasis of one of the leadership tools or techniques described below. So for example, it is not uncommon for someone to say that he leads *by example* or for someone else to describe his leadership style as leading by *consensus*.

The tools and techniques of leadership

There are many tools and techniques that can be used for effective leadership, and the strong leader will be adept at all and will know when to use each.

You can lead by *information*. Provide the appropriate information, and most learners will make the correct decision. Imagine yourself leading a group of scouts through the forest. You come to a fork in the path. You tell the group that the path to the left leads to the swamp, with quicksand, snakes, and spiders. The path to the right leads to the candy factory, where they are giving out free samples. Essentially all normal children will choose to go to the right. If you give your team enough information, they usually will make the right decision.

You can lead by *expertise*, which is different from information. Your team is seeing a child with asthma. The child is tachypneic and wheezing, but comfortable on low-flow oxygen. You reassure the team that you have cared for many such children, and that it is safe and reasonable not to transfer the child to the ICU. You are using your experience and judgment to reassure and lead the team. If you also provided the team with data about the effectiveness of systemic corticosteroids and an inhaled beta-agonist in this situation and how few patients go on to require ICU care, you would be leading by information as well.

Rewards and *goodwill* are commonly used leadership tools. Rewards are conditional and are given for specific achievements. The most common reward

in the clinical teaching setting is praise. You are unlikely to use money or a gold star, and you should never use food as a reward. Since people strive for rewards, viewing food as a reward could lead to overeating. Pavlov's dogs did not have free access to snacks and junk food the way most people do.

In contrast to rewards, goodwill is unconditional. As leader, you will work for your team, stand shoulder-to-shoulder with each member, and support each one regardless of how well they are doing. You will glow with pride when they succeed, but you will also stand by them when they are in trouble. You will be there for them. You will help out when they are overworked. You can provide articles and other information. You will start and end your sessions on time, and bringing food to rounds doesn't hurt either. While we do not want to use food as a reward (conditional), it is fine to use food, unconditionally, to establish goodwill. Today, low-fat items, such as cut fruit, berries, or trail mix, are often appreciated more than donuts.

While on the subject of using food to establish goodwill, we might mention a tradition on many clinical rotations—taking the team to lunch. This is not only a great way to build goodwill, but it is also a way to get to know your team members personally, including their individual goals and aspirations. And you do not have to wait for the end of the month. Taking the team to lunch during the month helps you get to know them before it is time to say goodbye.

Authority and *discipline* are two tools that should be used only when necessary. It is the leader's responsibility to see that all patients receive safe and appropriate care and that all team members behave professionally. Occasionally it may be necessary to invoke your authority to get the team or individual members to do what is right, either in regards to patient care or professionalism. A leader must be able to set boundaries and enforce them. Invoking authority may not build team spirit, but sometimes there is no other choice.

Discipline is a last resort and is usually unpleasant, but an effective leader needs to be able to discipline a team member whose behavior is unacceptable. You actually do the learner a disservice by ignoring inappropriate or unprofessional behavior. The learner needs to realize that unacceptable behavior will not be tolerated and has significant consequences. If discussion, role modeling, advice, and authority fail, disciple may be the only option. As clinicians, we always try to make a diagnosis before initiating therapy. Similarly, we should try to determine the causes of the errant behavior before starting a disciplinary process. There are more helpful interventions than discipline for problems such as marital discord or depression.

Table 13.
Advantages and Disadvantages of Some of the Tools of Leadership

Technique	Advantages/Strengths	Disadvantages/Weaknesses
Information	Information is an integral part of teaching	Time consuming; the needed information may not be available
Expertise	Safeguards patients and gives learners a feeling of security	Not always adequate; inherently not evidence-based
Reward	Motivates and encourages good performance	Praise can be overdone and become meaningless
Goodwill	Motivates learners to want to do the right thing, even if not being observed, evaluated, or tested; enhances team morale	If leader relies too heavily on goodwill, he may be reluctant to set limits or give constructive feedback
Authority	Rapid and does not require much leader time	Does not engender esprit de corps; may be viewed as antagonistic; rarely works when the learner is not being watched or evaluated; doesn't foster growth
Discipline	May be the only solution	Engenders resentment

The most common techniques of leadership include motivating, directing, coaching, role-modeling, advising, counseling, and tutoring. The effective leader helps the team set clear rules of behavior. He shows respect and concern for all team members and expects them to do the same. He provides positive feedback and recognition. He builds commitment and confidence. He shares responsibility and decision making with team members, and he defers the credit for any successes to the team, not to himself. Whenever feasible, the effective leader will listen carefully to all team members and talk last, after hearing from the others. As a leader, you earn respect by what you do, not by virtue of your position.

The successful leader knows his team members, their strengths and weaknesses, the way they operate and behave. The superb leader also knows their goals and aspirations.

Table 14.
Methods of Leadership

	Examples of actions
Styles	
Participative	Shares decision making
Delegating	Delegates certain tasks and responsibilities to team members
Authoritative	Makes all decisions or all important decisions
Tools	
Information	Provides team members with the right information so that they can make the right decision
Expertise	Uses personal expertise to ensure patient safety and give the learner a sense of comfort
Goodwill	Supports team and individual members; encourages positive effort and enhances team morale
Reward	Recognizes and acknowledges achievements of the team and of individual members
Authority	Demands that team members comply with his rules or decisions
Discipline	Reports team member to program director or department chair
Techniques	
Directing	Leads the team in general and in specific situations
Motivating	Encourages learners to work as a team and to do the right thing
Role-modeling	Demonstrates professional behavior, strong clinical thinking, and excellent patient care
Coaching	Helps individual team members overcome handicaps and achieve their maximal potential
Advising	Helps individuals work out solutions to ordinary personal and professional problems
Counseling	Analyses problems and provides constructive feedback
Tutoring	Works closely with learners having difficulties

Reflection exercise #1. Answers at the end of chapter.
Explain to a senior resident who is about to start his first month as supervisor on an inpatient unit, the difference between leading by information and leading by expertise.

PROBLEMS AND OBSTACLES

There may be problems *within* the team, and there almost always are problems *faced by* the team. The latter are often referred to as obstacles.

Internal problems

A common internal problem is the unbalanced team: strong versus weak residents or students. If all other factors are positive, this is a challenge rather than a problem. The strong help the weak; the weak make their best efforts; the leader guides wisely; and the team pulls together.

The uncooperative team member is a more serious problem and threatens the cohesiveness of the team. If the problem person is a student or intern, the attending physician should discuss the situation with the supervising resident and decide how they can work together to assist the individual. If the problem is the supervising resident, then the attending needs to address this directly. As when treating a patient, the first step is to establish a diagnosis. Is the learner incompetent, impaired, or overwhelmed? Is he under undue personal stress? Does he have a personality or behavioral problem?

When reviewing the problem with the learner, begin by asking for his perception. The simple question, "How do you think things are going?" gives the learner the opportunity to present the problem from his point of view and gives you an idea of insight or lack thereof. Respond by acknowledging some positive aspects of the individual's performance, and then explain the problem in terms of perceived behavior, not in terms of characteristics. "It seems to me that you don't pick up the slack when other team members have more patients than you," is better than, "I have noticed that you are lazy and unwilling to help others." (See Chapter 17 on evaluation and feedback.) In proposing a solution, be supportive and try to forge an alliance with the learner. An opening statement might be something like, "Joe, I know that you are deeply committed to your patients, but… " Deciding on common goals or agreeing on a verbal contract (and handshake) is more helpful than discipline, which is a last resort. It is important that the contract be reasonable and achievable. Do not expect one hundred percent compliance immediately. For example, if the problem is that the learner is argumentative and always wants to do things his way, agree that "episodes or events" will occur no more than once a week and that the learner will apologize *immediately* when he realizes what he has done. After a time, the goal becomes no more than once a month, and eventually, rarely.

When working with a problem team member, it is important to be fair and compassionate regardless of personal feelings towards the learner or his behavior. Listen carefully to the individual's side of the story and try to understand the issues from his point of view. If you conclude that the learner needs professional counseling or psychiatric help, recommend it, and do whatever you can to facilitate it.

External problems

It is a rare team that does not face some external obstacles, such as too heavy or too light a patient load, difficult-to-deal-with patients, rude ancillary personnel, or unreasonable physicians who are not part of the team. Be

prepared to intervene, even while realizing that there is no simple, universal solution, and that many external problems are beyond your ability to fix. If the problem is an individual (as opposed to the system or the facilities), meet with that person in a non-threatening way, emphasizing that you are all working towards the same goal of providing the best possible patient care. Define the problem and search for a mutually agreeable solution. The attitude that the problem is simply that person's fault and that that person has to do all the changing is rarely successful. If the problem is the system, be prepared to "go to bat" for your team whenever possible, but very often you will not be able to eliminate or even modify the problem. In that case, just showing the team that you recognize the problem, that you know it is not the team's fault, and that you understand everyone's frustration will be all that you can do.

LEADING THE TEAM

To be an effective leader, there is one thing you absolutely must do—*lead*. Be prepared to direct your team. Show your team members the different options and help them choose the best ones. But to lead, you have to get your team to follow, and you want to do this by motivating, not by invoking your authority, although there will be times when you have to be firm, set boundaries, and even make unpopular decisions. Do everything you can to establish and maintain team morale and esprit de corps. The single best reward, other than seeing a patient do well, is praise. Use this liberally but not gratuitously. Praise each team member at least once every few days, and if there is someone you cannot find a reason to praise, that person has a problem. Praise should be sincere and as specific as possible. Rather than simply saying, "That's great," explain what was great and why it was great.

Praise in the presence of other team members should be only for a specific task or accomplishment, not for general performance. "Super. Thanks for looking up that data." "Wonderful diagnosis; shows thinking outside the box." "Good job, very well organized presentation." If you want to tell a specific learner that he is doing a superb job, by all means, do so, but do so in private. Of course, it is fine to tell the team that *everyone* is doing a great job.

Leadership, management, and teaching overlap. In some regards, leadership is the housekeeping details of teaching. When should rounds start and end? How will you or the supervising resident round up team members who are late or straggling behind? How will you handle disruptions? But true leadership goes far beyond these mundane responsibilities. Peter Drucker, an expert in management, said that management is doing things right, and leadership is doing the right things.

As team leader, you should review the goals and objectives of the rotation with the team. This is different from setting goals and objectives for a specific teaching session. Determining the overall *goals* for a rotation is usually not too difficult, but defining *all* the specific learning objectives for a 30 day rotation on a

busy inpatient unit is a daunting task, and such a long list is likely to be overwhelming for the learners. It is generally best to decide on a few of the most important objectives, perhaps some that have to do with knowledge, a few with problem-solving, one with technical abilities, and one or two with interpersonal skills. Objectives will vary with the nature of the team. For example, a surgical team or emergency medicine team will likely have more technical objectives than a pediatric or internal medicine team. The six core competencies defined by the ACGME can be a useful guide in setting goals and objectives.

As leader, you want to determine the needs of your followers. Determine what they want and what they need. Try to accommodate the "wants," but focus on the "needs." Then remember, it is your job to deliver on what you have promised. This implies assessing the accomplishments and performance of the team, of individual team members, and of you as team leader *during* the rotation, not just at the end. This permits course corrections. Set aside specific times for feedback during and at the end of the rotation.

As leader, you should address the cognitive needs of your team. There is information they must learn. You also will be expected to help them master certain skills, including technical and interpersonal skills. And perhaps most challenging of all, a strong leader focuses on the attitudes of the team members. Learners have to develop positive attitudes about their work, their coworkers, and their patients.

SUMMARY

A team is more than a group of individuals working together. It is people with shared goals, people who bond together and support each other. The successful team leader builds team morale, listens to all team members, shares decision making responsibility, and leads the team in the best possible direction.

A team can have internal and external problems, and the team leader needs to help members deal with these problems in an appropriate, fair, and compassionate manner.

ACTION STEPS

- Know your team, its members, and its dynamics
- Motivate your team to work together and help each other
- Lead the team fairly and with compassion, and always in the right direction
- Recognize and praise team members for good work
- Help the team deal with internal and external problems
- Evaluate how well the team is doing and give feedback, both individually and to the team

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Answers to reflection exercise

Leading by *information* involves providing your team with the correct, needed information so that they can make the best decision.
Leading by *expertise* involves using your experience and judgment to reassure and lead the team.
The two techniques are complimentary, and together are powerful and empowering.

Chapter 9

Bedside Teaching

"There should be "no teaching without the patient for a text… " Sir William Osler

CHAPTER OUTLINE
OBJECTIVES
WHY AND WHEN BEDSIDE TEACHING
HOW TO CONDUCT BEDSIDE TEACHING EFFECTIVELY
Determining goals and objectives
Preparing the patient
Preparing the team
Conducting the session
Challenges of bedside teaching
SUMMARY
ACTION STEPS

OBJECTIVES
After studying this chapter, the reader should be able to:

- explain the differences between bedside teaching in the inpatient and outpatient settings
- set goals and objectives for bedside teaching
- effectively conduct an inpatient bedside teaching session, while preserving the well-being and dignity of the patient

WHY AND WHEN BEDSIDE TEACHING

While bedside teaching can take place in either the inpatient or the outpatient setting, there are substantial logistical and educational differences between the two settings. Bedside teaching is generally the *modus operandi* in outpatient settings, such as the clinic or emergency room, where a learner sees the patient and presents the patient to the instructor, who then accompanies the learner back into the patient's room to verify findings and communicate directly with the patient. Most often in this setting, the team consists of a single learner

and an attending physician. They are both in the same place at the same time and are responsible for making a decision about the immediate management of that patient. In contrast, on the inpatient service, the learner sees the patient, and the teacher may not come by until hours later or even the next day. On rounds, most members of the team, other than the presenter, have never spoken to or examined the patient, and in many cases the teacher may not be the patient's doctor and may have little or no responsibility for decision making.

A number of authors have commented on the decline in bedside teaching over the past three decades, especially in the inpatient setting. The most obvious reasons for this decline are the increased reliance on technology, including imaging and laboratory tests, increased physician workload and time constraints, heightened concern about patient privacy, and a variety of psychological factors.

Aside from Osler's quote above and the passion of many clinician teachers, are there really compelling reasons for bedside teaching? While there is data indicating that many clinicians and some students prefer visiting the bedside together, the authors could not find data that bedside teaching is more *effective* than "distant" teaching. When Osler said that there should be no teaching without a patient, was he implying that all teaching must take place in the presence of the patient, or did he mean that all teaching should be case centered as opposed to topic centered?

Although there is little proof that bedside teaching is superior to teaching which does not take place at the bedside, most authors in this area consider it to be self-evident that bedside teaching is critical and in danger of becoming a lost art. Certainly, one would not teach someone to swim without observing him in the water, and one would not coach a tennis player without watching him on the court. But these are predominantly psychomotor rather than intellectual skills. Most law students graduate without ever being observed speaking to a real client or jury or examining a real witness.

In 1993, in a commentary on bedside teaching, Fitzgerald wrote, "Physical diagnosis skills are clearly on the decline among American house officers." Although she provided no data for her statement, this perception is shared by many (including the authors of this book), and there are studies showing inadequate cardiac examination skills in house staff and faculty (Jones) and no improvement in these skills beyond the third year medical student level (Vukanovic-Criley). Today, computer skills, such as ordering and retrieving laboratory and imaging results, may be more important to the moment-to-moment survival of the house officer than is the skill of physical examination. Intuitively, we believe that bedside teaching would be one solution to the decline in physical diagnosis skills.

There is a tendency to romanticize bedside teaching, and truly disinterested reviews of this topic are rare. Most articles begin with the premise that bedside teaching is an important and positive learning experience, and at best analyze

the obstacles to beside teaching rather than the advantages and disadvantages. The author of an essay in a prominent journal of internal medicine offered much sound advice about how to conduct bedside teaching but also told of taking 16 learners with him, unannounced, into a patient's room, where the student presented the case. According to the author, the results were invigorating to all, but the students were not tested on what they learned, and the learning was not compared to that of a conference room discussion of the same patient (LaCombe). The patient was not given a confidential opportunity to tell how he felt, nor was his level of comfort measured objectively. Nevertheless, the article engendered eight glowing letters-to-the-editor in support of the author's viewpoint and no letters expressing concern. In a study by Nair and coworkers, while the majority of patients were pleased with bedside teaching and felt that it improved their understanding of their problems, 17 percent (almost 1 in 5) reported that it made them anxious and 12 percent (more than 1 in 10) felt that it breached confidentiality.

The amount of bedside teaching varies in different clinical settings. It is the norm in outpatient settings, where it is generally accepted that, at some point, the attending physician will go into the room and see the patient with the learner; it is common when a consulting attending rounds with his specialty team; and it is common in many intensive care units. It seems that bedside teaching is most conspicuously absent from general attending rounds, and most of the articles bemoaning the lack of bedside teaching have focused on this setting. Therefore, the discussion below will focus on bedside teaching during general teaching rounds on the inpatient unit, when bedside teaching is not always integral to patient care.

Bedside teaching will flourish only if it adapts to the current practice of medicine. The open wards in which Osler taught are gone. Most hospital general inpatient units are composed of private or semiprivate rooms which do not easily accommodate an instructor and up to ten learners. Patient privacy is not only a right; it is now federally mandated. Faculty are busier than ever, and house staff learning time is restricted not only by workload but also by regulatory requirements. Mooradien et al. reported that they were able to increase faculty time at the bedside during teaching rounds by giving feedback to the attending physicians, distributing relevant literature to teachers and learners, and explaining to the house staff the need to prepare the patients for the bedside sessions.

Table 15.
Advantages and Disadvantages of Bedside Teaching for the Learner

Advantages	Disadvantages
Learner can observe physical findings	Being asked to demonstrate or interpret a finding can be stressful to the learner
Learner can observe physician-patient interaction	Learner may be embarrassed by his lack of knowledge in front of patient
Learner can see patient's level of comfort or distress	Bedside teaching can be time consuming
Learner can hear history directly from patient	
Learner can participate in discussion with patient	

Table 16.
Advantages and Disadvantages of Bedside Teaching for the Patient

Advantages	Disadvantages
Can inform and educate patient about his illness	Can raise new concerns and irrelevant fears
Can help patient feel involved in his own care	Being seen and discussed by many physicians and students can be embarrassing or stressful for the patient
	Can cause physical discomfort (e.g. removal of a dressing; demonstration of pain on movement or palpation of a joint)

HOW TO CONDUCT BEDSIDE TEACHING EFFECTIVELY

Determining goals and objectives

If we acknowledge that bedside teaching is important, we then need to ask when and why? Is it important for teaching specific facts about the individual patient or his disease, or is it important primarily for teaching physical diagnosis? Is it important for teaching communication and for modeling physician-patient interaction? Only by clarifying the goals and objectives of teaching at the bedside can we decide when bedside teaching should be incorporated into rounds. In which domains of teaching is the bedside encounter most critical—knowledge, skill, or attitude? Kroenke et al suggest that the bedside is the "ideal setting for teaching physical examination, medical

interviewing, and interpersonal skills." They also note that demonstrating physical findings is the most commonly reported objective for bedside teaching.

Given the time and inconvenience involved in bedside teaching, the risk of spreading infection to or from the patient (especially when a large team enters the patient's room), and other potential disadvantages, there needs to be a valid goal for undertaking such an activity, and the goal of bedside teaching is to teach that which cannot be taught distant from the bedside or that which is learned best at the bedside. This includes items such as taking a history and performing a physical examination, interacting with the patient, understanding the patient as a person, and appreciating the impact of the illness on the patient and his family.

Each inpatient team needs to decide which learning objectives are important and which apply to the individual patient who might be visited. The team should decide if all patients will be visited during teaching rounds, all the new patients, or only selected patients.

Janicik and Fletcher reported on a series of workshops aimed at improving bedside teaching. They listed numerous advantages and barriers to bedside teaching and developed a model of "best bedside teaching practices" that included three domains: attending to the patient's comfort, focused teaching, and group dynamics. Attending to patient comfort includes asking the patient for permission, introducing everyone in the group and explaining things in lay terms. Focused teaching hones in on items such as role modeling, diagnosing the patient, observing the learners, and providing feedback. Issues of group dynamics include getting everyone to participate and time management.

Ramani offered 12 tips to improve bedside teaching. Interestingly, all but two would be considered standard educational practices, which apply to teaching in almost all settings. For example, the first three tips are: prepare for the session, have a plan, and orient the learners. Each of these would be equally sound advice for a lecture or a small group discussion. The two tips that are relatively unique to the bedside are to demonstrate the physician-patient interaction and not to overshadow the house officer in front of his patient.

Preparing the patient

When appropriate, obtain consent from the patient or parent. When the bedside encounter is truly part of patient care, as on work rounds, permission is not required, although simple courtesy would include introductions and explaining why the team is there. When the encounter is for teaching purposes only or includes individuals (learners or teacher) not involved in the care of that patient, consent from the patient is required. This can be done by the house officer or the attending physician in advance of the bedside visit or just before entering the room.

Preparing the patient and family includes explaining who will be coming into the room, what will be done, and why. Will anyone other than you be examining

the patient, or will you be demonstrating the findings? Will others be questioning the patient?

Preparing the team

It is important that the team discusses the goals, objectives, and protocols for bedside teaching in general and reviews them, as needed, for each patient to be visited. Remind everyone to wash or foam upon entering and leaving the room. Decide whether the learner will present the history and physical examination at the bedside or if the team will go to the bedside after the presentation. Delineate the boundaries to discussion and to physical examination. What are the standards of behavior? Which types of questions are appropriate to ask in front of the patient and which are not? For example, if the patient is a previously well child with pneumonia and anemia, a question such as "Could this be leukemia?" is best held for after the bedside visit. Is it okay for the learners to touch the patient? If so, make sure they wash their hands before and after. If the patient has an axillary lymph node or enlarged spleen, will everyone examine these findings?

The attending physician also needs to be prepared for the bedside visit. If you are the teaching attending and this is not your patient, how will you answer questions from the patient or from learners in front of the patient? How will you respond if the patient asks about diagnosis or therapy, or asks if what had been done by another physician was correct or necessary? What will you say if a parent asks what you think is wrong with the child?

Reflection exercise #1. Answers at end of chapter.
How might you prepare your learners for bedside teaching, and how might you prepare yourself?

Conducting the session

Who does the introductions will vary. If it is your patient, then you should introduce the team. If it's not your patient, then the student or intern should introduce you and, if necessary, the rest of the team.

One of the basic tenets of teaching in general is KISS – keep it short and simple (or, as some would have it, keep it simple, stupid). This is especially important at the bedside. Avoid lengthy, theoretical discussions in front of the patient. Do not tire the patient and try to not interfere with his routine.

There are a number of other don'ts when working with a patient and learners together. Do not ignore the patient. Do not use medical jargon; talk in lay terms or explain what you tell the learners to the patient in appropriate terms. Do not get hung up on trivial issues. Do not discuss alternative management plans unless you are in charge of the patient. Do not embarrass the student or house officer in front of the patient.

Do demonstrate respect for the patient's privacy and dignity, as well as for the learner-patient relationship. When you find something on history or physical that the learner missed, do not look at the group as if to say "aha." This is a difficult enough moment for the learner, without the teacher calling attention to it or gloating. Handling such situations is challenging for even the best teachers. Be supportive. You might explain that the student or intern did the bulk of the work in gathering all the basic data, and that left you free to explore more subtle issues. If you feel the oversight was major, discuss it with the learner later, in private.

Demonstrate physical findings, or better yet, invite the learner to demonstrate the findings. It is important to give the learners a role, especially the patient's house officer or student. Give the patient the opportunity to describe how he feels about his illness.

Model the physician-patient interaction. Ask the patient if he has any questions, and be prepared to answer them diplomatically or to explain why you can't tell him the diagnosis or recommend a management plan. So much depends on whether or not the teacher has actual decision making responsibility for the patient.

At the conclusion of the session, thank the patient, including specifics if possible. "Thank you for letting us take so much of your time." "Thank you for sharing your thoughts with us." "Thank you for letting so many people crowd into your room."

After the visit, review the encounter with the team. Exchange thoughts about the patient. Fill in the blanks, explaining anything that could not be discussed in front of the patient.

Challenges of bedside teaching

Which patients, if any, are off limits? Is bedside teaching appropriate with hostile, angry, or upset patients or parents? Patients who are in pain and terminally ill patients present special needs. If the patient or family does not speak English, translation will require additional time and will slow the process. Should we wake a patient or interrupt his meal purely for teaching purposes?

How should we deal with issues of isolation? It would seem reasonable to forego the bedside experience, rather than have 8 learners not involved in the care of the patient gown and mask and crowd into the room of a patient on respiratory precautions or on protective isolation. A learner with a cold should either wait outside the room or wear a mask.

Suppose the parents say that they do not want learners "experimenting" on their child? A reasonable response would to tell them that you will abide by their wishes, but then explain the reasons for the visit and assure them that no one is experimenting. Follow this with an invitation to "let me know if you should change your mind" and a promise that you will try to make it non-traumatic, even fun, for the child.

SUMMARY

The major goal of bedside teaching is to teach that which cannot be taught distant from the bedside or that which is learned best at the bedside. This includes the physical examination, patient-physician interaction, professionalism, and humanism. Bedside teaching also can enhance the learners' appreciation of the patient as a person. Bedside teaching requires preparation of the learner, teacher, and patient. Bedside teaching should be conducted in a careful manner, protecting the patient's privacy and dignity and supporting the learners.

ACTION STEPS

- Decide if a bedside visit is appropriate and will be useful
- Decide on the learning objectives for the visit
- Prepare the patient, the team, and yourself
- Conduct the visit so as to maximize the educational effect
- Conduct the visit so as to maintain patient dignity, privacy, and well-being
- Review the visit with the team and fill in the blanks

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Answers to reflection exercises.

#1. Prepare the learners by discussing the goals and objectives of the bedside session. Decide whether the learner will present the history and physical examination at the bedside or if the team will go to the bedside after the presentation. Review which types of questions are appropriate to ask in front of the patient and which are not. Remind everyone to wash or foam upon entering and leaving the room.

To prepare yourself, consider, if this it is not your patient, how you will handle questions from the patient or from learners in front of the patient.

Chapter 10

Role Modeling

"We learn by practice and the best practice is to follow a model of the virtuous person." Aristotle

CHAPTER OUTLINE
OBJECTIVES
INTRODUCTION
CLINICAL SKILLS
TEACHING SKILLS
COURTESY AND COMPASSION
PROFESSIONALISM
CITIZENSHIP
SUMMARY
ACTION STEPS

OBJECTIVES
After studying this chapter, the reader should be able to:

- identify the characteristics of an excellent role model
- identify the skills a positive role model possesses
- incorporate the characteristics and skills of a good role model into the practice of medicine and teaching

INTRODUCTION

The Webster-Merriam online dictionary defines a role model as "a person whose behavior in a certain role is imitated by others." Most educators who use the term "*role model*" presume a positive influence, although negative role modeling also is possible and can have important consequences. This chapter will focus on the characteristics and skills of positive role models.

A role model teaches or inspires by example and is someone whose conduct is observed directly. Role models differ from mentors in that they may have only brief or periodic contact with physicians in training and generally do not directly bear responsibility for the professional growth of learners. However, positive role models play an important part in promoting the professional maturity of medical trainees, who compare and emulate them, and role models often indirectly have influence over trainees' career choices.

The characteristics and behaviors demonstrated by a role model are exceedingly broad, and a great deal of role modeling is unintentional. The

learner not only sees the role model care for patients, he also sees the role model interact with other members of the care team and the medical community at large. What a role model says and does before and after rounds, between patients in the clinic, and even in the cafeteria, can have as powerful an effect on the learner as any observed physician-patient interaction. The "hidden curriculum" refers to the imprinting effect of negative attitudes and behaviors on medical students and other learners.

Table 17.
Some Characteristics of a Good Role Model

Capable clinician and teacher
Enthusiastic about patient care and teaching
Empathic and respectful toward patients and learners
Behaves in an ethical, professional, and dignified manner
Demonstrates good citizenship
Knowledgeable of self-limitations
Interested in learners' experiences
Able to develop rapport with learners
Accessible to learners
Non-judgmental in critiquing learners

CLINICAL SKILLS

What are the characteristics of a good role model as perceived by medical learners? Several studies have found that attending physicians who demonstrate clinical expertise at the bedside are highly regarded by medical trainees. In addition, clinical abilities as a generalist are more likely to be praised and emulated than abilities as a subspecialist. McDermott emphasized that attention to detail and the insistence on thoroughness are important for demonstrating clinical competency and excellence.

The attending physician who is attentive to the psychosocial aspects of patient care, who interviews and examines patients with compassion and respect, who demonstrates exemplary medical problem solving, and who takes responsibility for managing potentially complicated medical and social issues has a great impact on the behavior of medical students and house officers. Wright and colleagues found that clinical faculty who stress the importance of the doctor-patient relationship are more commonly viewed as excellent role models. Also, by being empathic to the anxieties and stresses experienced by students and residents, seasoned physicians model appropriate interpersonal

behaviors that trainees can employ in patient care. Other critical traits of clinical role models include striving for evidence-based improvement in clinical practice, recognizing limitations, and practicing self-criticism. In addition, attending physicians serve an important role in demonstrating appropriate communication among members of the health care team, including subspecialty services, nurses, social workers, and pharmacists.

TEACHING SKILLS

Medical students and residents repeatedly praise clinical faculty who demonstrate a commitment to medical education by actively teaching, whether during rounds, in the clinic, or during planned didactic sessions. Enthusiasm for teaching is demonstrated by being accessible to all learners, showing interest in their learning goals, and providing nonjudgmental feedback. Enthusiasm is interpreted by medical trainees as caring and fostering rapport and providing a safe learning environment.

The attending physician who spends time with students and residents outside of required or formal teaching time is more likely to be recognized as a positive role model. Highly regarded clinical faculty are likely to attend morning report or teaching conferences for the house staff. They are likely to take the time to learn about their trainees' personal lives and career plans and are also likely to share professional experiences and talk to them about their own personal lives.

Wright and colleagues reported that attending physicians who participated in any formal training in teaching or who served as chief resident were more commonly identified as excellent role models. The effective teacher learns when to teach, what to teach, and how much to teach in a given setting. (See chapters 6 and 7 regarding teaching in the inpatient and outpatient settings). Clinician educators who master effective teaching at the appropriate level for the learners are ranked highly as good role models by their juniors. Not surprisingly, effective clinical teachers usually foster interested learners, and learners who are perceived as eager, in turn, make teachers more enthusiastic in their endeavors.

Clinician educators can enhance their role modeling by pointing out to their learners, either before or after a clinical encounter, what it is they want to model and why. They can also discuss the modeling after the encounter, explaining the behavior or skill they were demonstrating.

COURTESY AND COMPASSION

Courtesy, or polite behavior, is a minimum expectation for all adults, whether they are doctors, teachers, telemarketers, or homemakers. Compassion differs significantly from courtesy. It is the deep human emotion or response that motivates us, without thought to our own circumstance, to reach out to others who suffer or are in need. A good role model in medicine is one who is kind

and gracious to each and every patient, regardless of his station in life. The strong role model demonstrates patience and the ability to be a good listener and is always a patient advocate, even when dealing with difficult or angry patients and their families. In addition, he knows how to balance hope with realism in disclosing frightening information or bad news. The role of physician is a privilege and not a right. Despite the time constraints and chaotic environment often associated with contemporary clinical practice, the physician who is an admirable role model approaches each patient as if he were a friend or member of the physician's family. With this attitude and approach to patient care, courtesy and compassion are the norm.

PROFESSIONALISM

Professionalism in medicine is a commitment to the values and obligations that define our profession and hold each physician to a high standard of practice. A physician's professional development begins in medical school, when one commits to a career in medicine and starts learning about the sanctity of the doctor-patient relationship. A positive role model assists in the professional development of medical trainees not only by helping them acquire the clinical knowledge and skills necessary to practice medicine proficiently, but also by demonstrating professional behavior in all patient and collegial interactions.

Pellegrino outlines the virtues entailed by the profession of medicine as: fidelity to trust, benevolence, intellectual honesty, courage, compassion, and truthfulness. Establishing a relationship of trust is essential in helping and healing the patient. Benevolence has been seen as a key component of medical ethics since the time of Hippocrates. Intellectual honesty includes knowing when to say, and being willing to say, "I don't know" and knowing when to consult a colleague in order to avoid patient harm. It also includes knowing how to handle intellectual disagreements with colleagues and limiting what is said about such disagreements in the public setting. Courage may be necessary when dealing with contagious diseases and dangerous situations, or less heroically but equally importantly, in situations requiring patient advocacy. Compassion is discussed above. Finally, in order for the patient to make informed decisions about his care, truthfulness and full disclosure of facts are necessary.

By observing the behavior of attending physicians, medical trainees are exposed to how senior clinicians use their clinical skills in conjunction with humanistic qualities to positively interact with patients, families, and colleagues. The character traits and virtues listed above define, in part, the profession of medicine and help protect the interests and welfare of patients.

CITIZENSHIP

Those who practice medicine have unique professional privileges and responsibilities and, therefore, often are held to higher ethical, moral, and civic standards than persons outside of the profession. Good citizenship is the quality of an individual's response to membership in a community as displayed by his behavior in terms of duties, rights, and privileges. The physician's "community" is the people and environment of his workplace. For role models to medical learners, this community includes not only the hospital, clinic, or medical school, it also includes the environment in which the patients live.

Good citizenship involves acting in an ethical and trustworthy manner and listening and responding to colleagues' and patients' needs and concerns. A role model of citizenship is available to his patients and colleagues and responds promptly when on call. Clinical role models who demonstrate exemplary citizenship respond to patients in emergent need whether directly involved in their care or not. They advocate for all patients, not just their own.

Good citizenship in medicine extends to the way we support our working environment in addition to the way we interact with our patients and our colleagues. It involves participating in hospital activities such as serving on committees and attending staff meetings as well as completing records in a timely fashion. Role models of good citizenship respect the people and the community in which they work. They model the values we embrace, such as integrity, excellence, and respect for all people.

Table 18.
Rewards and Challenges of Serving as a Role Model

Rewards	Challenges
Inspiring physicians in training by exemplary conduct	Exemplary conduct is expected
Teaching medical trainees	Time limitations associated with teaching
Influencing student and resident career choices	Influencing student and resident career choices
Admiration of learners	
Faculty development	

Reflection exercise #1. Answers at end of chapter.
A medical student asks you about medical professionalism and citizenship. Reflect on at least two aspects or examples for each that you might discuss with him.

SUMMARY

Highly regarded physician role models demonstrate strong clinical skills and teaching abilities. They possess personal qualities that enable the

establishment of rapport with medical trainees and enable them to approach patients with courtesy and compassion. Admirable clinical role models display professional behavior and citizenship that students and residents should emulate.

ACTION STEPS

- Identify the characteristics of an excellent role model
- Develop the clinical and teaching skills associated with being a good role model
- Model professional and compassionate patient care
- Model good citizenship

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Answers to reflection exercises

For professionalism, consider fidelity to trust, benevolence, intellectual honesty, courage, compassion, and truthfulness. Point out that professional behavior extends to all patient and collegial interactions.

For good citizenship, consider the duties, rights, and privileges of the physician. Good citizenship involves participation in hospital activities such committee and staff meetings as well as completion of medical records in a timely fashion, but also tell the student that the physician has a responsibility to the medical community in its broadest aspect—beyond the office or the hospital to the environment in which the patients live. Citizenship means advocating for all patients, not just your own.

Chapter 11

The Lecture

"Lectures… can, in short, bring a subject alive and make it more meaningful. Alternatively, they can kill it." G. Brown and M. Manogue, 2001

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OBJECTIVES
After studying this chapter, the reader should be able to:

- explain the differences between a speech, a lecture, and a presentation
- list and discuss the three components (ingredients) of a lecture in order of importance
- list and discuss the three steps (three P's) to an effective lecture
- select appropriate content for a lecture
- organize a lecture in an appropriate manner
- deliver a 50 minute lecture with no more than 5% of the audience asleep at any time

INTRODUCTION

Lecturing has received a great deal of bad press. Badmouthing the lecture seems to have come into fashion in 1948, when the psychologist B.F. Skinner published *Walden Two*, a novel in which one of his characters says, "The lecture… became obsolete with the invention of printing. It survives only in our universities… and a few other backward institutions." It is popular to say that in a lecture the teacher is active and the student is passive. However, passive is not synonymous with asleep, and while students at a lecture may not be interacting visibly with the lecturer or with other students, hopefully they are paying attention and thinking rather than daydreaming.

In the universities of Europe, during the late middle ages, students vied for seats at lectures. Indeed, at the greatest universities, students fought for the privilege of just standing at the back of the lecture halls. Lectures were so important and so effective in disseminating ideas and knowledge, that *lecturer* was an academic title of great respect in the universities.

The often-quoted Dr. Fox effect may not be as damning of the lecture as is commonly believed. In 1973, an actor, who was introduced as Dr. Myron L. Fox, gave a nonsensical lecture with no meaningful content, in a dramatic and appealing manner. The audience evaluated the presentation favorably, and this was taken to indicate that even highly regarded lectures could be devoid of educational value. However, it should be noted that the topic of Dr. Fox's lecture was "Mathematical game theory as applied to physician education." This is an area in which most physicians would hardly be competent to judge the content. Further, the audience was exclusively psychiatrists, psychologists, social-workers, mental health educators, and postgraduate students enrolled in educational psychology. Even though the topic allegedly focused on *physician* education, the only *physicians* in the audience were the psychiatrists; there were no pediatricians, internists or surgeons. The fact that this audience was fooled by a mock lecture on an obscure topic should not condemn the lecture as a teaching tool. After all, there are no studies to show whether or not it would be just as easy to hoodwink a small group of learners in an interactive session.

A subsequent study by Ware and colleagues two years later pointed out that the Dr. Fox study only assessed the learners' *satisfaction* and not how much they thought they *learned* or how much they actually learned, and there were no controls. The Ware study exposed students to one of six lectures varying in content and "seductiveness" and then measured both satisfaction and learning. Students who viewed high content lectures scored better on the posttest than those who viewed low content lectures, but students who viewed high seductive lectures also scored better on the test than students who viewed low seductive lectures with the same content. It seems that when content is there, the excitement of a presentation can enhance learning. Not surprisingly, for the same content, the highly seductive lectures received higher satisfaction scores than the less seductive lectures.

Despite vilification, the lecture is still alive and well. It is a highly efficient and effective method of teaching—if done properly. Have you ever attended an effective lecture? Have you ever learned from a lecture? Have you ever been moved or stimulated by a great lecture? Almost certainly you have. Lecturing can be effective, but to be successful, a lecture has to have meaningful content, appropriate organization, and effective delivery. It has been said that nothing is worse than a poor lecture, disorganized and badly delivered, but nothing is more effective than a good lecture, combining substance with showmanship.

THE SPEECH, THE LECTURE, AND THE PRESENTATION

People in medical education use the term *lecture*, people in politics talk about *speeches*, and those in business give *presentations*. The differences are real. The word lecture is defined as "a discourse given before an audience or class" and implies one-way teaching. A speech is usually thought of as a one-way "expression of thoughts in spoken words." The speech epitomizes public speaking, and because it is so one-way, it does require considerable oratorical skill to be effective. Effective speeches employ drama and emotion. A presentation is "a descriptive or persuasive account" and has a much broader connotation. Presentation implies more than words and slides; it implies persuasion, which requires engagement and emotion. When businessmen, politicians, or ministers gets up in front of an audience, they know exactly why they are there and what they are trying to get their audiences to do—what to buy, how to vote, or how to behave. They know they have to talk clearly and persuasively, and they know they have to engage their audiences. Lecturers sometimes actually forget their audiences. They focus on the information they are dispensing and almost ignore the audiences they should be convincing to accept that information.

In a speech, the speaker talks and the audience listens. In a lecture, the lecturer talks and the audience learns. In a presentation, the presenter talks and the audience gets involved. The dictionary definition of a lecture is no

longer adequate. To be superb, the medical lecturer needs to break out of the box and utilize features of the speech and the presentation.

Table 19.
Characteristics of the Speech, the Lecture, and the Presentation

	Speech	Lecture	Presentation
Major purpose	Inspire, motivate	Teach	Teach, convince and motivate
Major content	Emotion	Information	Information
Direction of communication	One way	Mostly one way	Can be moderately interactive
Frequently used by	Politicians	Teachers	Teachers, salespersons, business people, and scientists

ADVANTAGES AND DISADVANTAGES OF THE LECTURE AS A TEACHING TOOL

There are advantages to the lecture as a teaching method. It is a cost-effective tool for transmitting a great deal of information from one individual to many and can provide the most up-to-date information. The effective lecturer brings together data from various sources, including his own experiences and expertise, then analyzes and synthesizes that data. An effective lecture is much more than a list of facts.

Sometimes lecturers present material that is new and unavailable elsewhere, for example, data from meetings or from their own research. Even when the material is available in written or electronic form, the lecture is not necessarily superfluous. The material might be widely scattered and time-consuming to assemble. It might be available only in a specialty text which is expensive and not readily obtainable. In some cases, it may be difficult for the student to separate the wheat from the chaff or to recognize that certain articles or books are outdated or out of the mainstream. Material in a text or article can be more theoretical than practical. In practice, things often are done differently than described in the textbooks. The lecturer can be a gatekeeper as well as a traffic director, a filter as well as an analyst.

Another advantage of the lecture is that it permits a large number of learners to directly see and hear a specific renowned scientist or teacher. If a master teacher were restricted to interactive small group sessions, the number of students he could influence would be more limited than if he could also teach by lecture.

The lecture is not an all-purpose tool, but there are times when lecturing is the most appropriate method of teaching. The larger the audience, the more lecturing becomes the teaching method of choice. Imagine trying to have a

group discussion with an audience of 250. Lecturing is most suitable for the teaching of knowledge and is less effective (but not ineffective) for teaching skills such as analysis and synthesis. Brown and Manogue note that there are ample studies demonstrating that the lecture is at least as effective as other teaching methods for presenting information and providing explanations. They emphasize that a lecturer should not merely recite the contents of a standard text. If that were the case, the students would do as well to read the text. The lecture should enhance students' understanding, provoke their thinking, and motivate them to learn more.

One advantage of the lecture is its density—the tremendous amount of information that it can present to the learner. One danger of the lecture is its density—the overwhelming volume of material it can present to the learner. Strategies to decrease density include the use of repetition and dramatic pauses, the interjection of humor, and the technique of asking the audience questions.

Another advantage of the lecture, as compared to a book or web-site, is that the content can be tailored to each audience. However, few audiences are homogeneous, and the lecture cannot be tailored to the individual as easily as a group discussion can be.

The lecturer can integrate, synthesize and evaluate the data for the learner. This is both an advantage and a potential disadvantage. Having an expert evaluate the data facilitates reaching correct conclusions, but the students also need to learn to evaluate the data themselves.

Table 20.
Advantages and Disadvantages of the Lecture

Advantages	Disadvantages
Cost effective for transmitting a great deal of information	Can transmit so much information as to be overwhelming
Content can be tailored to the audience	Audience rarely homogeneous and lecture cannot be tailored to individuals
The lecturer can integrate, synthesize and evaluate the data for the learners	The lecturer can integrate, synthesize and evaluate the data for the learners, who may not learn to do so for themselves
Can provide the most up-to-date information	
Can bring together data from a wide variety of sources	

	The session is mostly one directional
	Learners are not very active
A lecture can be exciting	A lecture can be boring
The lecture format maximizes the number of learners the individual teacher can impact. If the teacher is effective, this is an advantage; if the teacher is ineffective, this is a disadvantage.	

HOW TO LECTURE EFFECTIVELY

You don't have to be a stand-up comic or a silver-tongued orator to lecture successfully. Learning the principles of effective teaching and practicing the skills of effective lecturing can improve your presentations dramatically.

Giving a lecture can be challenging. You are the center of attention, standing alone at the front of the room. Expectations are high. Since you agreed to give this presentation, the learners will assume that you are an authority and will have all the answers. As far as the audience is concerned, you had unlimited time to prepare for the lecture. You are in control, and they can sit back and criticize. Do not let this frazzle you. You are competent. You are prepared.

McLaughlin and Mandin coined the term *lecturalgia*, which they defined as a painful lecture, characterized by one or more of the following audience perceptions or responses: agitation, frustration, anger, apathy, or somnolence.

Whitman found that students' reasons for rating lectures as poor included unclear objectives, disorganized or boring presentations, and failure of the lecturer to relate to the students or to provide an opportunity to ask questions. Pinsky noted that when lecturers evaluated their own lectures, they most often listed the following problems: lack of preparation, misjudging the learners, difficulty with audiovisuals, and too much material. Less frequent problems were a lack of purpose and inflexibility.

Brown and Bakhtar reported that students did not dislike *lectures* in general but did complain about *lecturers* who were inaudible or incoherent, talked too fast, used audiovisual aids poorly, or crammed too much information into the lecture. The lecturers, reflecting on their own weaknesses, felt that they tried to say too much too quickly, overestimated the knowledge base of the audience, forgot to provide summaries, and had difficulty in timing the presentation. Lecturers reported being bothered by very large or unresponsive audiences, the work and time involved in preparation, lecturing on topics they did not like, and the feeling of failure after a lecture that did not go well.

Copeland and coworkers surveyed physicians at a large review course of internal medicine over a three-year period. They found the following characteristics to be most strongly associated with overall satisfaction of lectures: speaker's ability to engage the audience, clarity of the lecture, use of a

case-based format, speaker's ability to identify key points, and comprehensibility of slides.

ANATOMY AND PHYSIOLOGY OF A LECTURE

The anatomy of a lecture can be divided into three components. The first component, *content*, is the heart and lungs of a lecture. Without content, there is no learning. Features of contents include quantity, quality, relevance, and integrity. Quality refers to the accuracy and degree of correctness of the information. Integrity refers to the degree to which data is presented objectively, fairly, and without bias. The second component, *organization*, is analogous to the muscular skeletal system. It provides structural support for the lecture. It holds the lecture together, with all the parts in proper relation to each other. The third component is *delivery*, which is the integument. Delivery is the packaging of the lecture. It is the means by which the outside world sees the lecture.

Table 21.
Anatomy of a Lecture

Component	Function	Action
Content	Makes the lecture educational	Select content based on learners' needs
Organization	Makes the lecture understandable	Organize in a logical and easy to follow manner
Delivery	Makes the lecture interesting	Be enthusiastic, energetic, engaging, innovative and clear

The physiology of a lecture also can be divided into three, the three P's: preparation, presentation and postmortem. The first two are self-evident; the last, postmortem, refers to getting feedback from the audience about how they perceived the presentation and what they learned. Except for a question and answer period at the end of the lecture, this is all too often neglected.

Table 22.
Physiology of a Lecture

Step	Action	Analogy
Preparation	Get ready	Load the gun
Presentation	Do it	Fire
Postmortem	Evaluate what you did	Check the target

PREPARATION

Every lecture begins with preparation. The preparation is the foundation, and a strong lecture requires a strong foundation. Preparation is like loading a

gun.

Purpose, goals, and objectives

You need to know the purpose of your lecture and stick to it like glue. Keep your presentation focused on your purpose. The purpose of a medical lecture is best determined from the goals and objectives for those attending the lecture, and defining these objectives is logically the first step in preparing any lecture. Objectives tell the teacher where to go, and when shared with the learners, objectives tell them what they are expected to learn. Goals belong to the lecture—what the lecture will accomplish for the learners. Objectives belong to the learners—what they should be able to do after the lecture. The purpose is yours—what you want to accomplish with the lecture.

After you have determined the learning objectives, you need to decide which of the following *purposes* is most closely aligned with these objectives. Educators are not accustomed to thinking of purposes, but businesspeople, politicians and clergy are. The potential purposes of a presentation are to inform, explain, persuade, motivate and inspire. The most common purposes of medical lectures are to *inform* and *explain*. Informing means providing information, data, knowledge, facts, concepts, and ideas. What should the learner know? Explaining deals with concepts and relationships rather than facts. What should the learner understand?

Another purpose of the lecture may be to *persuade* the learners to accept the speaker's point of view or to change their behavior. What should the learners believe or what should they do, as opposed to what should they know? To accomplish this, you need to provide a reason for their espousing your recommendations. For example, if trying to persuade the audience to use an asthma severity classification and follow a stepwise management plan, in addition to providing convincing data (informing) that this will improve patient outcome, you may want to remind the audience of the consequences of inadequate control. You may appeal to emotions such as a sense of responsibility and duty to patients. You may emphasize the negative consequences of not following these recommendations. To persuade, it can be useful to project an aura of authority (without appearing authoritative or arrogant) or to invoke an authority. For example, you might point out that the guidelines you are proposing come from the National Institutes of Health or the Centers for Disease Control and Prevention.

Part of your purpose may be to *motivate* the audience. Motivation is related to persuasion but goes further. You persuade your audience to do something, but you motivate them to want to do it.

A final purpose, which is important but is not often the sole or main purpose of a medical lecture, is to *inspire* the learners. Inspiration is more likely to be the over-riding purpose of a non-medical presentation, such as a *talk* welcoming students to the rotation or a *speech* to graduating residents.

Inspiration heightens interest and feelings, and while not the main purpose, it can be an integral part of almost any lecture.

Content

Content is the single, most important component of any lecture. Select content from the learners' point of view. Tailor the content to the needs of the learners. It is not enough that the material be of interest to you, it has to be relevant to the learners, and it has to be at their level. In preparing your presentation, your first question should be, "What do these learners need to know about this topic?" Your next question should be, "What do they *really* need to know about this topic?" because it is almost certain that you will gather more material than will fit into your allotted time. If lecturing about failure to thrive to a group of core students, you might want to spend a good deal of time with definitions, recognition, and the most common causes, while when lecturing about the same topic to a pediatric postgraduate audience, you might go into a more extensive differential diagnosis and focus on management. Talking to a group of infectious disease fellows about sinusitis, you might spend less time on the signs and symptoms and the first choice of antibiotics and more time on complications and second-line drugs than when talking to house staff.

Selecting relevant material at the level of the learners is difficult when lecturing to an audience of mixed level learners or learners from different disciplines, as is frequently the case at Grand Rounds. Find out as much about your audience as possible. An audience is rarely homogeneous, but usually most of the members will have some things in common. If you are lecturing about Prader-Willi syndrome at pediatric departmental Grand Rounds, you can be reasonably certain that most of the listeners are not geneticists. If you are lecturing about parathyroid disorders at a Pediatric Postgraduate Review Course, you can assume that most of the attendees are not endocrinologists. If you are lecturing to second year medical students, you know that as a group, they have had limited clinical experience.

Organization

After addressing objectives and content, you need to turn your attention to organization. The lecture needs to be organized at both the macro and the micro levels. Macro refers to overall organization—a beginning, middle, and end. This corresponds to the military training approach of "Tell them what you're going to tell them, tell it to them, and then tell them what you told them." In medical education, we would say, "Tell them what you want them to learn, teach it to them, and then summarize what you have told them." The beginning, middle, and end correspond to the introduction, body, and summary of your talk. Material needs to be in the right place, and content should flow smoothly

from start to finish. The introduction, body, and summary, all need to be organized logically, in a manner that will make sense to the learner.

Organization at the micro level refers to organization of each part of the presentation—each topic, item or packet of information within the introduction, body, or summary. Micro-organization includes organization of each slide. The major components need to be clearly organized in a logical and easily followed manner, but all the little parts also need to be appropriately organized.

The introduction

The introduction serves many functions. If the audience doesn't know you, and if you have not been introduced, it is appropriate to introduce yourself. You may want to give your qualifications briefly or explain why you chose to give this lecture. You may want to thank the audience for coming or thank whoever invited you, and you may want to acknowledge those who helped you prepare the session or contributed to the material you are going to discuss, although such acknowledgements could just as easily go at the end.

All writers know that a story has to begin with a hook—something that will grab and draw in the reader. The same is true for a lecture.

Examples of hooks include: a joke, a question, a dilemma or problem, a startling or controversial statement, a dramatic fact or scenario, an interesting slide. If you start with a joke, it should relate to your topic. For example, here's a joke you might use if you were lecturing on infant formulas.

Question: what's the difference between a pediatrician switching a formula and a mechanic changing a tire?

Answer: the tire usually needs to be changed.

You can begin with a rhetorical question that requires no answer or with a question that calls for a show of hands. Often, a simple true or false question will get the audience involved.

Commonly, the opening hook is an interesting slide. As with an opening joke, it is best if the slide relates to your topic. Avoid self-aggrandizing slides of your last vacation or your hobby.

On the next page are two examples of slides that might be used as hooks. Humor is a great tension-breaker as well as an attention-grabber. Slide #1 is an example of a humorous slide. Anyone who has ever dealt with a screaming infant can appreciate the caricature, and the slide usually gets a good laugh from the audience. Slide #2 is a dramatic photograph of a patient for a lecture on failure to thrive (FTT). The audience response is usually silent attention, occasionally some shocked murmuring. When giving a lecture outside of your own bailiwick, a slide of your home institution, while rarely a show-stopper, is always appropriate and interesting.

Slide #1

THE IRRITABLE INFANT

Slide #2

RECOGNIZING FTT

Does this child have FTT?

FTT - inadequate or deficient growth usually manifested by inadequate weight relative to age or to length.

Once you have hooked your audience, reel them in by explaining the relevance of the material. You want to tune them into station WIIFM – "What's In It For Me?" If lecturing to a group of new interns about managing shock, you don't have to explain why they should be interested, but if talking about breastfeeding to a group of core medical students, most of whom are not going into pediatrics you may want to point out that issues of breastfeeding are not restricted to infants and that students going into fields such as internal medicine and surgery, as well as obstetrics-gynecology, will at some time likely have to deal with a lactating female patient. If it's early in the students' rotation, you can tell them that a basic understanding of the principles of lactation will be useful to them during the remainder of the course. Also, you can just about guarantee that there will be one or more questions about human milk or breastfeeding on their examination at the end of the rotation and on the pediatric portion of the USMLE. While exam preparation is a poor reason for learning, it does get the students' attention and can be a motivator.

It is very helpful, indeed, it is almost mandatory, in the introduction, to tell the audience the goals and objectives for the session. (See Chapter 3.) Goals are global. "We are going to review the topic of urinary tract infections (UTIs), and at the end of the session, you should be able to diagnosis and treat UTIs." Objectives are more specific and more measurable. Objectives are expressed in terms of what the learner will be able to do at the conclusion of the presentation. For example, "At the end of this session you should be able to: list at least two ways, other than dysuria and frequency, in which urinary tract infection may present in infants and children; discuss four ways of obtaining a urine specimen for culture and how to interpret the results; and select an appropriate antibiotic prior to culture results.

The introduction is also the time to establish ground rules, if necessary. If you want the audience to interrupt you with questions or comments, then invite them to do so at the very start of your presentation. If you want them to hold their comments and questions to the end, then let them know that, although in some cases, this is not necessary. If you stand up behind a podium in front of a large audience, it is generally understood that members of the audience will hold their questions until the end unless asked to do otherwise. With a smaller audience, or in a conference room rather than a lecture hall, this may not be clear.

The body

The body of the presentation contains the bulk of the information and consumes most of the time. For this reason, it is most difficult, yet most important, to maintain the learner's attention during this segment of the presentation. This is a time for audience engagement, and if feasible, audience interaction, as well. It has been shown that audience attention tends to decline after about 15 to 20 minutes, so you may want to "rehook" your learners that

often (Stuart). Think about providing a "seventh inning stretch," physically or mentally, at about the 20 and the 40 minute marks of an hour lecture or at the midpoint of a shorter lecture.

Discussing cases, real or fictitious, can help keep the audience interested. While it is a good idea to begin a presentation with a case or two, it's also a good idea to intersperse a few cases in the body of the talk. Remember, if you are going to keep the audience awake, you yourself are going to have to be enthusiastic.

As much as possible, emphasize concepts. A long list of data and a heavy load of information can be difficult to follow. Break up information with variations in style. Decompress the data with pauses, reiterations, and mini-summaries. Do not just list information. Explain and expand. Be careful that your slides are not too dense. (See Chapter 12.)

Watch your time throughout the presentation. Plan ahead and decide what you will condense or what you will omit if you find yourself running behind. Plan for contingencies resulting in lost time. Do not leave all the critical material for the final five minutes. Have a safety valve—some material towards the end that can be omitted if necessary. Know what slides you can skip if necessary. Plan how to quicken your pace by saying *less* rather than by talking *faster*. Plan in advance what material you will omit, if you find yourself running out of time. The summary is a potential safety valve.

Whenever possible, end the body of the lecture with a conclusion, ideally, an action statement. Tell the audience what you want them to do. For example, "Make sure that the mothers in your practice are aware of the benefits of breast-feeding, but do not be judgmental." Not all topics lend themselves to such a bottom-line or take-home message, but if there is one, do not miss the opportunity to present it.

The summary

The summary is just that, a summary. It should not contain any new material. The summary is not the conclusion or take-home message. The conclusion is part of the body of the lecture, usually the last part. If you run out of time and have to skip the summary, it's not a catastrophe, but if you do not have time to get to the conclusion, it is a catastrophe. The summary should review the important facts and major concepts of the presentation. It is an opportunity for the speaker to reiterate the take-home message. What are the most important things that you would like your audience to remember a year from now?

Revisiting the learning objectives that you presented at the start of the session is a powerful way of summarizing. Review how you and the learners achieved these objectives.

If you have not already acknowledged your collaborators and contributors, now is a good time to do so.

Audiovisual aids

See Chapter 12 for a detailed discussion of audiovisual aids. Properly used, audiovisual support adds interest to a presentation, helps clarify the content, and enhances learning.

Rehearsing

As actors and public speakers know very well, rehearsal improves performance. Never memorize a lecture, but do practice and rehearse. Reading a lecture is rarely as stimulating as presenting it. Rehearse by giving your presentation out loud, going through your slides and other visuals and timing the presentation. Practice inflection and emphasis. The less experienced you are at lecturing, the more time you will need to spend rehearsing. Also practice mentally. Visualize yourself giving your presentation smoothly, dynamically and flawlessly. In your mind, practice making eye contact with the audience.

Rehearsal is an opportunity to fine tune the presentation, to decide when you will pause, when you will break from the slides, and when you will engage and interact with the audience. Rehearse how you will speed up if needed.

Checking the site and equipment

Preparation extends right up to the moment of presentation. Try to optimize external factors—all the things other than what you say and do. If possible, check out the room and equipment well before your lecture. Decide where you will stand. Even if there is a podium, you may choose to stand beside rather than behind, it, or you may want to ignore the podium and stand elsewhere or move about—but not so much as to appear nervous or to be distracting. Where is the clock, and will you be able to see it from where you will be standing? Is there a lapel microphone? If you will be using a podium microphone, can you be heard when you turn to look at the screen? How do you advance the slides, go back, focus the projector? To what extent can the room lighting be adjusted? A dark room invites the audience to doze off, so use the maximum lighting that will permit your projected images to be seen well. If you are speaking in a new environment, time spent familiarizing yourself with the room and equipment is well worth it.

Finally, always have notes or a printout of your slides in case the unimaginable happens and the bulb blows, the projector dies, or the computer crashes.

Reflection exercise #1. Answers at end of chapter.

a) What is the most important aspect or component of a lecture?

b) What is the difference between the conclusion and the summary?

PRESENTATION

Energy, enthusiasm, and excitement

The Three E's of presentation are energy, enthusiasm and excitement. You are not talking to sponges that will passively soak up everything you say. To keep your audience interested, you have to project energy and enthusiasm. One of the surest ways to stimulate excitement in your audience is to be excited yourself. Animation and reaching out to the audience will keep the learners awake and focused.

The first few moments of your presentation are critical. We have already discussed the hook. Begin in the "ready position," relaxed yet alert. Your body language and facial expression should reflect confidence and authority without being condescending. You want to give the impression that you are in charge, while at the same time, you are one with your audience. Talk to your audience, not to the blackboard or the slides, and never talk to the podium or the floor. Be animated. Moving about the room forces the audience to follow you with their eyes and keeps their attention focused on you. People are accustomed to following actors and athletes about the stage. Today's remote slide control devices and transmitting lapel microphones permit the speaker to break free of the podium. In very formal lectures or "platform presentations," leaving the podium may be inappropriate, but in more relaxed settings it can be very effective. Do not, however, be in perpetual motion; do not pace; and avoid other repetitive actions, which can make your audience uneasy.

If you are behind an open laptop, be sure that the computer screen doesn't block the line of view from the nearest audience member to your face. Being talked to by a pair of eyes peeking above a screen is like facing a masked intruder. It doesn't make for a comfortable feeling.

Present powerfully. Vary the volume and tone of your voice. Use power pauses and dramatic repetitions. Emphasize important points by inflection or by slowing your speech. Try to convey confidence, decisiveness, energy and power. Maintain eye contact. Engage your audience in an enlarged conversation. Keep language clear, simple and powerful. Be yourself. Be spontaneous.

Engagement, involvement, and interaction

Engagement means getting and holding the learners' attention by making them feel that you are working with them—you and they are having a conversation, even though you are doing almost all the talking. Effective engagement gets the audience mentally involved. Interaction is a step beyond engagement and beyond involvement. During the interactive part of a presentation, the learners are mentally interacting and demonstrating this by some physical response—usually verbal or a show of hands.

Many speakers assume that a lecture means no audience participation until the question and answer period at the end, but if you think of your task as giving

a *presentation* rather than delivering a *lecture*, you may feel less constrained. You can ask questions of your audience, so long as this is done in a careful and non-threatening manner. In a lecture format, even with a small audience, it can be distressing for a learner to be asked a question and not know the answer, so generally it is best to not single out one learner. There are numerous ways to get audience participation while avoiding embarrassment. Asking for a show of hands will stimulate a sense of involvement, but even a show of hands can be intimidating. Imagine the situation where the speaker says, "How many people in the audience think that the iron content of breast milk is greater than cow's milk?" Many in the audience might be fearful of raising their hands, each thinking that he not only might be wrong but might be the only person in the room to be wrong. This situation can be avoided by framing the question in a neutral manner or selecting a question that deals more with opinion, personal experience, or expectations, making sure that the question is politically correct and non-threatening. For example, instead of the above question, you might ask, "How many of you feel that it is important to know the relative iron concentration in breast milk and in different formulas?"

Alternately, rather than asking for a show of hands regarding the correct answer, ask for a show of hands regarding how many people think they know the answer. "How many people in the audience know the concentration of iron in different formulas and in breast milk? Don't worry, I am not going to ask you to tell us. We just want to see how many believe they know the right answer." It doesn't really matter how many people raise their hands or if someone is afraid to raise his hand. What matters is that you made the audience think about a response.

Still another approach is to ask a rhetorical question, anticipating no overt response from the audience. For example, you could say to the audience, "Ask yourself this. Does the primary care physician need to be an expert on the management of asthma, and if so, how close are you to that goal?"

Whether or not you choose to have your audience *participate*, you should get them *involved*. Give the audience something to think about, give them a moment to think and then draw them back to what you are saying. The most important technique for engaging an audience is eye contact. Do not just look at the audience, look at individuals in the audience. When you look at one person, everyone nearby will feel that you are looking at him. But do not look at the same person repeatedly or for too long; it can be intimidating. In general, 5 seconds is a long time for eye-to-eye contact.

Table 23.
From Engagement to Interaction

Term	Meaning
Engagement	The audience is actively and attentively listening to the speaker
Involvement	The listener is mentally responding to what the speaker is saying
Interaction (participation)	Members of the audience are responding to, or communicating with, the speaker in a clearly discernable way, usually verbally or by a show of hands

Humor is a powerful tool for getting an audience's attention. A good joke makes a great start for almost any lecture, but humor can be used during the lecture as well. Of course, the joke should be in good taste and should relate in some way to the topic of the lecture.

Humorous slides and cartoons are great attention grabbers. There are other novel ways to get the audience's attention—gimmicks, props, and devices. For example, if talking about snake bite, handle a toy snake as if it were real. Props and gimmicks can be very helpful but are never a substitute for information or skill building. Never let technique lead to neglect of content.

Speech and language

When we talk about "speaking clearly," we really are talking about two different things—language and speech. Language is words and sentences. It is the words you choose to use and how you put them together. Language conveys meaning. Speech is how you pronounce and deliver these words and sentences. Speech makes language intelligible and conveys feeling about the words and their meaning. Together, speech and language equal communication.

Crisp articulation and clear pronunciation are vital to successful delivery. Don't slur, don't mumble, and don't assimilate. Assimilation is the combining or shortening of words in a corruptive way. Examples include "gimme" for give me, "wanna" for want to, and "shunt" for should not or shouldn't.

Utilize the power of inflection and emphasis. Read the following sentence out loud, emphasizing the word *major*. "One major factor in successful breast-feeding is the physician's attitude." Now read it aloud again, this time emphasizing the word *successful*. Then once more, with the emphasis on *physician's* and finally, with the emphasis on *attitude*. Notice how the meaning as well as the drama of the sentence changes?

Repeat this exercise with the sentence, "If you do this, your patients will survive." First, emphasize *if*, then *you*, then *do this*. Note the subtle yet real

differences in the message. Try it again, overemphasizing the selected word. Practice being excessively dramatic. When you actually present your lecture, you should not be overly dramatic, but it is useful to exaggerate in practice, so as to know your capabilities. Finally, try to say the sentence without emphasizing any individual word. You will find that this is not only bland, but it is difficult to do. Emphasis can be subtle, but it is a natural part of speech.

Make sure that you are audible. In a large auditorium, ask the audience if you can be heard. Test the microphone and use it properly. Some microphones distort the sound if you put your mouth too close, while others fade out if you are not close enough. Unfortunately, some do both, in which case you must keep a safe distance and speak loudly.

Language can be formal, informal, or a combination of the two. Most people intuitively choose a formal or informal vocabulary based on their assessment of the audience. For example, when giving a lecture to a small group of medical students or interns, you might say something like, "You guys really need to know this." When giving grand rounds or lecturing at a postgraduate course, you are more likely to something like, "We as pediatricians need to know this."

Simple and clear language is always preferable to complex and ambiguous language. Colorful words and phrases are effective, but arcane terms (terms known only to a select few) can be "off-putting."

Avoid or explain abbreviations. Even basic abbreviations, known to every intern, may be nothing but a set of letters to a core medical student.

Reflection exercise #2. Answers at end of chapter.
Other than asking questions, what are some of the ways you could engage your audience?

Relaxation

It has been said that the fear of death is second only to the fear of public speaking. If you feel yourself getting nervous just thinking about giving a lecture, you could benefit from some relaxation techniques. The manifestations of nervousness are psychological (anxiety, uneasiness, and apprehension) and physical (dry mouth, tight throat, tachycardia, tremor or trembling, sweating, shortness of breath, and even tingling from hyperventilation). A bit of "stage fright" happens to almost everyone, even seasoned actors and public speakers. It is usually at its worst just before the presentation and tends to lessen after starting.

There are numerous ways to relax in preparation for public speaking. The first step is to think positively. Your future, your career, and your life are *not* at stake here. Most medical audiences are receptive and understanding. They don't expect you to be a showman, so don't feel that you have to be one.

Preparation, rehearsal and following the principles discussed in this chapter will help you relax and do a fine job. Take command of your physiology. When

you get nervous, your heart rate and your respiratory rate go up. You cannot easily control your heart rate, but you can control your breathing. Breathe slowly, deeply, and evenly, holding your breath for two to three seconds at the end of each inspiration. By controlling just one of the manifestations of nervousness, you often can break the cycle. It really works, but you need to concentrate. It's like a beta-blocker without the side effects. Consciously relax your body, from eyes to fingertips. If your mouth tends to get dry at times like this, drink some water before your talk and take a glass *inconspicuously* to the podium with you. Diminishing the physical manifestation of nervousness makes you look and feel better.

Avoid caffeine for at least eight hours before your presentation. The caffeine may be out of your system in only a few hours, but the jitters can be self-perpetuating. Don't worry about falling asleep or being lethargic. If you're nervous, chances are you have more than enough circulating adrenaline to make up for the missing caffeine.

While you are waiting to ascend the podium, pretend that you are about to have a chat with friends. Focus on your presentation, not your nervousness. As you step behind the podium, make eye contact with the friendliest face in the audience.

Previsualization

Previsualization (also referred to as visualization) is a powerful technique that is used successfully by professional speakers, performers, and athletes. Picture your lecture as a pleasurable experience. Settle down in a comfortable chair in a quiet room. Get rid of all distractions and try to put all business out of mind. Select soft lighting and either absolute quiet or soft music. Now relax and visualize a favorite place, a calm, comfortable, safe place. This can be a real place, a place you know and love, or it can be an imaginary place, your make-believe sanctuary. Visualize yourself there and feel how relaxed and safe you are; then picture yourself calmly getting up to talk to a group of people who have gathered there. You talk, you lecture, but everything is still relaxed and safe. Now picture yourself leading these people to a lecture hall where you are still very, very relaxed. You're in the lecture hall, but it's just as relaxed and non-stressful as your safe place. Visualize yourself walking to the podium, talking to the audience, engaging the audience, answering questions. Picture yourself doing all this in a relaxed manner, enjoying every minute of it. You give a great lecture, and your audience loves it.

Once you are familiar with your safe place, you can do your previsualization anywhere, anytime, even an hour or a few minutes before your presentation, which you now know will not only be tolerable but will actually be an enjoyable experience.

Timing

Timing is critical. You must finish on time. It is your duty to your audience. Ending a bit early is better than going overtime. Leave time for comments and questions. The length of your presentation depends on content, speed and pace. Keep the content reasonable. You can't cover everything.

Speed refers to the number of words per minute. Speaking too quickly will leave your audience behind, too slowly will put them to sleep.

Pace indicates the number of ideas or amount of information per unit of time. You control pace primarily by the amount of content but also by techniques such as pausing between facts or concepts, reiterating before moving to the next point, and summarizing at strategic times. These techniques keep the pace manageable for the learners and also reinforce your teaching.

Innovation

Can you risk being innovative? Not only *can* you risk being innovative, you *should* risk it. Innovation is exciting and draws in your audience. Summon up the courage to be innovative. If it does not work, even if it bombs, it's not the end of the world. You have only hit one bump in one presentation. But if it works, you can use the technique again and again. This is a very favorable risk-to-benefit ratio. Remember that the innovation should always be appropriate for the audience you are addressing.

Don't be afraid to appeal to your audience's emotions, but use pathos judiciously; don't cloud the science of your presentation. Invoke fear, sympathy and joy, but do so appropriately and with restraint.

Innovation doesn't have to be extravagant. It doesn't have to be difficult, complex, or intimidating. Incorporate a case or two. Ask a few questions. For a lecture on asthma, show a metered dose inhaler and demonstrate how to use it correctly, as well as the various ways in which patients use it incorrectly.

THE POSTMORTEM

A lecturer's job doesn't end with the summary. Often there will be a question and answer period. While this is geared primarily to giving the audience a chance to ask questions for their enlightenment, it can provide the speaker with some feedback about his performance. If learners ask questions that were covered in the presentation, it suggests the presentation was not clear enough. Probing questions that build on the presentation suggest the lecture was stimulating and held the audience's attention. But this is very limited feedback. Individuals may ask inappropriate questions because they came in late or dozed off. People applaud out of courtesy.

The only way to get adequate feedback about how a presentation *was perceived* is to have members of the audience anonymously complete a properly designed questionnaire. Sometimes this will be provided by the

program sponsoring the lecture, but often the speaker will have to do this, distributing and collecting the forms himself.

Rating and critiquing the presentation by the learners is helpful, but it is only part of the story. More important than what the learners thought of the lecture is what they learned, and this can be determined only by evaluation. A posttest is extremely useful. Although a pre and posttest would be ideal, a pretest is rarely given except as part of a study. Evaluating what the audience has learned is not done nearly as often as it should be. At best, the learners may take a test at the end of the course.

A pre and posttest can be administered by an anonymous, electronic audience response system, which provides instant feedback to the learners as well as to the teacher. Although the newest units are less expensive and more portable than the original ones, they are still not universally available and require training for effective use.

SUMMARY

The lecture is alive and well as a means of transmitting information from teacher to learner. It can provide up to date information brought together from a variety of sources and tailored to the audience. There is an art and a science to the effective lecture. The successful lecture requires skill and effort.

There are three major components to a lecture: the content, which is most important and makes the lecture educational; organization, which makes the lecture understandable; and delivery, which makes the lecture interesting.

There are three steps to a successful lecture: preparation, presentation and postmortem.

Preparation begins with defining objectives and selecting appropriate content that is relevant to the learners. This is followed by organization of the lecture and its individual parts. All this is brought together in the rehearsal phase. The final act of preparation is checking-out the lecture site and equipment in advance.

The presentation should be well organized. It should exude energy and excitement. The speaker should be engaging and, when possible, interact with the audience. Speed, pace, and language should be appropriate for the audience. Innovation is a powerful tool.

Finally, it is important to get feedback about how the learners perceived the lecture and what they learned. The latter is best accomplished with a pre and posttest, although this is often not practical.

ACTION STEPS

- Prepare, prepare, prepare
- Select relevant and appropriate content for your audience
- Organize the material appropriately

- Use effective audiovisuals (See Chapter 12.)
- Checkout the lecture room and equipment
- Exude energy and enthusiasm
- Strive for engagement, involvement, and interaction
- Have a strong presence—preach, sell, convince
- Use humor and props appropriately
- Speak clearly, confidently, and convincingly
- Don't be afraid to be innovative
- Obtain feedback about the effectiveness of the presentation

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Answers to reflection exercises

#1.

a) Content is the most important aspect of a lecture. Without useful, appropriate content, the presentation can be fun and entertaining, but it's not educational.

b) A conclusion or bottom line is the take-home-message. It brings everything together and tells the audience what they should know or do. The summary is a highly condensed version of what has been said—it adds nothing new. If you run out of time and have to skip the summary, it's not a catastrophe, but if you do not have time to get to the conclusion, it is a catastrophe.

#2. Engagement is holding the learners' attention by making them feel that you and they are having a dialog. The most important tool for engaging an audience is eye contact. Other techniques involve a conversational tone, clear speech and appropriate language, enthusiasm, effective body language, humor, and props.

Chapter 12

Effective Use of Audiovisual Support

"We do not use the music to play the violin, we use the violin to play the music."
Isaac Stern

CHAPTER OUTLINE
OBJECTIVES
INTRODUCTION
RATIONALE
PLANNING
VISUAL AIDS
Models and props
Chalk and marker boards
Flip charts
8.5 X 11 transparencies
Slides
AUDIO AIDS
COMBINATION AIDS
SUMMARY
ACTION STEPS

OBJECTIVES
After studying this chapter, the reader should be able to:

- identify the importance of audiovisual aids in educational activities
- describe the major types of audiovisual aids used in clinical education
- discuss the advantages and disadvantages of each type
- select the most appropriate type(s) for a given presentation

INTRODUCTION

While audiovisual aids (also referred to as audiovisuals) are used most often with presentations and lectures, they may be used in almost any teaching setting. For example, even in a one-on-one encounter, the teacher may sketch a surgical technique or illustrate a biochemical pathway. In this chapter, we will consider only those audiovisual aids used by a teacher as a tool, excluding those audiovisuals that are themselves the focus of the teaching, such as web-sites, computer programs, and mannequins and other simulation equipment. Also, discussion of expensive and not commonly available interactive aids such

as audience response systems and the interactive whiteboard are beyond the scope of this text.

It is important that educators be familiar with the common types of audiovisual aids, keeping in mind that such aids are the medium, not the message. Even highly effective aids do not in and of themselves teach; however, they can enhance the teacher's message.

RATIONALE

The primary purposes of audiovisual aids are to illuminate, clarify, and reinforce the speaker's message, and there are a number of ways in which they accomplish these goals. While most people learn best visually, some have a preference for auditory learning. In general, most of us learn best when material is presented by both the visual and the auditory routes.

Audiovisuals direct and focus attention. They increase the efficiency of information transfer. The familiar adage that a picture is worth a thousand words is generally true. A visual representation of the middle ear is likely to enhance the understanding of the anatomy more than an oral description. Furthermore, learners have come to expect audiovisual aids. In the age of television, computers, and other high-impact media, students at all levels have been raised in an environment rich in audiovisual input. Recognizing and playing to that expectation will enhance the likelihood that learning will occur.

PLANNING

Like all aspects of an educational session, preparation of effective audiovisual aids requires careful planning. The first step is to select an appropriate aid or aids. Several factors should be taken into account when making the selection.

Usually, the size of the audience is the most important. Each type of aid has a range of optimal audience sizes. For instance, props generally work best for small audiences, while projected images can be effective with an audience of almost any size. It is critical that any visual aid used should be visible to all members of the audience.

Ideally, the teaching venue should be inspected prior to the presentation. This permits the teacher to determine if a planned aid will prove feasible. In particular, issues such as seating layout and ability to dim the lights should be addressed.

VISUAL AIDS

Visual aids are the most common type of audiovisual support used in medical teaching. A wide variety of such aids are available. Only the most common will be addressed here.

Models and props

Often, the simplest visual aid is a model or prop, either of which can have a very high impact. Models are particularly effective when there is a need to convey three-dimensional relationships. As an example, a model of a vertebra can demonstrate the complex interrelationships of vertebral articular anatomy more clearly than a projected two-dimensional image.

Props have their limitations. The practicality of their use is generally proportional to the size of the prop and inversely proportional to the size of the audience. With large audiences, visibility may be a problem, especially with small items. Passing the object around can be disruptive, and in a large group when a learner finally gets his turn, it will be distracting as the teacher will likely have moved on to the next point. It is generally best to keep props out of sight both before and after their use to minimize potential distraction. Despite these limitations, props, including patients and volunteers, are powerful teaching aids, and the effective teacher will look for opportunities to use them. Demonstrating a neurological abnormality or the examination of the knee on a real patient or a volunteer can be both effective and dramatic.

Chalk and marker boards

The board (chalkboard or dry marker board) is one of the most commonly used visual aids. This simple tool has many advantages over more technical alternatives. Boards are relatively inexpensive, widely available, easy to set up, and intuitive to use. They can be used in well-lit rooms, obviating the problems associated with the darkened room necessary for projected visuals. Unlike the situation with slides, information generated at the time of presentation can be captured on a marker board. Finally, the simplicity of a board minimizes the chance of malfunction.

Marker boards do have a number of limitations. Legibility can be a problem for speakers whose handwriting is poor. In addition, writing on a board turns the speaker's back to the audience, reducing engagement with the learners. Both of these limitations can be overcome by utilizing a scribe with good penmanship. However, use of a scribe reduces the speaker's control over what is written on the board, and if the scribe is chosen from the audience, he may be distracted enough to inhibit learning. Another limitation is the size restrictions imposed by handwriting. It is recommended that letters be a minimum of one inch in height for every 10 feet between the board and the furthest member of the audience. For example, a learner seated 30 feet from the board would require 3-inch tall letters. This effectively limits the use of marker boards to small and medium sized rooms.

Flip charts

Like marker boards, flip charts are inexpensive, low-tech aids that can be used in a well-lit room. Unlike most marker boards, however, they are easily

transported. While the relatively small size of the flip chart limits the amount of information that can be displayed at one time, this limitation can be overcome by using more than one flip chart or by posting multiple completed sheets on a wall visible to the audience.

Flip charts can be used in at least two ways. First, individual sheets may be prepared in advance and then displayed sequentially. When used in this way, flip charts can function much like a slide presentation, but without the need for special equipment. More powerfully, flip charts can be used in an interactive fashion. The speaker solicits audience participation and captures the important points on the chart. A combination of these two techniques may be used; charts prepared in advance can be annotated during the teaching session.

Although flip charts and marker boards share major features, one important difference is the ability to capture a permanent record of the session on the flip chart. Since the moderator does not have to erase to make room for new material, everything written down persists. The presenter or group leader can refer back to a previous page to determine or verify what was decided on earlier. And at the end of the session, the teacher or moderator has a permanent record of what was written. For these reasons, flip charts are particularly useful for planning sessions or when follow up of the session is desired.

8.5 X 11 transparencies

These full-page transparencies are displayed by an overhead projector. This system was once a state-of-the-art teaching tool. Now, although far less popular than computer projection systems, overhead projectors still can be found in many classrooms. Like marker boards and flip charts, overhead transparencies can generally be used without dimming the lights, thereby facilitating eye contact with the audience.

Transparencies can be prepared in advance or blank transparencies can be used like a marker board to capture audience input. Like a flipchart, transparencies that are prepared prior to the session can be annotated during the presentation. In situations where the speaker will annotate the transparencies, the same limitations regarding handwriting described for marker boards and flip charts will apply.

Advance production of the transparencies can be done in several ways. The material can be prepared using a word processor or presentation software (e.g. PowerPoint®), and then printed onto the transparency. If a laser printer is used, transparencies designed to withstand the heat generated by these devices should be utilized. Alternately, the material can be printed on regular paper and then photocopied onto transparencies.

Handling transparencies can be sticky, literally. Static electricity often causes the sheets to adhere to each other. This problem can be addressed by separating individual transparencies with a sheet of standard printer paper. An

alternative is to use commercially available cardboard borders. These borders have the additional advantage of providing a convenient place to write speaker notes. However, the expense and effort involved in the use of these borders may preclude their routine use, particularly if the transparencies are to be used only once.

There are problems with the use of overhead projectors. Depending on the room setup, the projector may obstruct the view of some audience members. In addition, the speaker may be forced to turn his back to at least some members of the audience. Writing on transparencies on a projector can be difficult, and it can be hard to keep the transparency aligned properly. Finally, overhead projectors are sometimes noisy enough to interfere with speaker-audience interaction, which may necessitate intermittently turning off the device.

Slides

The term "slides" originally meant 35mm positive film mounted in cardboard or plastic frames. These physical slides have been largely replaced by computer generated slide projection. Today, when a course director asks for slides, he means your electronic presentation rather than your physical slides. 35mm projectors are no longer universally available and have become hard to find. At the same time, LCD projectors have fallen in price and size and are now almost universally available. While computer generated slide presentations are not without problems (both software and hardware) the color fidelity of these projectors has improved, as has compatibility between the projectors and various laptops. For these reasons, we will focus here on the computer generated slide. In this process the computer actually has a dual role: the slide is created with a computer, and its projection is accomplished through a computer.

One software program, PowerPoint®, controls so much of this market that its name has almost become generic, much as aspirin, which was once a trade name, has become the generic name for acetylsalicylic acid. Originally designed for use in business presentations, PowerPoint® was quickly assimilated into education, where it spread to all levels, from grade school to post-graduate, and to all fields, including medicine. Its use by teachers and students is now almost universal. Many articles in the medical, educational, and business literature refer to PowerPoint® as if it were *the* computer slide creating software. The mechanics of PowerPoint® are adequately addressed in computer books and through on screen HELP and will not be addressed here. Additionally, most clinicians are already familiar with the mechanics of PowerPoint®. For these reasons, this chapter will focus on the educational and effective use of slide presentation programs.

Slides can serve a variety of functions, but they are not meant to be read verbatim by the teacher. Slides can provide an outline for the speaker, reminding him what points to make and what information to provide. Slides also

function as an outline for the learners. Visually displaying the key points the speaker is making enhances retention.

It has been said that a picture is worth a thousand words, and slides can project images of almost anything from a rash to a microbe. Slides also can display illustrations, diagrams, and cartoons, depicting concepts and relationships as well as data. Slides can display data in dramatic visual form—the more graphic, the better. Do not use a list if you can show the data in a table, and do not use a table if you can show the data in a graph. When comparing and contrasting data, spatial display is preferable to temporal display. This means that showing sets of data to be compared on one slide, either side by side or plotted on the same graph, is more effective than showing the sets of data sequentially on different slides.

Not only is presenting data in graphic form more effective than presenting it as text, but graphics also permit more data per slide without overloading the slide visually. So, when feasible, use tables rather than bullets, and whenever possible, use graphs rather than tables.

The most important aspect of any visual aid is its content, and the information in a slide should correspond to that being discussed by the speaker at the time the slide is shown. Extraneous and additional information potentially confuses and distracts from the desired message. Generally, a slide either outlines, presents, or clarifies the points the speaker is making. Slides should not be a verbatim transcript of the speaker's words. If the speaker intends to read the slides, he would do better to distribute the material as a handout.

In general, the simpler the slide the more effective it will be, and the more likely it will enhance rather than distract from what the speaker is saying. Use a san serif font (without serifs, small strokes at the end of the characters) such as Arial. Follow standard rules of capitalization; text that is all upper case is difficult to read. Keep the color scheme simple: generally no more than 3 colors, one for background, one for title text, and one for bulleted or narrative text. Horizontal orientation (landscape mode) permits more words per line and is preferable to vertical orientation (portrait mode). Switching between horizontal and vertical is disturbing and should be avoided unless absolutely necessary. Limit the use of abbreviations to those widely known and accepted.

As much as possible, make a single point on each slide. Divide complicated information into a series of slides. Use telegraphic statements, rather than complete sentences. A standard guide is the rule of six: 6 lines of text and no more than 6 words per line (Holz). But some experts suggest a rule of seven—7 lines per slide and 7 words per line (Balisteri). Visibility and clarity are the keys. The more lines of text, the smaller the font will have to be. The more teaching points, the more confusing the slide.

It is generally suggested that the pace of slides be no more rapid than one per minute, and on average this is reasonable. More than 50 slides for a 50 minute talk is a lot and may make the pace of the talk too rapid. However, there

are times within a lecture when a more rapid sequence is appropriate, e.g. a series of simple pictures. The exact number of slides is only part of the picture, as a single slide with extensive animation can have the content of five non-animated slides, while a series of five slides without animation, but each the same as the previous with one added item, can have the content of a single slide. Too few slides may represent a lost opportunity to enhance learning, but is rarely a problem. Indeed, many great lectures have been given without slides or other audio-visual aids.

The above guidelines are suggestions, not gospel, and deviations may be necessary and desirable at times. However, a speaker should never have to apologize for the appearance of a slide. Statements such as, "I'm sorry that this slide isn't legible to those of you beyond the first row" do not compensate for the poor slide. Rather than apologize, the speaker should eliminate or improve the slide so as to make an apology unnecessary.

Color is important primarily because it influences legibility. For example, red text, especially on a blue or black background, is hard to read and should be avoided. Further, because of subliminal associations with certain colors, coordination of color with the message has the potential to enhance the message. Common color associations include: authority and mystery with black, passion and excitement with red, truth with blue, and purity and professionalism with white. As these associations are highly subjective and far from universal, color selection should be based principally on legibility. Fortunately, white (professionalism) text on a blue (truth) background is highly legible. Red (excitement) works well for bullets and arrows.

Slides do have limitations. Generally, the room lighting must be dimmed, which can interfere with the speaker's ability to engage the audience, and which can make the learner sleepy.

Computer generated slides have a number of advantages over the 35mm slides they have largely replaced. Production requires only a computer and the appropriate software, both of which are widely available. Once the equipment is procured, the only cost of production is time. A teacher can now create 100 slides for no more money than a single slide, and the slides are instantly available. This makes it economically feasible to update slides at almost the last minute and to tailor the presentation to specific audiences.

The use of navigation links in programs such as PowerPoint® permits incorporation of input from the audience into the presentation. The speaker shows a slide with two or more choices (action buttons), asks the audience to vote, and then clicks on the winner. Predetermined links call up the slide corresponding to that answer and provide feedback. For example, such a slide might say, "Good choice. You selected the best option." or "Actually, the use of an inhaled corticosteroid is not warranted for this child with intermittent asthma."

Slides created and projected by computer permit the use of a wide variety of enhancements, including the incorporation of photographs, clip art (much of it

free), sound effects, and video-clips. Animation, in PowerPoint® refers to techniques such as progressive disclosure, whereby individual lines of text, as well as arrows, images and other items, are disclosed (i.e. appear on the slide) as the speaker begins to cover that material. This prevents the learner from reading ahead and being distracted by information not currently being covered. Also, items previously covered can be made to fade or disappear as new items appear.

The array of features that are available with PowerPoint® is also its Achilles heel. Excessive use of these features can distract the learner and impair rather than enhance learning. Fancy and varying transition from one slide to the next may be appropriate for home slide shows, but such techniques are only distracting in the educational setting. Likewise, complex colorful backgrounds can be confusing, and fancy borders decrease the amount of space available for text and data.

Another potential problem with a computer slide system is malfunction. This can be due to hardware problems with either the computer or the projector. Most commonly, the problem is software incompatibility between computer and projector or between the software used for slide creation and the program being used for projection, although this appears to have improved as a single program, PowerPoint®, has become "the standard." Nevertheless, the potential for incompatibility and other problems makes it important that speakers test the actual equipment to be used prior to the presentation if at all possible.

The use of slides is often accompanied by the use of a pointer. The most common type in use today is the laser pointer, and the most important precept is to use it sparingly. Overuse, referred to as "pointer hyper-mania", is irritating at best and distracting at worst. The pointer can be helpful in directing the learner to particular data or to a specific part of a cartoon. It should not be used to "circle" or "underline" content. Rather, it should briefly be directed at the area of interest and then turned off. Rather than using the pointer to "highlight" the bullet being discussed, the same effect can be achieved by the previously mentioned technique of progressive disclosure.

Reflection exercise #1. Answers at end of chapter.
List at least three suggestions for preparing effective slides.

AUDIO AIDS

While the use of video clips, incorporating both audio and visual signals, inserted into a computer slide program is not uncommon, pure audio aids are used less frequently than pure visual aids in medical presentations. Audio aids can, nevertheless, be effective if used in the right situations. Certain concepts and physical findings may be demonstrated most effectively using sound. Examples include physical findings such as heart and lungs sounds, the cry of an infant with cri du chat, or the cough and whoop of a child with pertussis.

Proper use requires a good deal of preparation. Sounds may be recorded on tape, compact disk, or in another electronic format. The sounds should be played just long enough to convey the information desired. Playing the audio for too long will disrupt the flow of the presentation.

COMBINATION AIDS

Instructional aids that combine audio and visual information can be useful. The most obvious examples are VHS tapes, CDs and DVDs. When part of a live presentation, these modalities should be used sparingly so that they do not become the presentation rather than merely an aid.

SUMMARY

Audiovisual aids can enhance a presentation but are never substitutes for content. Such aids can be used at the bedside (a sketch or diagram) or with a full auditorium (slides). Computer generated slides have largely replaced 35mm slides. The most important aspect of a slide is its content, and this should parallel the speaker's discussion. Organization, style, and graphics all add to the effectiveness of a slide.

ACTION STEPS

- Decide which, if any, audiovisual aids will best enhance your presentation
- Prepare the appropriate aid(s) in advance
- When using slides, keep the format and the content of each as simple as possible

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Answers to reflection exercise.

Use slides as an outline or to display key points.
Keep color scheme simple.
Limit text to 6 or 7 words per line and 6 or 7 lines per slide.
Whenever possible, use a table rather than bullets and a graph rather than a table.
Keep slide orientation consistent, generally horizontal (lanscape).

Chapter 13

The Handout

"Handout: a portion of money, food or clothing given to, or as if to, a beggar; a folder or circular of information for free distribution." Webster's Ninth New Collegiate Dictionary

CHAPTER OUTLINE
OBJECTIVES
INTRODUCTION
PURPOSE AND RATIONALE
TYPES OF HANDOUTS
TIMING OF DISTRIBUTION
FORMAT AND CONTENT
SUMMARY
ACTION STEPS

OBJECTIVES
After completing this chapter, the reader should be able to

- discuss the purposes and rationale for a handout
- compare and contrast an outline versus a complete handout
- describe how to prepare a handout from a PowerPoint® presentation
- decide if a handout should be distributed before, during, or after the presentation

INTRODUCTION

In the broadest sense, many things can be considered a handout: a pamphlet or pocket card given to incoming interns, a book given to students on a certain rotation, an article given to an intern caring for a specific patient. The focus of this chapter, however, will be on the handout prepared by the teacher for use in conjunction with a prepared didactic teaching session, such as a lecture or workshop. To be effective, a handout needs to be current, organized, and readable, and the data within needs to be useful and appropriate to the learning objectives of the teaching session for which it is intended. This requires time and effort.

PURPOSE AND RATIONAL

The three most important functions of a handout are: 1) to facilitate understanding and consolidation of the material by review of the handout and learner's notes soon after the session (usually within 24 hours); 2) to enhance recall of the material by review at a later time (usually before an examination); and 3) as reference material, to be consulted when the need arises, much as one would consult a text or Internet site. The first two are common with students (McLennan), while the third is typical of a resident, fellow, or physician in practice.

In addition, a handout can provide additional information to supplement the live presentation. Time limitations often prevent covering material in its entirety; the handout can help fill the gaps imposed by these constraints. Handouts can provide lists of references and other resources, illustrations, case studies, and in-class exercises. If distributed in advance, handouts can provide questions and other types of assignments.

Handouts can provide an organizing framework for the learner. This is particularly true if the presentation is strictly verbal, without the use of any visual aids. Many individuals are visual learners and will benefit from a written handout. The ability to make notes directly on the handout decreases the chance of error in note-taking and facilitates learner interaction with the material being presented.

On the down side, a study in a veterinary school found that about two-thirds of faculty and one-third of students believed that comprehensive lecture notes discouraged further reading about that subject (McLennan). Additionally, it is theoretically possible that provision of a detailed and comprehensive handout could inhibit the learner's processing and encoding that accompanies the taking of notes. And finally, production of an effective handout requires time, a precious and limited commodity.

TYPES OF HANDOUTS

Handouts vary from a skeletal outline to an almost verbatim transcript of the verbal presentation. A skeletal handout stimulates attention and acts as a scaffold for note-taking. A complete handout provides a more useful (and presumably more accurate) resource but may discourage attention during the presentation. If much of the material being presented is not readily available in texts or journals, a relatively complete handout will be useful as well as appreciated. Not surprisingly, more students than faculty feel that handouts should be complete and comprehensive (McLennan).

The effect of the completeness of handouts on retention of knowledge is unclear. It has been suggested that the effectiveness of a handout may depend on how soon after the presentation the learner is tested for recall. As the time lapse from presentation to testing increases, memory of the presentation itself will wane, while the time available to review handouts increases. Based on this theory, more complete handouts become more effective as the time interval

from presentation to testing of recall increases. Support for this conjecture was provided by a study by Morgan et al. which found that skeletal handouts were superior to complete handouts when students were tested two days after the lecture, but the difference was minimal when they were tested two weeks after the lecture.

TIMING OF DISTRIBUTION

Another consideration when using handouts is the timing of distribution—in advance of, at the start of, during, or after the presentation. Reflecting on the goals of the handout should help determine the optimal time for distribution.

Providing a handout in advance of a presentation permits the learner to review the material in advance. In the case of interactive sessions, better-prepared learners are better able to participate. Theoretically, providing the material in advance allows the learner to prepare, enabling more material to be covered at the time of the actual presentation. Unfortunately, many, if not most, handouts provided in advance are not read in advance, especially by busy and sleep-deprived house staff.

If one of the purposes of the handout is to provide a framework for following the oral presentation and taking notes, the handout must be distributed before the presentation starts. Ideally, the handout should be distributed 5 to 10 minutes before, so that the learners have completed their "glance through" before the presentation starts. In practice, this is rarely feasible, and some distraction as the audience looks through the handout is inevitable. The teacher then needs to work harder to grab and focus the learners' attention.

Handouts designed to help the learners follow the presentation and to facilitate note-taking should mirror the temporal sequence of the oral presentation. A handout that does not follow the sequence of the oral presentation will distract the learners as they attempt to "find their place" in the handout. In a similar fashion, handouts containing material that is not going to be covered in the oral presentation are likely to be distracting if provided at the beginning of the presentation. The distraction can be minimized by providing the extra material in italics, in a different font, or (best choice) at the end of the handout.

If the purpose is primarily as a reference for later study or review, the handout can be distributed at the conclusion. More latitude in content and format is permissible for handouts that will be provided at the conclusion of presentations. Sequence is not as critical, although it seems likely that a handout which follows the order of the original presentation will better stimulate accurate recall of the presentation. Inclusion of supplementary material not covered in the original presentation is not problematic.

Distribution of a handout during a lecture is an infrequently used strategy. The concern is that this will disrupt the session and distract the learners. However, for interactive sessions, the distribution of a clinical case or of a

scenario for small group discussion or role playing during the session is not uncommon and generally works quite well.

It is helpful for the instructor to explain the purpose, format, and contents of any handouts as part of the introduction to the session. This is especially true if the handout is to be provided at the end of the session. Learners should be told whether the handout is an outline or complete, and whether it includes material in addition to that being presented in the oral presentation. Providing this information permits learners who wish to take notes to decide how extensive their note taking should be.

Reflection exercise #1. Answers at end of chapter.
A colleague asks you whether it is better to distribute his handout at the beginning or end of his lecture? What do you suggest?

FORMAT AND CONTENT

Neatly prepared handouts can enhance a presentation, while poorly prepared handouts serve as a distraction. Word processors, scanners, imaging programs, and presentation software have made the production of high quality handouts relatively easy.

An outline format is commonly used in handouts. As discussed previously, the outline should follow the planned sequence of the oral presentation. Use of an easily read typeface of sufficient size is important for legibility. The size of the type varies with the font. Two commonly used fonts are Arial (11 or 12 point) and Times New Roman (12 or 13 point). Depending on the nature of the handout, provision of sufficient blank space is also important. Skeletal handouts designed to be utilized in note taking will need more blank areas than more complete handouts intended for distribution at the end of the session.

Popular presentation software packages (e.g. PowerPoint®) typically permit the teacher's slides to be printed in groups of two to nine per page. Because of the ease of production, this has become one of the most popular methods of producing handouts, both in general and in the clinical setting. Printing the slides is convenient and provides the learner with an exact reproduction of the visual material presented during the lecture. The two slides per page format provides a large, easily read image but consumes the most paper. Three slides per page is quite legible and provides convenient, lined space next to each slide for notes. Six slides per page is more economical and usually still legible but does not provide a convenient space for notes. Nine slides per page is more economical but usually strains legibility. It is important to select grayscale or black and white from the color/grayscale drop down menu unless you actually are using a color printer. Leaving the default color when sending to a black and white printer will usually result in white text on a black background. This is not only hard to read, it is also wasteful on ink. A printout of the slides usually works well for a lecture, but for workshops and other highly interactive sessions,

a more structured and detailed handout with outline, tables, and narrative data is more effective.

There are some problems with the use of slide printouts as handouts. The font may be so small as to impair legibility. Likewise, any included graphics may be so small in the handout as to be illegible. Animations or slide transition effects will be lost in the translation to the printed format. If slides consist of multiple layers of images that are progressively disclosed and overlay previously displayed material, the final printout will demonstrate only the topmost "layer". This latter limitation can be overcome by placing the individual layers on consecutive slides.

A very real danger is that the material on some slides may be meaningless, or, even worse, misunderstood without the accompanying narrative. For example, a slide might list five antibiotics as potential treatments for a certain infection. When the lecturer shows the slide, he explains that the first has a low cure rate, the second has numerous side-effects, and the third tastes terrible and is difficult to administer to children, but the learner might not note this on the handout and looking back on it a year later might not remember the verbal admonitions that accompanied the slide. Rather than simply printing the slides as a handout, it is often better to save the presentation as a separate PowerPoint® file with the word "handout" in the file name and edit it—changing and deleting material and adding notes as needed. Be careful not to confuse the lecture file with the handout file; update them separately but simultaneously.

Including the date when the handout was prepared or last reviewed by the teacher is a helpful, albeit often neglected, item. When later reviewed, the learner can easily determine how current the material is.

If material is available as hardcopy only, be certain to keep the master, as each photocopy is slightly smaller and less legible than the original. A convenient way to keep track of the original is to underline the title on the first page in red.

Reflection exercise #2. Answers at end of chapter.
Reflect on at least two potential problems with using a direct printout of the slides as the handout.

SUMMARY

Handouts are useful adjuncts to lectures and other teaching sessions. They vary from outlines to detailed and comprehensive transcripts and may contain material not covered during the session. The type of handout and the timing of distribution should be based on the purpose of the handout for that session. While it is convenient to prepare a handout by simply printing out the slides, care should be taken that important information is not obscured by overlying animation and that no slide is likely to be misunderstood when reviewed at a distant time without the speaker's input.

ACTION STEPS

- Decide if a handout is appropriate
- Decide if it should be an outline, a detailed discussion, or a printout of the slides
- Prepare the handout thoughtfully, making sure that the format and content are appropriate and that all materials are legible

References and other reading material

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Answers to reflection exercises

1. You tell your colleague that you cannot answer this question with a simple "before or after." Timing of distribution depends on the goals of the handout. Providing a handout in advance permits the learner to review the material before the session. If the purpose of the handout is to provide a framework for following the oral presentation and taking notes, the handout should be distributed before the presentation starts. If the purpose is primarily as a reference for later review, it can be distributed at the conclusion.

2. There are several potential problems with the use of slide printouts as handouts. The font and graphics may be too small to read comfortably. Animation effects will be lost in the printed format. Some slides may be unclear or misunderstood without the accompanying narrative.

Chapter 14

Asking Questions to Stimulate Learning

"The wise man doesn't give the right answers, he poses the right questions."
Claude Levi-Strauss.

CHAPTER OUTLINE
INTRODUCTION
OBJECTIVES
CLASSIFICATION OF QUESTIONS
Difficulty and complexity
Open or closed
Types of questions
ASKING QUESTIONS AND HANDLING ANSWERS
PIMPING
THE SOCRATIC METHOD
SUMMARY
ACTION STEPS

OBJECTIVES
After completing this chapter, the reader should be able to

- discuss the differences between open and closed and between probing and clarifying questions
- define and discuss wait times
- respond appropriately when the learner is unable to answer a question
- respond supportively when the learner gives a poor answer
- discuss the entity of pimping as a teaching tool

INTRODUCTION

Asking learners questions is a method of teaching that antedates Socrates by millennia, likely going back to the very origins of speech, when parents first used words to teach their offspring survival skills. "Do you want to get eaten by that hungry lion? Do you know how to keep her from spotting you?" Because it is so common and time-honored, questioning is often undertaken lightly. In reality, effective questioning, as a tool for teaching and for evaluating, is a skill that requires thought and practice.

CLASSIFICATION OF QUESTIONS

Questions can be classified by many characteristics, including degree of difficulty, level of complexity, and whether open or closed. They can also be classified on the basis of the type of answer being sought or the thinking process required to answer the question.

Difficulty and complexity

Difficulty and complexity do not always go together. Degree of difficulty (from easy to very hard) depends on factors such as the level of the learner and how common or rare is the condition being discussed. Degree of complexity (from simple to exceedingly complex) depends on the number and relation of the various factors involved in answering the question. Most easy questions are simple, but not all simple questions are easy.

"What is Allgrove's syndrome?" This is a simple, straightforward question, but measured by how many pediatricians would get the correct answer, it is not easy, because Allgrove's syndrome (achalasia, alacrima, adrenal insufficiency, and autonomic dysfunction) is extremely rare.

Avoid asking only easy and simple questions. Challenge your learners with some difficult and complex questions, but pose the tough questions to the group rather than to a single learner.

Open or closed

While questions are often classified as open versus closed, there is no uniformity as to the meaning of this distinction. In general, an open question has an unlimited number of correct answers, while a closed question has a limited number of correct answers, often only one. Open questions can reveal the learner's understanding and ability to see relationships. Open questions provide an opportunity to assess the learner's skill at problem-solving. The best open questions require the learner to think and provide the teacher with an opportunity to examine that thinking. Closed questions generally require recall and recitation and provide assessment only of knowledge and the ability to apply that knowledge to a clinical situation. While an open question also permits evaluation of the learner's knowledge, it is more time-consuming in this regard than a closed question.

Neither the open nor the closed question is ideal for all situations. Time constraints on rounds may push the teacher to ask closed questions, and a more leisurely, sit-down discussion of a topic or a single case may be conducive to open questions. The desire to disseminate information often dictates primarily closed questions, while the need to evaluate and strengthen the learner's thinking process requires open questions. The effective teacher is comfortable with both types of questions and able to use a combination of the two.

Table 24.
Examples of Easy and Difficult, Open and Closed Questions

	Open	Closed
Easy	This previously well 6 year old male has acute right lower quadrant abdominal pain. *What do you think is going on*?	What is *the most common* cause of acute right lower quadrant abdominal pain requiring surgery in a previously well 6 year old male child?
Difficult	This previously well 6 year old female has acute right lower quadrant abdominal pain. Imaging has ruled out appendicitis, mesenteric adenitis, and ovarian pathology. W*hat do think is going on*?	List 5 intestinal parasites seen in the U.S. that might present with abdominal pain in a previously well 6 year old child?

Types of questions based on nature of answer being sought

Questions can be classified by type depending on what they are looking for (e.g. data and information, thoughts and ideas, opinions and judgments), as well as by the nature of the thinking process they call for (e.g. recall of information, pattern recognition, analysis, comparison, inference, or evaluation). As a clinical instructor you can ask for facts, for a conclusion, for a judgment, or for an opinion. You can ask a learner to justify his answer. You can probe for evidence to support a suggested diagnosis or treatment.

The thinking required to answer a question can be classified according to Bloom's taxonomy: low level—knowledge and comprehension; and high level—application, analysis, synthesis, and evaluation. (See Chapter 3.) The distinction between low and high levels is more important that the distinction between different thinking within a level. Effective teaching utilizes a combination of levels. Excessive questioning for knowledge can become pimping (see below). Excessive questioning for evaluation can consume time without providing all the information needed to care for the patient.

Weinholtz categorized questions as probing, clarifying, and mixed. Probing questions explore the extent of the learner's knowledge and the depth of his understanding. "What are the three mechanisms of generalized edema and how do they apply to this patient?" Clarifying questions ensure that what the learner has presented is clear and that the teacher correctly understands what the learner has said. "You said the skin was discolored? Can you elaborate on that? Was it erythematous, or purple, or some other color?"

Weinholtz also classified the questioning process as high, moderate, and low-frequency. He reported that high-frequency probing questions *during their presentations* tended to fluster students. Moderate-frequency questioning was less disruptive and was stimulating, but low-frequency, mixed questioning was the style the students preferred. A useful option is to make notes during the presentation and hold some of the probing questions until after the presentation.

Table 25.
Advantages and Disadvantages of Different Types of Questions

	Advantages	**Disadvantages**
Open	Explores higher levels of thinking	Time-consuming
Closed	Time-efficient and relays information	Can be intimidating or embarrassing
Probing	Teaches and provides immediate feedback	Can disrupt presenter's train of thought
Clarifying	Clarifies information for teacher and group	Can disrupt presenter's train of thought
Low Frequency	Opportunity for student to think between questions	Slow pace
Moderate Frequency	Pushes student	Not enough time to think between questions
High Frequency	Pushes student to maximum	Stressful; can be intimidating and frustrating; not enough time to think

Questions also can be *hypothetical*. This type of question is especially useful when the case is straightforward or not challenging enough for the learner. It is also useful when rounding on multiple patients with the same problem. A question such as, "What if the patient had not responded to the treatment?" will broaden the discussion and permit you to explore new areas.

ASKING QUESTIONS AND HANDLING ANSWERS

The teacher poses questions, while the learners work toward a solution. The basic sequence is to ask a question, get a response, reinforce or elaborate if the response is right and correct it if it is not. Questions should be presented clearly and unambiguously, in a non-threatening way. A relaxed and friendly demeanor will help the learner feel that he has time to think before answering.

It should be clear whether the question is being posed to the group or to a specific learner. One technique is to ask the question, give everyone a few

seconds to think about it, and then call on a learner to answer. This gives everyone time to consider the question and, since no one knows who will be called on, all are motivated to think about the answer. Another technique is to let the group or a subgroup confer and answer as a team.

How do you handle a blank expression and no answer? How long do you wait? While conventional wisdom recommends 3 to 5 seconds, experienced teachers would suggest long enough to give the learner a chance, but not so long as to cause discomfort. How long to wait depends on the setting, group dynamics, and how well you, as group leader, have established trust and a milieu comfortable with silence and time to think. If you are asking a question during a lecture or with a group of learners whom you do not know, a few seconds of silence is generally sufficient. On the other hand, one-on-one or with a small group in a very supportive situation, more than 5 seconds might be tolerable. Most studies suggest that teachers in general do not wait long enough, rather than waiting too long.

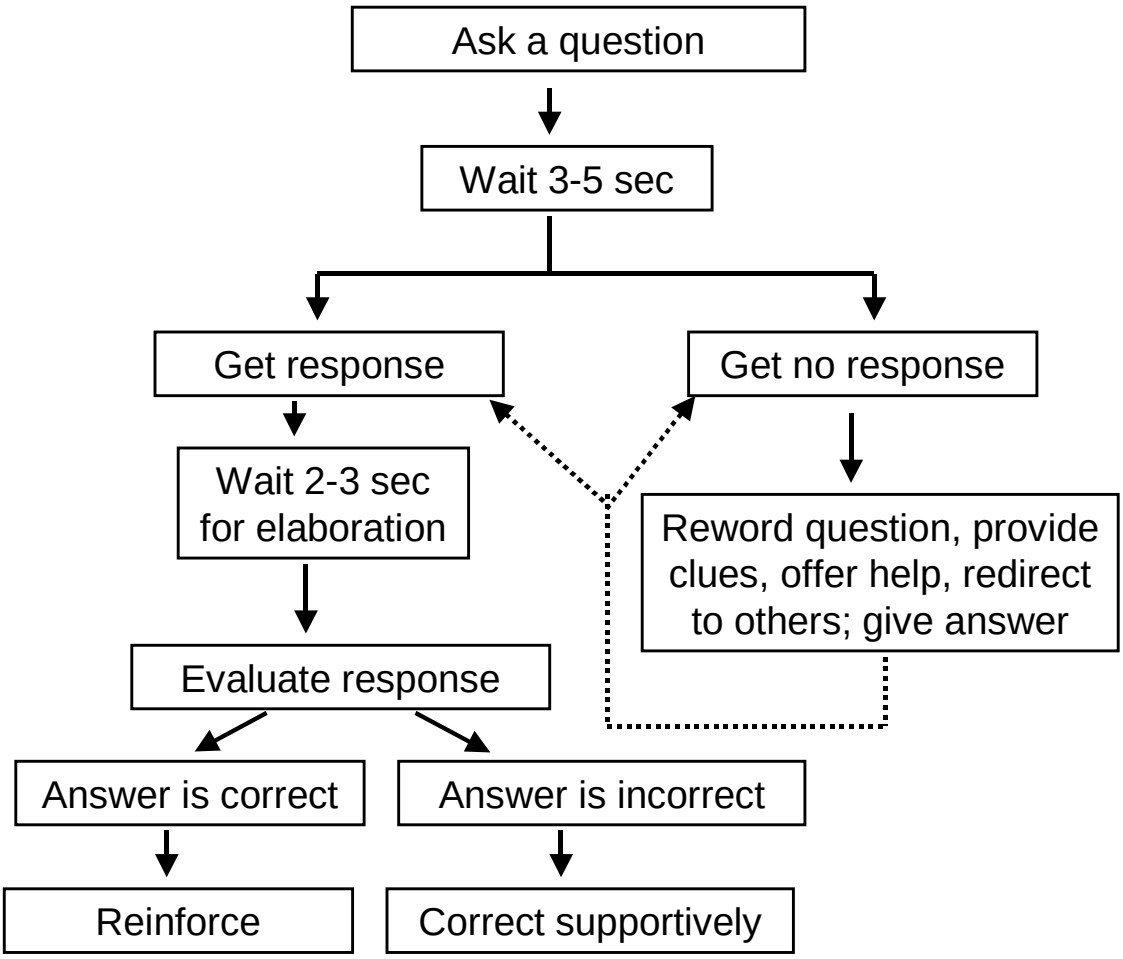
The human mind works quickly but not instantaneously. To answer a simple question of fact, the learner has to retrieve the information from long-term memory into working memory and verify that the information answers the question. To answer a complex question, the learner needs to retrieve multiple bits of data, analyze the relationships, create, and verify or reject hypotheses. The ideal wait time is unknown. Much research has been done with grade school and college students, but very little has been done in the clinical setting. There are at least two different wait times. The first is the time between asking the question and intervening if the student doesn't answer. One study with medical students on a surgical rotation (Schneider et al.) found no difference in learning between a 3 and a 6-second wait time. The second wait is after the student gives his answer. If the teacher does not respond immediately, the learner often will start talking again and fine-tune or elaborate his answer. The second wait time also gives other learners an opportunity to assess the answer before the teacher intervenes. You do not need to count down the seconds; just use judgment in waiting an appropriate amount of time for *that* learner in *that* setting.

What do you do when the learner remains silent? Do you give the answer or do you ask someone else the question? If the latter, whom? If a second learner at the same (or lower) level gives the correct answer, this might embarrass the first learner who was silent. You need to develop a repertoire of face-saving strategies to move the question to another learner. You could mimic a popular television quiz show: "You have one telephone call. Whom would you like to call?" Or you could offer the learner the chance to defer to a more experienced member of the group: "Would you like to consult your upper level?" If an upper level resident is unable to answer a question, avoid redirecting the question to a lower level learner.

Another option is to help the learner develop an answer. Rephrase the question. Simplify the question or address it from another point of view. The effective teacher is able to probe, give clues, and lead the learner to an appropriate answer, but to do so he must have established a safe and trusting milieu.

This approach is outlined below as an algorithm for effective questioning.

Algorithm for effective questioning



Be careful about selecting questions for particular students or residents based on their strengths or weaknesses. If you know your learners' special interests or career goals, asking them questions directed at these areas stimulates interest and is appreciated. This technique can be helpful but should not be overdone.

Avoid asking too many questions. Even at a comfortable pace this can overwhelm or exhaust the learners. Eschew questions about trivia, very narrow, *what am I thinking* questions, and never ask a question simply to demonstrate your knowledge.

To be an effective teacher you have to know how to handle poor or incorrect answers. You do not want to let an incorrect answer go uncorrected, but you certainly want to provide or help the student come to the correct answer in a supportive and constructive way. Do not say, "That's a good suggestion, however…" if it is *not* a good suggestion. Rather, "That's' an interesting thought. Let's see how well it fits…" Then lead the student to see why other answers would be better.

Praise good answers. Try to find a reason to praise everyone, but do not overdo it. Praise should be graded, and when appropriate, explain what you are praising. "Good answer." "Great answer. Not many people know that." "Wonderful analysis." "Great judgment." "Super. You really focused in on…"

Equally important to asking a question properly is listening to the answer. Listen carefully and identify key points. Search the answer for specific bits of information or evidence of thinking that you feel ought to be there. Try to understand the meaning of what the learner said, and try to understand the thinking behind the answer.

Reflection exercise #1. Answer at end of chapter.
a) What are the differences between open and closed questions?

b) What are the differences between clarifying and probing questions?

PIMPING

What is "pimping?" The frequent use of this term by students, residents, and faculty requires that we address this "teaching technique." Obviously, the dictionary definition of this verb is not relevant to medical education. However, pimping is also an adjective meaning petty and trivial, which may have some bearing on its derivation in the clinical situation. Medical use of the term seems to have arisen primarily on the wards and in the classrooms rather than in the literature, whether by learners or teachers is unknown.

Pimping is generally taken to mean the intense questioning of a student or intern by an upper level resident or attending physician. In this context, it would seem simply to be one method of teaching or evaluating learners in the clinical setting. Many, however, consider pimping to be an abusive type of questioning,

designed to glorify the questioner and humiliate the victim. *The Art of Pimping*, a humorous but bitingly satirical commentary in the *Journal of the American Medical Association*, portrayed pimping as a devastating practice with no redeeming virtues and detailed the many ways in which an intern could be questioned so that a satisfactory answer was essentially impossible (Brancati). Clearly, this is not our goal.

On the other hand, a survey of 11 senior medical students revealed that more than half liked "being pimped," and all said that they would pimp when they became residents (Wear). Most made a distinction between good and bad pimping, which gives rise to the semantic question, *if there is good and bad pimping, then how does pimping differ from other forms of questioning*? The answer is that pimping implies intensive, high-frequency questioning. We need to define those characteristics of good pimping and bad pimping and strive to emulate the former and avoid the latter. Bad pimping focuses on facts and minutia, pushing the learner to his emotional as well as intellectual limits. Good pimping focuses on important facts and concepts, encouraging the learner to achieve his highest level of clinical reasoning.

THE SOCRATIC METHOD

A chapter on questioning would not be complete without at least a mention of the "Socratic method." While it seems that any type of teaching that involves questioning may be labeled as teaching by the Socratic method, strictly speaking, this is not correct. According to Webster's New Collegiate Dictionary, the Socratic method refers to "his philosophical method of systematic doubt and questioning of another to reveal his hidden ignorance or to elicit a clear expression of a truth supposed to be implicitly known by all rational beings." It was designed for teaching philosophy and morality, not science or medicine. As clinicians, we usually are dealing with knowledge and evidence-based medicine, rather than philosophical issues or *implicit truths*. Even when dealing with social, economic, and ethical issues, we approach them from a logical and scientific point of view.

The method Socrates used was oppositional, one person questioning another, until one is forced into a position of self-contradiction. It examined concepts that had little or no scientific merit, concepts such as virtue, piety, wisdom, courage, and justice. This is hardly the method and substance of medical rounds and conferences. In law schools, a modified Socratic method of teaching by direct questioning with limited lecturing appears to work well. Indeed, according to the Princeton Review, there are law professors who are alleged to have gone an entire semester without uttering a single declarative sentence. But law is not a science, and its corpus is built on interpretation, while the body of medicine is built on evidence.

There are, however, many aspects of the Socratic method that can be applied to clinical teaching. We can use a series of questions to reveal faulty

reasoning and stimulate critical thinking. We can use questions to expose unsubstantiated doctrine and activate our learners to demand evidence. Perhaps the most important application of the Socratic method is that we can teach our learners to pose challenging questions to themselves and to each other.

SUMMARY

Questioning the learner is an important teaching technique that requires skill and practice to do well. Different types of questions provide a rich armamentarium for the clinician educator to stimulate learners, strengthen thinking skills, and impart knowledge. The major types of questions are open or closed and probing or clarifying. Bloom's taxonomy of thinking can be used to classify questions into high and low level questions. Misused, questioning can be confusing, distracting, and intimidating to the learner.

ACTION STEPS

- Establish a milieu of trust, so that learners are comfortable with questions
- Think about the questions you will ask
- Ask a balance of open and closed questions
- Use clarifying questions when necessary
- Use probing questions when appropriate
- Give the learner time to consider the question and respond
- Handle the response supportively and constructively

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Answers to reflection exercises

a) Closed questions have only one right answer, and in general, they test only recall of knowledge. Open questions have more than one correct answer and can test for reasoning and understanding as well as knowledge.

b) Clarifying questions are designed to ensure that the teacher correctly understands what the learner has said. Probing questions are designed to explore the learner's knowledge, reasoning, and understanding.

Chapter 15

Small Group Teaching

"Discussion is an exchange of knowledge; argument an exchange of ignorance." Robert Quillen.

CHAPTER OUTLINE
OBJECTIVES
INTRODUCTION
ROLE OF THE LEADER
PREPARING FOR THE SESSION
CONDUCTING THE SESSION
Getting started
Keeping the group focused and together
Helping learners reason and understand concepts
Managing the quiet or the assertive student
Providing closure
SUMMARY
ACTION STEPS

OBJECTIVES
After completing this chapter, the reader should be able to

- define the role of the group leader, including the distinction between teacher and facilitator
- list and discuss at least two tasks of the group leader in *preparing for* a session
- list and discuss at least three tasks of the group leader in *conducting* a session

INTRODUCTION

What constitutes a small group? There is no agreement as to the maximum number of learners in a small group, and obviously, any limit would be arbitrary. While an instructor and one or two learners theoretically could be considered a group, for this chapter we will define a small group as a teacher and three to ten learners, with a focus on active learning and communication between members. We will exclude certain group activities, such as rounds and bedside teaching, from consideration in this chapter, as these activities are unique and addressed elsewhere in the book. Finally, we will focus on the group that has a designated

time to meet, a place to sit and talk in private, adequate assigned time for discussion, and an agreed upon topic or agenda.

Groups differ based on composition, type, and activities. In this chapter we will focus on the group with learners at the clinical level. All of the four major types of small group structures—tutorial, seminar, discussion, and workshop—have a place in the clinical arena. The tutorial approach is most efficient in transmitting information. The seminar helps the learners improve their skills at researching a topic and in communicating what they have learned to others. The discussion is probably the most commonly used structure and combines well with the tutorial approach. The workshop is a powerful way of improving clinical reasoning, which succeeds best when group members are adequately prepared.

Table 26.
Common Types of Small Group Teaching Sessions

Type of Session	Description	Primary Role of Leader
Tutorial	Teacher or a student acts as leader and helps students examine and work through problems. Leader does a good deal of direct teaching; may assist, direct, and correct students	As teacher
Seminar	One or more students present prepared material, which is discussed by the other students and the teacher	As facilitator
Discussion	An open, interactive session with many possible formats, styles, and activities	As facilitator and teacher
Workshop	Learners participate actively beyond the level of discussion. They interact in a problem solving or decision making manner.	As facilitator

The dynamics of the group may be teacher-centered, learner-centered, or a combination of the two. The teacher-centered approach focuses on the teacher providing knowledge and demonstrating how to think, while the learner-centered approach emphasizes the learner acquiring knowledge and improving thinking, and is generally preferable.

Seating arrangement is important for the success of any small group session. To facilitate communication, everyone should have easy, face-to-face contact with everyone else. Ideally, this means sitting in a circle or around an oval table. Sitting around a rectangular table is a common arrangement and is acceptable, albeit sub-optimal. Classroom style seating does not work well for a small group discussion. Those in the first row see only the teacher, while

those in the rear are looking at the backs of their colleagues. A U-shaped arrangement with seating only on the outside of the table and the instructor in front works well, especially for sessions with a tutorial component.

Table 27.
Commonly Used Group Activities

Activity	Description
Group discussion	Entire group listens and responds to speaker(s) and to each other. This is the most commonly used activity for group teaching in the clinical setting. It also can be used following one of the activities below to summarize or report back to the group.
Brainstorming	Designed to generate ideas. All members contribute. No suggestions are rejected. Useful for working out team dynamics and solving logistical problems. Limited use for topic or case discussion.
Group round	Each person talks for a brief period (1/2 to 2 minutes) in turn. Ideally, everyone is sitting in the round, so that everyone has eye contact with the entire group.
Subgroups	Group breaks up into subgroups of two or more individuals who are instructed to interact in some way. May merge into larger groups. May report back to the group.
Fishbowl	Two or more participants interact while the rest of the group observes the interaction.
Simulations and role playing	Can be done in groups or in fishbowl style.
Games	Games are typically question and answer format. Many are modeled after television quiz shows.

ROLE OF THE LEADER

As leader of a small group discussion, it is important to decide early on your role. Will you be more of a teacher or more of a facilitator? In any small group the instructor needs to ensure that all learners are meaningfully involved. As leader, you *must no*t do all the talking, you *cannot* do all the thinking, and you *should not* do all the work, but you do need to lead the learners as they think, guide them as they evaluate suggestions, and help them as they analyze data and generate hypotheses.

If you see your role primarily as teacher, you will plan to do a good deal of talking. Perhaps you will be talking 50% of the time and the learners the other 50%. You will provide many answers and explanations. You plan to talk about some of the findings and some of the possible diagnoses. You do not have to count the minutes that you talk, but make sure that there is adequate time for the learners to think and to present their ideas to the group.

If you see yourself more as a facilitator than a teacher, your role will be quite different. You will minimize your active role and get the learners to do more. You will teach less and let the students work out solutions more, with you guiding rather than informing. A good facilitator may talk only 10 or 20 percent of the time. Restricting your role to that of a facilitator works best when the learners are well prepared for the session, have an adequate fund of knowledge regarding the topic, and are attuned to their role. It is difficult to limit your role to that of facilitator, if the learners are total novices, with little or no information about, or understanding of, the material.

Discussion is most effective for improving problem solving skills and changing attitudes. Periods of direct teaching (mini-lectures) are most efficient for conveying information.

PREPARING FOR THE SESSION

Preparation begins with a needs assessment to determine the specific objectives for each session. This permits you to design a lesson plan (See Chapter 5) based on which structures and activities will best help meet the objectives. If possible, let the learners have input on the topics and how the sessions will be conducted.

Gather any materials you plan to distribute at the session. If you are responsible for bringing or presenting any cases, make sure you have all the necessary information and familiarize yourself with the material. Prepare your handouts, slides, and any other audiovisuals. Think about any props you might want to use. Check out the room in regards to seating arrangement, lights, whiteboard or flipchart, and other audiovisual equipment.

Learning the names of ten or less learners should not be difficult. If possible, find out the names and something about each of the learners (e.g. what year of training they are in and what prior rotations they have had) before the first meeting. Using names improves the learning climate. If the composition of the group changes with each meeting, learning names can be challenging.

CONDUCTING THE SESSION

Regardless of whether you plan to function as leader-teacher or as leader-facilitator, there are several things you need to do.

Getting started

The first step, after greetings, introductions, and any “ice-breakers,” is to discuss goals and objectives. Then, if the group will be meeting regularly, as with a course or rotation, tell the students what you expect of them, both for the rotation or course and for individual assignments. When giving assignments, be specific. For example, do not simply say, “Report to us on the toxicity of that drug.” Be more specific. “See what you can find about the toxicity of that drug,

including any possible interactions with other medications the patient is receiving, and give us a 5 minute presentation about this tomorrow."

Ask what the group expects of you, and clarify your roles, for you will likely function differently with different activities.

It is the leader's responsibility to set the ground rules for the session(s) and to maintain order. At a lecture, most learners will assume that they should not interrupt or that they should raise their hands if they want to ask questions. In the small group environment this is likely not to be the case, and the specific rules are not intuitive. Should learners speak up freely, or should they raise their hands before speaking? Are there rules about not interrupting others? Learners should be talking to the group, not in private "side bar" discussions between two or more learners. While students should feel free to participate and join in the discussion, it is not helpful for more than one student to be talking at the same time. Think about how you will keep order without insulting or embarrassing anyone.

Establish trust. Explain that everyone, including the teacher, is here to learn, and it is okay to make mistakes. Everyone will be treated with respect.

Keeping the group focused and together

It is the role of the leader to keep the discussion focused on the appropriate issues. Without an effective leader, the group is likely to wander off on tangents and into side issues. The leader needs to curtail "war stories" (recitation of individual experiences that are not relevant). An effective leader will keep the students interested. A student who is far ahead of the group or a student who is lost can easily become bored. An effective leader is attuned to these problems and can challenge the learner who is ahead and reorient the learner who is confused.

Keep your facial expression relaxed and friendly. Be careful not to glare or scowl at anyone. Eye contact with group members obviously is important, but do not overdo it. Look people in the eye, but don't stare at anyone. Move your gaze around.

Periodic summaries of what has been discussed can help keep the group interested and focused, and also has the benefit of "rescuing" a learner who missed something and is unsure of where the group is.

Helping the learners reason and understand concepts

It is the leader's role to show the students how to reason and to help them understand concepts. An effective leader teaches the students to separate the wheat from the chaff and facilitates their understanding of the concepts behind diagnostic and therapeutic actions. He does this at least as much by questioning and probing as by demonstrating. (See Chapter 14, Asking questions to stimulate learning.) The teacher does not have to comment after every learner's pronouncement or answer. Listen attentively to what the learner

says and think about how best to respond. Often a simple, "That's right" or "That's excellent" is sufficient. At other times, the best response is to ask the group what they think about what was just said.

An effective leader corrects errors in information or mistakes in interpretation of data in a supportive, non-threatening way. However, an effective leader also is ready to say that he doesn't know something. He can then help the group decide where to find the answer or the missing information.

Managing the quiet or the assertive student

All members of the group should participate. It is the leader's responsibility to encourage the quiet student and to restrain the overly assertive student. Calling on individual learners can be an effective way to manage both problems. Gently challenge the quiet student with an open question such as "What do you think about that?" Keep the atmosphere supportive yet structured.

Calling specifically on others *may* restrain the overly assertive learner. Assigning an overly eager student a task, such as scribing on the board or taking notes so as to summarize at the end, can give others more opportunity to participate. Switching to an activity where learners work in pairs or subgroups will set most of the group free. If the group will be meeting regularly, talking to the overly assertive student in private to address the issue directly usually is helpful. Tell the student that you recognize his knowledge and astuteness and appreciate his desire to participate, but when he contributes so frequently, it diminishes the opportunity for other students. (Note: first give the student positive feedback, then explain the problem in terms of behavior and consequence, not in terms of the learner's personality.)

The effective leader is alert to group dynamics, recognizes interpersonal problems early, and intervenes quickly. (See Chapter 8.)

Providing closure

Do not wait until the very last minute to bring the session to a close. Leave the last 4 or 5 minutes for closure. Summarize the major teaching points or decisions reached and ask for questions or comments. One way to do this is to ask each learner to write down one important thing he learned and then ask each person to read his comment.

Thank any learners who presented. Review any assignments for the next meeting. Distribute a written instrument for the learners to evaluate the session or ask for verbal feedback about how the session went and what could be done to make it better.

Reflection exercise #1. Answer at end of chapter.
You are directing a course for first year medical students, introducing them to clinical thinking and are helping a junior colleague prepare for his first small group teaching session in that course.
a) Provide one suggestion to facilitate starting the discussion

b) Suggest one thing he could do to improve teaching during the session

c) What is one thing he could do to conclude the session successfully?

SUMMARY

The small teaching-learning group is a teacher and three to ten learners who meet at a designated time with an agreed on topic or agenda. The most common format in the clinical setting is the discussion; other formats include the tutorial, the seminar, and the workshop. Activities vary from a group discussion to breaking into subgroups. The leader's role is critical, but that does not mean that he should dominate the session or do most of the talking.

ACTION STEPS

- Know your group, its members, and its dynamics.
- Decide on the structure of the session(s) and the activities you will use.
- Encourage the group to work together and support each other.
- Solicit feedback, verbal or written, about how well the group is functioning.

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Answers to reflection exercises

a) After appropriate greetings and introductions, he might discuss goals and objectives for the session. He could explain the ground rules for the session.

b) There are many ways to improve a small group session. He should keep the discussion focused on the appropriate issues. He could provide periodic summaries of what has been discussed, both to keep the group focused and also to "rescue" any learner who missed something or is lost. He should listen attentively to what each learner says and think about how best to respond. He should correct mistakes in a supportive way. And, he should be ready to say that he doesn't know something. He can then help the group decide where to find the answer or the missing information

c) To improve closure, your colleague could summarize the major teaching points or decisions reached and ask for questions or comments. He could ask for verbal feedback about how the session went and what could be done to make it better. And he should thank any learners who presented or made other special contributions.

Chapter 16

Leading a Case Discussion

"It usually takes more than three weeks to prepare a good impromptu speech." Mark Twain.

CHAPTER OUTLINE
OBJECTIVES
INTRODUCTION
TO KNOW OR NOT TO KNOW THE CASE IN ADVANCE?
TO LISTEN TO THE ENTIRE CASE OR TO INTERRUPT?
Choosing which method to use
Knowing why, when, and how to interrupt
TO CALL ON INDIVIDUAL LEARNERS OR TO DEPEND ON VOLUNTEERS?
SUCCESSFULLY LEADING A CASE DISCUSSION
Check out the room and set-up
Get everyone involved
Have students explain their answers
Keep the group interested, challenged, and focused
Summarize and give feedback
SUMMARY
ACTION STEPS

OBJECTIVES
After completing this chapter, the reader should be able to

- discuss the advantages and disadvantages of knowing and of not knowing the case in advance
- discuss the advantages and disadvantages of the entire case and the interrupted case formats
- compare and contrast the advantages and disadvantages of calling on individuals versus depending on volunteers only
- list and discuss at least three strategies or techniques for successfully leading a case discussion

INTRODUCTION

The case discussion is an extremely strong tool for clinical teaching. In the clinical setting, discussions of real cases are the backbone of the educational experience. Case discussions are not only stimulating, they help the learners

sharpen their organizational and analytical skills. They bring information and concepts to life, and they allow the learners to practice decision-making skills.

Leading a case discussion is not the same as *discussing* a case. One person can *discuss* a case in front of a large audience with minimal, if any, audience participation, e.g. the classical Clinical Pathological Conference. However, *leading* a case discussion implies that the learners are doing much of the thinking and the talking. In this chapter, we will focus on *leading* a case discussion.

While many of the principles of teaching in a problem-based format apply to leading a case discussion, and while most problem-based sessions revolve around a case, problem-based teaching and leading a case discussion are not the same. Formal problem-based learning is used more in the pre-clinical curriculum, and usually both the teacher and the learners know at least part of the case in advance. In the problem-based teaching setting, the case is usually created, is complete, and a dénouement is eventually available. In the clinical setting, the case is usually real, generally ongoing, and the "answer" may never be known. Furthermore, decisions reached may actually be put into effect. In the problem-based, pre-clinical setting, the case is selected to meet predetermined learning objectives. In the clinical setting, the case is usually selected *ad hoc*, and while process-related objectives, such as strengthening clinical reasoning or learning to set priorities, can be determined in advance, content-based objectives can only be determined as the case unfolds. Finally, problem-based learning groups tend to be consistent, with the same teacher and students meeting regularly, while case discussions in the clinical arena are often on an ad hoc basis, and the composition of the audience can vary from day to day.

TO KNOW OR NOT TO KNOW THE CASE IN ADVANCE?

The first decision point in preparing to discuss a case is whether or not you will know the findings or the diagnosis in advance. Sometimes this is your decision, but more often, how much you know about the case in advance is determined by the circumstances in which you are teaching. You may have your preference, but you need to be able to teach comfortably in both situations.

Knowing the case or diagnosis ahead of time has advantages, but it also has disadvantages, and you are likely to find yourself in each situation at one or another time. The major advantages of knowing the case in advance are that it permits you to refresh your knowledge of the subject, look up relevant evidence-based data, and bring reprints or other materials to the session. Knowing the topic in advance also allows you to prepare a content-specific lesson plan. A final advantage is that, knowing the diagnosis, you are unlikely to be sidetracked or go down the wrong path.

The disadvantages of knowing the "answer" in advance are that your discussion will be less spontaneous and more narrowly focused and will not

model your real-time clinical reasoning. Also, if you know the diagnosis while most of the audience does not, it is an uneven playing field, and you have to be very careful to keep the audience engaged in the reasoning process. When you know where things are going and the learners do not, it is easy for you to become the driver while the learners are relegated to the role of passengers.

Table 28.
Advantages of Knowing and of not Knowing the Case in Advance

Discusser knows case in advance	Discusser does not know case in advance
Less likely to take discussion down the wrong path	Facilitates real-time modeling of clinical thinking
	More closely mimics real-life, clinical medicine
Opportunity to review literature and prepare discussion in advance	Minimal preparation time required
Can research relevant EBM	Discussion more spontaneous
Ability to bring handouts and other educational material	Diffuses responsibility for thinking process

Even if you do not know the case or the topic in advance, you still can prepare for the session by reviewing the techniques discussed in this and the two preceding chapters and by rehearsing in your mind how you will manage your learner group. Whether or not you know the case in advance, your main goals for the session will be to help the students learn to reason clinically, analyze a case, and problem solve. You also will want to transmit, to the learners, specific information about the signs, symptoms, and diseases that the patient may have. In order to do all this successfully, you will have to keep the group focused, and you will have to get all the learners to participate.

A case discussion can involve a small, medium or large group. For most clinicians it will be a relatively small group, perhaps a ward team or the core medical students. If you are a section head, program director, or department chair, you are likely to find yourself in front of a large audience.

TO LISTEN TO THE ENTIRE CASE OR TO INTERRUPT?

There are two methods for leading a case discussion. One is the traditional method, whereby a learner presents the case in its entirety, from beginning to end, or at least through the history and physical, and the discussant then leads an analysis of the data. The second method is to interrupt at key points of the presentation in order to analyze and evaluate information as it becomes available. Each method has its advantages and disadvantages.

When the entire case is presented without interruption, the discussant has the opportunity to examine the case in its broadest perspective and to focus in

on any aspect he wishes. The discussant can identify key issues and allocate time appropriately.

The main advantage of the interrupted method is that the discussion leader and the learners have the opportunity to analyze the case in real time, before all data are known. This is how a physician thinks about a patient. In a sense, it is unrealistic to begin the analysis only after all the data have been assembled. The learner must be able assess data as he goes along. He must learn "to think on his feet." When taking a history, the student must know what questions to ask based on the available data at that point in time. The student must know what to look for on physical examination and which laboratory tests to order. Analyzing the case in real-time, examining each major piece of data as it becomes available, is time consuming but highly effective.

One potential disadvantage of the interrupted method is that the presenter may lose his place. It is important that you be cognizant of this and help the presenter stay on target. Reassure the presenter that you realize interrupting and stopping for discussion can be disconcerting. Summarizing the data just before the learner resumes the presentation can be helpful. You can do this yourself or you can ask the presenter or one of the other learners to do it.

Table 29.
Advantages of Interrupted and Non-interrupted Presentation

Presentation without interruption	Presentation interrupted for discussion
Can identify and focus in on important issues	Models real-time clinical reasoning
Less likely to go down the wrong path	Gets audience involved early and holds their attention
More time efficient and can allocate time proactively	More exciting
Less disconcerting to presenter	More likely to generate a broad differential
Allows more time for discussion of evidence-based data	Facilitates evaluation of learners' thinking process
	Facilitates questions and clarification during presentation

Choosing which method to use

You should become familiar and comfortable with both methods—hearing the entire case first or interrupting. Decide on which method you will use for each assignment and plan for it.

The entire-case-first method (traditional method) often is the best choice for work rounds and other situations where many patients need to be covered in a limited period of time. The interrupted method may be preferable for case

conferences where only one or two patients are being discussed. The traditional method teaches summary reasoning and is relatively fast. The interrupted method teaches sequential reasoning and is relatively slow. The interrupted method tends to keep the group interested throughout. When a long case is presented from beginning to end without any interaction, minds can wander.

Knowing why, when, and how to interrupt

If you are going to interrupt the case presentation with questions or discussions, you should know why, when, and how to do so.

The *why* goes back to the goals and objectives. If you want the learners to improve their ability to analyze a case in real time, then you need to give them incentives and opportunities to do so, and this, incidentally, also gives you the opportunity to evaluate their analytical and reasoning skills.

Interruptions are valid to clarify or examine the significance of presented findings, especially if this is critical to the group's understanding of the case. For example, if the presenter says, "The child presented with a history of biliary atresia and a Kasai procedure…" some of the students may have no idea what a Kasai procedure is, and they will not be able to view the subsequent data in the correct perspective. Avoid asking, "Does everyone know what a Kasai procedure is?" or "Is there anyone who doesn't know what a Kasai is?" Learners may be hesitant to admit ignorance when they think everyone else knows. It is better to ask the presenter or someone in the group to explain what a Kasai procedure is.

Interruptions are also valid to engage in problem solving and to provide an opportunity for decision making. What you do *not* want to do is to interrupt the presentation with a question solely to *evaluate* a learner's knowledge.

Table 30.
Interrupting the Presentation with Questions

Purpose of interruption	Example
To clarify an item in the presentation	"You said the area was discolored, can you tell us in what way it was discolored?" "You said the serum sodium was slightly elevated; would you give us the actual value?"
To assure that all learners know what something is or appreciate its significance	"Let's review what a balloon septostomy is." "Let's talk about the significance of an elevated ACE level in a child."

To probe the learners' reasoning or understanding or to demonstrate clinical reasoning	"What do you think is the relationship, if any, between the dehydration and the mental status?"

When should you interrupt a case presentation? Stopping for a few comments or consideration of the initial differential diagnosis after hearing the patient's age, gender, and chief complaint or after the history of the present illness is so natural, and so commonly done, that it can be viewed as a strategic pause rather than an interruption. If the chief complaint has a relatively narrow differential, e.g. sudden unilateral blindness, it can be useful to discuss the differential diagnosis at this time, knowing that it is unlikely that such a presenting symptom will turn out *not* to be the major problem. On the other hand, if the chief complaint is fever, that is too broad a topic to discuss in depth without more information, and it easily could turn out to be a "red herring." For example, the real problem might be an abdominal mass discovered incidentally in a child with a febrile viral infection.

Logical places to stop for discussion are after the chief complaint, after the history, and after the physical examination, but it also is appropriate to interrupt *during* these parts of the presentation. Stop when there is important data to analyze or when you want to be sure that the learners understand the significance of a certain piece of information. As discussed above, interrupt if you need to clarify something. "You said the child went to a petting zoo. Do you happen to know if he actually touched any animals or the soil around them? Or did he just look at them?"

Do not interrupt excessively or needlessly. Give the presenter an opportunity to get his thoughts organized and to make any comments he wishes to make.

In regards to *how* to interrupt, using a supportive, non-threatening manner is key. When interrupting with a question, be clear if you are asking the group, the presenter, or another specific learner. Use a balance of open and closed questions, but with emphasis on open questions. (See Chapter 14.) If there are many interruptions, acknowledge this to the presenter. "Sorry for the interruptions; there seem to be a great many complex issues to sort out." "Sorry to interrupt again, but I think we need to stop to analyze the data to this point." Don't apologize repeatedly; once or twice will do.

After the interruption, to help the presenter get back on track, it can be helpful to summarize briefly or to ask the presenter or another learner to summarize. Sometimes, all that is needed is a statement of where the presenter was when you interrupted. "You had just told us that the child vomited red blood, when I interrupted."

Reflection exercise #1. Answers at end of chapter.
You are going to be leading a case discussion in a conference room setting, with an audience of about 50 learners, students and house officers. You will not know the case in advance and are trying to decide if you should have the learner present the entire case before you begin to ask questions or if you should interrupt with questions as he goes along.
Reflect on the advantages of each method.

TO CALL ON INDIVIDUAL LEARNERS OR TO DEPEND ON VOLUNTEERS?

Certainly, you will be questioning the learners, but should you do this by posing questions and asking for volunteers, or should you call on individuals even if they don't raise their hands? This is an important tactical decision, and while there is no right or wrong answer, you should be aware of the strengths and weaknesses of each strategy and decide which you will use and when. With a large group of learners at different levels (e.g. students, interns, residents), calling on individuals who have not raised their hands can be intimidating. In a small group, especially with learners all at the same level, calling on individuals is likely to be less threatening. Often, a combination is useful—for some questions ask for volunteers, while for other questions, call on specific learners.

Table 31.
Calling on Individuals Versus Asking for Volunteers only

Volunteers only	Call on individuals
More relaxed, less threatening, and less intimidating	Can be tense, threatening, and intimidating to some
Some learners may not volunteer	Involves those who would otherwise not volunteer
A few learners can dominate the discussion	Makes it less likely that a few learners will dominate the discussion
Knowing they will not be called on, learners can tune out	Keeps learners awake and alert

SUCCESSFULLY LEADING A CASE DISCUSSION

C. Roland Christensen, who pioneered case-based teaching at the Harvard Business School, where he taught for 50 years, noted that in a case discussion the leader is a planner, host, moderator, devil's advocate, fellow-student, and judge, as well as a teacher. Christensen said, "Even the most seasoned group leader must be content with uncertainty, because discussion teaching is the art of managing spontaneity."

With either the entire-case-first or the interrupted method, it is useful to explain the goals for the session briefly, and it is very important to set the ground rules. May anyone speak out at any time, or should learners not

interrupt one another? Should people raise their hands, or will you direct your questions to specific individuals? You need to explain clearly how the session will work. Your goal is for everyone to feel free to ask questions and to contribute, without interrupting one another, especially when someone is trying to answer a question.

Establish a "safe milieu." Explain that everyone is here to learn, and if the students knew all the answers, they wouldn't need to be here. Assure the group that it is perfectly all right for someone to not know the answer to a question, and point out that if given enough time and encouragement, the learner is likely to come up with a very reasonable answer. Establish trust within the group and between you and the group.

An electronic pamphlet, *Tips for Leading a Case Discussion*, on the Florida State University College of Medicine website, emphasizes that the effective leader shows the students how smart they are, rather than how smart he is—"the guide by the side," not "the sage on the stage." The successful case discussion leader does not just talk and teach; he listens, questions, and listens again.

Exercise is good for the developing mind. When asking questions, emphasize those that require a higher level of thinking—analysis, synthesis, and evaluation. (See Bloom's Taxonomy in Chapter 3, Setting Goals and Objectives.)

Check out the room and set-up

If you are not familiar with the conference room you will be using, check it out in advance. If you plan to use a whiteboard or flip chart, make sure one is available, with appropriate markers. In a small room, there usually is no podium and no microphone, and as leader, you have the option of sitting or standing wherever you want. Plan how you will track the time. Is there a good place to position yourself from where you can see the wall clock without looking over your shoulder? Will you look at your watch or take it off and lay it on the table? Will you sit, stand or walk around the room? The choice is yours. When the person in charge sits, it makes the atmosphere less formal and more relaxed. A standing leader commands more authority and is more easily seen by all members of the group. A facilitator who walks around the room becomes part of the team—a leader wandering among his followers. Walking about can heighten teacher-learner interaction and can help keep people awake. On the other hand, walking around the *outside* of a conference table or circle of chairs will position the leader behind some of the learners, and it can be discomforting to have someone standing behind you. Decide which method best fits your style, the group's needs, and the physical layout of the room.

Get everyone involved

In a small group, it is not difficult to keep track of who has and who has not contributed; in a large group, this can be difficult. In either case, do not let a few verbal or assertive students dominate the group. Call on those who have not contributed. Use open-ended questions. Give clues and rephrase questions. A few moments of silence while a student thinks should not be threatening, but do not let the learner sit in silence so long as to be embarrassed. Be supportive.

The teacher does not have to be the "answer man." You can redirect some questions to the group. This heightens involvement and encourages the learners to think things through.

One way to encourage all learners to get involved is to ask the group if anyone has any questions for the presenter. Unless the reason for the question is obvious, ask the learner to explain why he posed that question. Sometimes, this type of questioning can go on excessively, with trivial or irrelevant questions, so the leader needs to recognize when to end the questioning and move on to the discussion.

Have students explain their answers

Give students the opportunities and incentives to explain their answers. When a student offers a diagnosis or suggests a test or treatment, you may want to ask why, even if the proposal is correct. You will not do this all the time, but if the point is not self-evident or if you think some of the learners may not understand the underlying reasoning, it is wise to ask the learner to explain. Correct mistakes in a supportive, nonjudgmental manner. In responding to an incorrect answer, rather than simply saying "No," try something like, "That's an interesting thought, but if that were the case, what else would you expect to see?"

Keep the group interested, challenged, and focused

Keep control of the group, and keep the learners properly focused. Do not let the group deteriorate to a free-for-all, and do not let sidebar conversations interfere with the dynamics of the group. If the discussion is getting off focus or becoming bogged down in irrelevant question or distracting arguments, take charge and get everyone back on track. "There are some interesting questions being raised here, but I don't think they're relevant to this case..." or "Those are all interesting points, and some are very valid, but they're not likely to help us resolve this case."

Variation heightens interest. At appropriate points in the discussion, switch from the clinical approach to the underlying basic science. Bring up issues of evidence-based medicine, medical economics, and cost-benefit analysis. Examine social and behavioral aspects of the case. But do all this as it relates to the case. Do not go off on unrelated tangents.

Summarize and provide feedback

At the conclusion, summarize the case, reviewing not only content, such as the presenting complaints, the disease and treatment, but also the analytical and reasoning processes that led to the group's decisions. If the group missed the diagnosis, explore why. You can do this, or you can ask for a volunteer. Give the learners some feedback about their performance as a group.

SUMMARY

The three major questions of format to be decided in planning a case discussion are whether or not you will know the case in advance, whether or not to interrupt the presenter during the presentation, and whether to call on individuals or to depend only on volunteers. Regardless of format, the effective teacher orients the learners and sets the ground rules. He asks questions and listens to the answers, directs and leads the discussion, gets every member of the group involved, and provides constructive feedback without embarrassing the student.

ACTION STEPS

- Decide on the format and strategies you will use
- Check out the room setup
- Orient the learners, set the ground rules, and establish a milieu of trust and comfort
- In a small group, get everyone involved; in any size group, do not let a few learners monopolize the discussion
- Handle questions and answers supportively

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Answers to reflection exercises

Hearing the entire case before asking questions or initiating discussion allows you to identify and focus in on the important issues, with less chance of going down the wrong path. This approach is more time efficient, less disconcerting to the presenter, and allows more time for discussion of evidence-based data.

Interrupting the presentation for questions and discussion models real-time clinical reasoning; is more exciting; and gets the audience involved early. It also facilitates questions and clarification during the presentation and facilitates evaluation of the learners' thinking process.

Chapter 17

Feedback and Evaluation

"The teacher's feedback—reinforcing what has been done correctly and re-teaching what has not—is key." Nancy Protheroe

CHAPTER OUTLINE

OBJECTIVES

After studying this chapter, the reader should be able to:

- discuss the differences between feedback and evaluation
- identify when, where, and how to provide feedback
- identify the barriers to providing feedback
- describe at least three instruments for evaluation

INTRODUCTION

As far back as 1979, Eichna wrote that we were training physicians who had never been observed, and in 1983, Ende noted that even when medical trainees were observed, they rarely received feedback about their performances, although guidelines for doing this already existed in the business and educational literature. The terms "feedback" and "evaluation" are often used interchangeably in clinical medical education, an inaccuracy that partially explains the confusion surrounding feedback and the paucity of feedback provided to learners. While feedback and evaluation are closely related and occasionally merge, they are distinct from one another.

FEEDBACK

Feedback was first used mechanically to control the action of machines, for example, using feedback about the speed and direction of a rocket to modify these parameters so as to strike the target. Subsequently, it was recognized that the principles of feedback apply to learning, and it was quickly appreciated

that feedback not only modifies the current action of the learner, but it also can affect general and future performance—the very essence of education. Van de Ridder acknowledges the lack of consensus on a single definition of feedback in clinical education and suggests the following definition: "Specific information about the comparison between a trainee's observed performance and a standard, given with the intent to improve the trainee's performance." Ende defines appropriate feedback as "an informed, non-evaluative, objective appraisal of performance intended to improve clinical skills." Feedback is formative and presents information rather than judgment. Feedback relies on verbs and nouns. "You didn't obtain spinal fluid on your first attempt because the needle was directed laterally instead of centrally."

Providing feedback is an essential component of medical education and allows learners to know how they are performing. Formative feedback guides future learning, provides reassurance about competency, reinforces positive values and behaviors, and promotes reflection. Most learners are eager for information regarding their strengths and weaknesses. In the absence of objective feedback, students depend on exam scores to know how they are doing, and this focuses their learning on memorization of information. And if they do not receive feedback from their instructors, they generate their own. "He didn't say anything, so I must have done it correctly." "He looks displeased, so I must have presented poorly."

Unlike the summative process of evaluation (see below), feedback should be targeted to specific behaviors, both those at which the learner excels and those that require improvement. Feedback should be immediate and formative. Its purpose is to provide information to the learner in order to help him meet the objectives of the assignment or the rotation. Alerting learners early in the rotation that regular feedback will be provided will help prepare them for the feedback process.

Effective feedback needs to be planned and delivered in a compassionate, non-judgmental manner. Set aside time for the encounter, which should be unhurried, comfortable, and private. Teacher and learner should work together with agreed upon common goals. Feedback should be based on direct observation. If you have not observed, you cannot provide feedback. Secondhand data (properly labeled as such) may be part of the evaluation, but it is rarely part of feedback. Do not overwhelm the learner with feedback. Keep the feedback to a manageable volume, usually just a few points, and focus on behaviors that can change.

Feedback should be factual and descriptive, and as specific as possible. Stay with the facts, describe exactly what the learner did, and review the consequences. Ask the learner to reflect on the experience and analyze what went well and what did not. Be careful about assuming or implying motives, intentions, and attitudes. Distinguish between data and interpretations. While feedback should be as non-judgmental as possible, it is rarely possible to totally

avoid all judgments. Even Ende, a strong proponent of non-evaluative feedback, concedes, "Actually, there is almost always a judgment assigned to feedback information." He notes that in the clinical setting, positive feedback sounds "good" and negative or constructive feedback is perceived as "bad."

Branch and Paranjape described three types of feedback operationally. *Informal feedback* (aka brief feedback) is that which occurs *ad hoc*, on a daily basis to an individual learner and is related to an observed behavior or event. It can be as concise as pointing out an excellent differential diagnosis or helping to clarify and improve upon an order written in a patient's chart. *Formal feedback* involves setting aside specific times for feedback, for example, in the outpatient setting at the conclusion of the case discussion or on the ward at the conclusion of a case presentation. *Scheduled feedback* is provided at strategic points during a rotation, usually mid-rotation, and serves to provide more detailed information regarding areas of strengths and weaknesses. It is intended to provide information to the learner so that he can improve prior to the end of the rotation, when the final evaluation is performed.

Sometimes it is helpful to label feedback as such, that is, to explain to the learner that you are providing feedback. Often, students do not recognize that when you say a presentation was well organized and on target, that you are providing feedback, and when you point out that the presentation did not mention what medications the patient had taken, that also is feedback.

There are several formats and systems for organizing feedback. The *sandwich format* refers to good news (positive feedback), bad news (need for change), and good news (more was done correctly than incorrectly). Another format is: 1) the learner's perception (How do you feel the examination went, or what do you think went well and what do you think could be improved?); 2) the teacher's feedback ("Your physical exam was appropriate, except that in a comatose patient, you also have to inspect the sacral area for edema and bed sores."); 3) and finally, agreement ("So, we agree that the physical exam is not always exactly the same for every patient, and you need to decide what is appropriate for each patient.").

While most of the literature on feedback focuses on verbal feedback, feedback can also be written. Schum et al. reported that the majority of medical students considered written feedback more timely, constructive, and concrete than verbal feedback. Colletti found that surgical preceptors gave more negative feedback and lower grades in written *evaluations* than in face-to-face verbal sessions.

If feedback is essential for medical learners to achieve the competencies they will need as physicians, then as clinician-educators, it is our responsibility to provide that feedback. It is important to offer accurate descriptions of errors, in order for the trainee to practice self-reflection and improve. It is equally important to provide positive reinforcement, so that a learner will know when he

is performing well. It is the responsibility of the attending physician to prepare the learner to receive feedback and to provide it.

Table 32.
Proper and Improper Techniques for Providing Feedback

Proper technique	Improper technique
Based on direct observations	Based on hearsay
Respectful and supportive	Disrespectful or antagonistic
Sensitive	Insensitive
Non-judgmental	Judgmental
Focus on behavior	Focus on personality
Focus on specifics	Deal in generalities
Goal-based	Not goal-based
Thoughts and feelings of learner elicited and considered	Thoughts and feelings of learner not elicited or ignored
Suggestions for improvement	No suggestions for improvement

After Hewson and Little.

Providing negative feedback

Delivering negative feedback ("constructive criticism") is challenging. Ende pointed out that it is difficult, if not impossible, to provide negative feedback without engendering some disappointment or embarrassment. Both teacher and learner may have concerns about negative feedback. The teacher may fear that negative feedback will injure the student's feelings, ego, or self-confidence. He may be concerned that it will impair his (the teacher's) popularity. Vanishing feedback is a term in personnel management: the supervisor wants to address the problem directly , but fails to and only talks around the issue. The trainee, fearing a negative evaluation, reinforces the supervisor's avoidance. The reluctance of clinicians to provide feedback about major behavioral issues such as unprofessional conduct was documented by Burack et al.

Planning and rehearsing are important for delivering negative feedback. Arrange for a private venue. Sensitivity and kindness are paramount. Ask yourself how you would want the teacher to handle the situation if the learner were your son or daughter. Just as you have developed a language style and a repertoire of phrases for breaking bad news to patients and parents, you need to do the same for giving bad news to a learner. Express the deficiency in terms of performance not personality. Rather than, "You are insensitive," say, "Remarks like, 'That's the way we do it here, and you're just going to have to wait,' don't really address the problem or help the patient deal with his distress." When addressing perceptions, use the "I" word. Saying that the learner appeared angry implies that this is an irrefutable fact for all to see and can be hard for the learner to accept. Saying, "I had the feeling that you were angry,"

is less accusatory and can help open the way for a dialogue about how the learner actually felt. Other examples of improving feedback are provided in Table 33.

Table 33.
Examples of Poor Feedback and How to Improve Them

Poor feedback	Improved feedback
That was an excellent presentation. Great job.	That presentation was very well organized and covered all the important points without being excessively long.
Your differential diagnosis was poor.	Your differential diagnosis didn't include the possibility that these complaints were functional.
That was not a very good examination of the chest.	Your examination of the chest did not include auscultation of the bases posteriorly.
You seemed pretty callous and uncaring in the way you brushed off that last question.	Your response to the mother's last question was brief, and it seemed to me that it left her unsettled.
You looked quite nervous and uncomfortable telling the patient the results of the latest scan.	I noticed that you didn't look at the patient when you told her the results of the scan and your voice shook a bit. Do you recall that, and would you like to reflect on it?

Barriers to providing feedback

Other than concern over giving negative feedback, there are several barriers to providing feedback in the medical setting. Some of these include: inadequate time, failure to identify clear goals and objectives, failure to observe learners, and lack of skill in providing feedback.

Failure to observe a learner can lead to missed opportunities in providing feedback. The chaotic pace of daily events and the reluctance of teachers to provide critical feedback often results in the failure of attending physicians to educate learners regarding their performance. In order for feedback to be useful it needs to be timely and specific. Therefore, the attending physician must be readily accessible and able to observe the behaviors of medical trainees in order to provide effective feedback. The feedback should focus on specific behaviors. However, it should be limited in quantity so as not to overwhelm the learner, and it should be delivered in nonjudgmental language.

EVALUATION

Evaluation (also referred to as assessment) is summative. It is a teacher's judgment of whether or not, or how well or how poorly, a learner met a goal or standard. Evaluation is often based on comparison to defined standards or to performance of peers. Evaluation relies on adverbs and adjectives. "Your performance was generally excellent but with a few areas of weakness." Unlike feedback, evaluation is not always based on direct observation. It may be based on review of the learner's written history and physical examination, on information from other observers (including patients and parents), or on the results of a written examination. There are at least three major purposes for evaluation of the clinical learner: 1) provide the learner with motivation and direction for future learning; 2) protect patients and the public by identifying and not advancing incompetent learners; 3) provide a basis for selecting among applicants for further training, i.e. residency and fellowship.

Table 34.
Comparison of Feedback and Evaluation

Feedback	Evaluation
Formative	Summative
Timely and frequently; usually *ad hoc*	Scheduled, ideally at midpoint and at the end of the rotation
Focuses on facts and behavior; specific	Provides a general overview of a trainee's performance
Based on direct observation	Based on multiple sources, e.g. direct observation, input from multiple observers, exam scores
Nonjudgmental	Includes judgment and comparison to norms or peers
Intended to improve performance	Intended to determine and document pass or fail and final grade
Usually verbal, face-to-face	Verbal and/or written
Ends with detailed instructions on improvement	Opportunity for improvement for given rotation or assignment has passed

Utilize the evaluation strategies that best match the behaviors being evaluated. For example, written examinations are effective for evaluating knowledge, but direct observation is much better for evaluating clinical skills. Observation and reports from others (e.g. nurses, patients) are helpful for judging professionalism. Oral discussion may be best for evaluating attitudes. Whenever possible, use multiple methods.

Specific instruments for evaluation

Direct observation of patient care is the key technique for evaluation of clinical abilities and competencies. The use of a *checklist* in conjunction with

direct observation adds a dimension of accuracy and uniformity to the evaluation process. Such lists are prepared in advance of the observation, and the observer checks off each component of the activity, noting whether it was done, and if so, how well.

Reviews of videotapes of learners' encounters with patients, real or simulated (see below), can be a dramatic and effective way of showing the learners their strengths and weaknesses (feedback), and also can be helpful in evaluating and grading learners. The videotape review permits accurate quantitative and qualitative analysis of each learner's performance, especially when compared with a predetermined checklist or set of standards. It can obviate problems with the teacher's memory of the interaction. Also, in real-time observation, the teacher may be focused on the learner and miss the patient's expression or *vice versa*.

The GRADE mnemonic has been proposed as a structure and strategy for evaluation in the clinical setting (Langlois).

Get ready
Review expectations with learner
Assess
Discuss assessment at mid-point
End with a grade

As Langlois and Thatch emphasize, evaluation is an ongoing process, not simply something to be done at the end of the assignment. The teacher gets ready by reviewing the goals and objectives for the rotation and clarifying his expectations for the learners. The teacher also should review the evaluation form that he will be required to complete at the end of the rotation. He should then review this with the learner. Assessment is ongoing, usually based primarily on observation. It is helpful for the teacher to keep notes of the learner's performance, including specific examples. The teacher should provide frequent feedback to the learner. At around the mid-point of the rotation, it is important for the teacher and learner to review the performance and decide on any areas that need improvement. At the end of the rotation, time should be scheduled for final feedback and an overall evaluation.

Simulation is a rapidly growing field for both teaching and evaluating learners. Simulation involves two distinct educational modalities: 1) scenarios with high-tech mannequins that can simulate a patient's physiology, from heart rate and rhythm to pupil size and urine output; and 2) standardized patients, who are real people pretending to be patients or parents. Today's standardized patients are so highly trained that experienced practitioners cannot distinguish them from real patients. One of the great strengths of simulation is the debriefing that follows the activity. The debriefing is well-crafted feedback, in a safe environment. Simulation can be used to evaluate performance and

ability—from treating a cardiac arrest to telling a mother and father their child has a fatal illness. Simulation is an ideal way to measure competency without endangering the patient.

The *Objective Structured Clinical Examination* (OSCE) is a particular application of simulation in which the student examines a standardized patient while an observer uses a checklist to document what the learner does and to evaluate how well or how poorly he does it. Usually, the learner moves from station to station, examining several mock-patients serially. Each station generally focuses on one particular problem and looks for a specific set of behaviors in regards to that problem.

The *Clinical Performance Examination* (CPX) is similar to the OSCE, but the student's performance is evaluated and scored by the standardized patient (against criteria established by clinical faculty) rather than by an observer. The CPX is a practical test of basic clinical and professional skills, and compared to the OSCE, assesses a wider range of skills with each patient.

The RIME model, described in Chapter 7, can be used to evaluate the learner's level of function. At the lowest level, the learner acts simply as a ***R****eporter*, obtaining data and recording it. At the next level, he learns to ***I****nterpret* the data. Moving up, the learner functions as a ***M****anager*, generating a diagnostic or therapeutic plan. Finally, at the highest level, the learner becomes an **E**ducator, searching the literature for evidence pertinent to the patient and teaching the patient and other health care professionals. The evaluator decides where along this continuum the learner is functioning.

The *360º evaluation*, a common tool in human resource management, refers to obtaining information about a learner's performance from a circle of observers, including those not considered the learners' teachers, for example, nurses and other ward personnel, patients, and their families. As these individuals have not been trained to evaluate medical students or physicians, their input must be interpreted very carefully and cannot always be taken at face value. Ask for specific examples to illustrate statements such as, "He is really great," or, "He is okay but a little lazy." Nevertheless, the 360º evaluation augments the teacher's observations and can be helpful in uncovering areas of concern of which the teacher was unaware, and in documenting a learner's strengths or weakness. The 360º evaluation can be especially useful in providing information about professionalism. Information from the 360º evaluation should be shared with the learner.

Reflection exercise. Answers at end of chapter.
Compare and contrast feedback and evaluation in regards to purpose, timing, and technique.

SUMMARY

Feedback is the provision of non-judgmental information about performance in a timely manner so as to help the learner improve. Evaluation is the provision of an overall assessment of competency, usually with a grade, at the conclusion of the rotation or assignment. The clinician-educator should always strive to provide meaningful feedback to his learners, in a supportive and sensitive manner, based primarily on direct observation. In preparation for a final evaluation, the teacher should keep notes of his observations during the rotation.

ACTION STEPS

- Provide feedback in a timely fashion.
- When providing feedback, cite specific facts or behaviors.
- Be constructive and sensitive.
- Allow the trainee to participate in the feedback.
- During the rotation, assess your learners and gather data in preparation for a summative evaluation at the end of the rotation.

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Answers to reflection exercise

Feedback is designed to help the student improve, and evaluation is designed to document the level of achievement and competency.

Feedback should be frequent and timely, while evaluation is at the end of the assignment or rotation.

Feedback is formative. It is as non-judgmental and as sensitive as is possible. It is usually verbal and face-to-face. Evaluation is summative. It judges and grades the learner against set standards or against his peers. It is usually written, but may be reviewed with the learner.

Chapter 18

Educational Scholarship

"Originality is the essence of true scholarship. Creativity is the soul of the true scholar." Nnamdi Azikiwe

CHAPTER OUTLINE
OBJECTIVES
INTRODUCTION
STANDARDS OF SCHOLARLY WORK
CONCEPTUAL FRAMEWORK: QUANTITY, QUALITY, AND ENGAGEMENT WITH THE EDUCATIONAL COMMUNITY
THREE PHASE MODEL FOR TRANSFORMING YOUR TEACHING INTO SCHOLARSHIP
SUMMARY
ACTION STEPS

OBJECTIVES
After studying this chapter, the reader should be able to:
- identify six standards against which scholarly work can be evaluated
- describe a framework, other than the traditional curriculum vitae, to document educational scholarship
- develop an outline to transform a teaching activity into scholarship using the 3 phase model

INTRODUCTION

Scholarship in the academic setting has traditionally been defined very narrowly and is usually related to the number and quality of publications and the number and size of grants received. This traditional definition may decrease the legitimacy of the full scope of academic work, including educational scholarship. In an effort to define scholarship in a way to avoid the "teaching versus research" conflict, Boyer defined scholarship as having four separate, yet overlapping dimensions. These are: 1) discovery (traditional research); 2) integration (making connections across disciplines); 3) application (interaction between research and practice); and 4) teaching (creation of new knowledge about teaching and learning). Boyer argued that all four dimensions of scholarship should be rewarded. Over the years, a "crisis of missions" has developed related to medical school faculty roles and rewards as research

dominance has emerged as a priority in medical schools and as the dependence on clinical revenue for operating budgets has heightened (Simpson). Richlin has pointed out that as early as 1992, some medical schools were encouraging faculty to provide evidence of their educational work in portfolio-like documents, and that by 2003, at least half of all medical schools showed that they valued the educational activities of their faculty, and many provided instruction as to how faculty members should assemble and present their educational records for promotion. However, debate continues in many promotion and tenure committees about the definition of educational scholarship.

To elucidate further the relationship between teaching and scholarship, it is helpful to define teaching, scholarly teaching, and scholarship in teaching. *Teaching* is the promotion of learning. Teaching, in itself, is not scholarship. One can be an outstanding teacher without either being a scholarly educator or making any contribution to the scholarship of teaching (Hafler). *Scholarly teaching* is the application of the principles and theories of education. According to Richlin, a scholarly teacher strives to understand and apply theories of learning to his teaching, curriculum development and evaluation methods. He reflects on his teaching, invites feedback from learners, and makes changes as appropriate. *Educational scholarship* requires dissemination of knowledge, experience, or a tangible product to the educational community. To further broaden the definition of scholarship of teaching, Schulman suggested that "An act of intelligence or of artistic creation becomes scholarship when it possesses at least three attributes: it becomes public; it becomes an object of critical review and evaluation by members of one's community; and members of one's community begin to use, build upon and develop those acts of mind and creation."

STANDARDS OF SCHOLARLY WORK

Building on the original work of Boyer, Glassick and colleagues identified six standards against which all scholarly work, including teaching, should be evaluated. These include: 1) clear goals, 2) adequate preparation, 3) appropriate methods, 4) significant results, 5) effective presentation, and 6) reflective critique.

An educational scholar must be clear about the aims of his work. He should state the purposes of his work accurately within all relevant contexts. In addition, the scholar should define objectives that are realistic, specific, measurable, and attainable. (See Chapter 3.) Are these objectives consistent with the stated leadership philosophy? Are important questions in the field of education identified? Do goals reflect the needs of the profession, learners, and society?

One of the most basic aspects of scholarly work is adequate preparation. A clinician-educator should continually update and expand his knowledge in

educational theories, findings from educational research studies, teaching methodologies and evaluation principles. No matter what the specialty, every scholar must keep up with the literature in the field in which he works. This can be accomplished through reading books and peer reviewed articles related to teaching, attending faculty development offerings locally, regionally, or nationally or even by obtaining an advanced degree in education. Knowledge alone, however, is not sufficient; one must also have the necessary skills to accomplish the goals set forth. Scholarly preparation also requires adequate resources to achieve the stated goals. Can the resources necessary to carry out the project or move it forward be brought together?

When designing learning experiences or research projects a systematic framework should be applied so that findings can be shared with the teaching community and built upon by others. (See Chapter 5.) Utilizing appropriate methodology engenders integrity of, and confidence in, the results. It also increases the likelihood that colleagues will understand and accept the project. Frameworks provide scholarly scaffolding to learning experiences.

Any scholarly activity must be judged by the significance of its results. It should contribute to knowledge, stimulate learning, or help solve problems. Teaching cannot be judged merely by how well the teacher performs but by the outcome of the scholarly process. Learning experiences should be evaluated beyond satisfaction of the participants. Were the goals of the project achieved? Learning outcomes should be determined and linked to patient outcomes if at all possible. Did the results add to the field of education? For example, a new way of teaching evidence-based medicine might serve as a model for colleagues at the teacher's institution or others. Does the work open new areas for further exploration and discovery? Originality increases this potential. A project that was creative in breaking down a traditional model and looking at things with a new perspective would be considered scholarly.

The importance of effective presentation is readily apparent when it comes to teaching. Results need to be shared so that others can learn or build upon the work. Findings should be disseminated to colleagues locally, regionally, and nationally through abstracts, papers, lectures, discussions, training materials, and workshops. When results are not shared, the teaching community cannot grow. The scholarly work should be communicated with clarity and integrity, utilizing effective organization and a suitable style. Teaching encounters, for example, should use images, metaphors, analogies, and examples to enhance learning and retention of the material.

The final standard is reflective critique, thinking about one's own work, seeking the opinion of others, and learning from this process so that scholarship itself can be improved. The *sine quo non* of academic scholarship is peer evaluation. The scholar should take responsibility for getting feedback on his work. Learner feedback alone is not enough. Peers should review teaching activities, including courses, lectures, presentations, and written and

computerized materials. Have a colleague provide a peer review of one of your lectures or other teaching sessions. Send your course outline to a colleague at another institution and get feedback on what could be improved. Once feedback has been received from a variety of sources, use this information to improve the quality of your work. In addition, observe other teachers and their styles. Reflect on how you might incorporate their effective strategies into your own teaching repertoire.

Reflection exercise #1. Answers at end of chapter.
You are discussing educational scholarship with a colleague. What are the six standards against which all scholarly work should be evaluated? Provide an example for each standard that you could incorporate over the next few months.

CONCEPTUAL FRAMEWORK: QUANTITY, QUALITY, AND ENGAGEMENT WITH THE EDUCATIONAL COMMUNITY

The curriculum vitae (CV), Latin for course of life, is the primary documentation tool for scholarship in the academic medical center. This tool is often inadequate to document scholarly activities in teaching, and the educational portfolio has been used as an adjunct method to record educational contributions not usually listed in a CV. The following five categories have been identified from the literature as the major areas of educational contribution: direct teaching; curriculum development; advising and mentoring; educational administration and leadership; and learner assessment.

The Summary Report and Findings of the American Association of Medical Colleges (AAMC) Group on Educational Affairs Consensus Conference on Educational Scholarship provides examples of documentation for each of these. The Guidebook for Clerkship Directors, a web-based document, also has resources from a number of academic institutions in the chapter entitled “Educational Scholarship” (Hafler).

Regardless of the type of portfolio or category of educational engagement, evidence of excellence must document both the quantity and the quality of educational activities. Quantity is a descriptive documentation of the types and frequencies of educational activities. Begin by making a list of all your teaching activities and the role you play in them, e.g. course director, lecturer, or developer, then make a list of all the data related to the quality of these endeavors. Include comparative measures, when available. Be as descriptive as possible for quantity and quality. Include data such as: number of learners, time spent in activity, frequency of sessions, satisfaction, objectives achieved, transfer of learning to work environment, awards, sustained or increased numbers of participants, examination scores, and peer review, if utilized. Keep everything that can be used to demonstrate the quality of your work (e.g. emails, cards, or letters from learners) accessible in a “file drawer.” Update

your CV and educational portfolio at least every 3 months. One of the best ways to find methods to present educational activities is to review other educator's portfolios and CV's. If your institution does not utilize a portfolio, seek out colleagues at other institutions who use this type of documentation for teaching and ask if you can review their portfolios.

The next step is to document how various activities were based on the literature, educational theory, and best practices. Use other databases in addition to PubMed, for example, ERIC (Educational Resources Information Center). By documenting this component of application, an activity becomes scholarly. For example, "In the process of developing an evaluation tool on resident teaching skills, I applied the Dreyfus framework of professional skill acquisition to the response categories of each question (Dreyfus and Dreyfus)." Finally, because without dissemination, there is no scholarship, you need to export your material. Start with colleagues in your department, share your creation with other departments at your institution, discuss the process through an abstract, workshop or platform presentation at a regional meeting, and finally, send the product to a web-based repository for peer evaluation.

Reflection exercise #2. Answers at end of chapter.
You are preparing for promotion and feel that your CV does not adequately reflect the quantity, quality, and breadth of your teaching endeavors. You have chosen to create an educational portfolio.

a) What are the 5 categories that have been identified in the literature as the major areas of educational contribution?

b) Evidence of educational excellence must document the quantity and quality of teaching activities. What should be included, if available, for student lectures?

THREE PHASE MODEL FOR TRANFSORMING YOUR TEACHING INTO SCHOLARSHIP

Hafler et al. described a three-phase model for transforming teaching into scholarship. Phase 1 is educational activities, describing what, where, when, and how you teach. Phase 2 is scholarly approach, collecting data to improve your teaching. Phase 3 is scholarship, sharing your findings so as to improve what the teaching community does. This model parallels the conceptual framework described above and breaks it down into definable steps.

Table 35.
Example of Hafler's 3 Phase Model Applied to a
Lecture Series in a Pediatrician's Educational Portfolio

Phase 1 Educational Activity	Phase 2 Scholarly Approach	Phase 3 Scholarship
Set of 4 one hour lectures given to ~ 4 pediatric residents/month on a required developmental rotation since 2001	Starting in the next academic year, incorporate team based learning, an effective teaching strategy described in the literature, into the lecture series. Collect feedback from the learners on satisfaction and perception of change in knowledge and/or skills. Measure changes in knowledge with an end of rotation exam and changes in skills utilizing a brief structured clinical observation checklist	Present findings at regional meeting in a workshop format

Dissemination of scholarly educational activities can occur at a variety of levels, from local to national and can utilize a variety of methods. These include: peer-reviewed or invited workshops or presentations; educational consultation to other programs; journal articles, book chapters and the development of other enduring materials, such as curriculum, evaluation tools, medical images, cases, test questions, educational videos. Enduring educational materials should be submitted to peer-reviewed web-based repositories, such as AAMC-MedEdPORTAL, HEAL (Health Education Assets Library), MERLOT (Multimedia Educational Resource for Learning and Online Teaching) and the Association of Pediatric Program Directors' (APPD) Share Warehouse.

Finally, as you continue to transform your teaching into scholarship, try to incorporate research into your activities. Develop testable hypotheses, gather data, analyze and reflect on the results, and most of all disseminate the findings. Seek out colleagues who are also interested in educational scholarship and collaborate on investigational projects. Seek out a leadership role in a national education group or specialty board. Offer to be a question writer for the American Board of Medical Specialties. Volunteer to review educational manuscripts or workshops for regional or national meetings. Apply for an editorial board position on a medical journal, *Pedia*Link, or the Pediatrics

Review and Education Program (PREP). Most of all, find a good mentor who can help guide you through your growth and development as an educator.

Reflection exercise #3. Answers at the end of the chapter.
Develop an outline to transform one of your teaching activities into scholarship using the 3 phase model.

SUMMARY

Being a superb teacher and spending a great deal of time in educational activities does not automatically make your teaching scholarly. Teaching activities become scholarly as they follow the science of education. Scholarly work can be evaluated against standards. Data should be collected on the quantity and quality of teaching endeavors and documented within both a CV and an educational portfolio. Only with dissemination, however, does true scholarship occur. The three phase model of transformation can be used to facilitate conversion of educational activities into educational scholarship.

ACTION STEPS

- Write a personal statement outlining your goals and philosophy of teaching
- Take a course or look into the literature on medical education
- Collect data on your teaching activities
- Have your teaching peer reviewed
- Develop an educational portfolio
- Disseminate your work to other educators, at least within your own section or department

References and resources

AAMC Group on Educational Affairs Consensus Conference on Educational Scholarship provides. Advancing Educators and Education: Defining the Components and Evidence of Educational Scholarship. Available at https://services.aamc.org/Publications/showfile.cfm?file=version86.pdf&prd_id=196&prv_id=237&pdf_id=86. Accessed January 17, 2008.

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Dreyfus H and Dreyfus S. *Mind over Machine* New York, NY. Free Press. 1986.

Glassick CE, Huber MR, Maeroff GI. Scholarship Assessed-Evaluation of the Professoriate. San Francisco, CA: Jossey-Bass, 1997.

Hafler JP, Blanco MA, Fincher RM, Lovejoy FH, Morzinski JA. Educational Scholarship In: Fincher RM, editor. Guidebook for Clerkship Directors. 3rd edition. Available at http://familymed.uthscsa.edu/ACE/chapter14.htm. Accessed on January 8, 2008.

Richlin L. Scholarly Teaching and the Scholarship of Teaching. In: Kreber C, editor. Scholarship Revisited: Perspectives on the Scholarship of Teaching. San Francisco, CA. Jossey-Bass. 2001.

Schulman LS. Taking Learning Seriously. Change. 1999;31:10-17.

Simpson D, et al. Advancing Educators and Education: Defining the Components and Evidence of Educational Scholarship: Summary Report and Findings from the AAMC Group on Educational Affairs Consensus Conference on Educational Scholarship. Association of American Medical Colleges. 2008.

Answers to reflection exercises

1.

Clear goals: I will have goals and objectives for all my medical student lectures.
Adequate preparation: I will attend a workshop on improving my large group lecturing skills.
Appropriate methods: I will use team-based learning in one of my medical student lectures.
Significant results: I will evaluate the use of team-based learning on student retention of the material.
Effective presentation: I will discuss the results of team-based learning with other faculty in my section.
Reflective critique: I will obtain feedback from the learners on the team-based learning session and have a colleague peer review my teaching techniques. I will reflect on the findings and make changes as necessary to improve outcomes of the next teaching session.

2.

a. Direct teaching, curriculum development, advising/mentoring, educational administration/leadership, and learner assessment.
b. Frequency of lectures, number of learners, peer review results, learner feedback, comparative measures to other faculty based on learner feedback, and outcomes on testing or other assessment measures related to your topic.

3.
Educational activity: develop a set of paper cases with answers covering the content specifications of the American Board of Pediatrics.

Scholarly approach: each case will have learning objectives and questions to stimulate discussion. I will contact individuals within my institution who have written cases and obtain resources and guidance on case writing. I will field test the cases with a select group of residents at different levels of training, pediatricians in the community and with subject matter experts at other institutions. Cases will be refined based on feedback. I will obtain data from the Program Director of our residency to determine if scores on the boards improve in endocrinology over time.

Scholarship: I will submit the cases to the Association of Pediatric Program Directors' (APPD) Share Warehouse.

Chapter 19

Educational Resources

RESOURCES TO HELP IMPROVE YOUR TEACHING
"*He who dares to teach must never cease to learn*." John Cotton Dana.

Websites
How can I develop or improve my teaching?
http://www.provost.wisc.edu/archives/ccae/MOO/formative.html

Teaching Tips Index. Site is packed with all types of information on teaching from using questions effectively to teaching techniques.
http://honolulu.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/teachtip.htm#learn

Instructional tips. This website contains a variety of instructional tips including information on lecturing and small group teaching strategies.
http://www.uab.edu/uasomume/cdm/tips.htm

The One Minute Preceptor: Microskills of Clinical Teaching. This site describes the one minute preceptor in detail, utilizing case examples and questions.
http://www.im.org/facdev/gimfd/ProjectMaterial/MeetingPresentFiles/Strategies%20Tampa%20Sarkin.htm

University of Medicine and Dentistry of New Jersey: Center for Teaching Excellence. Provides multiple links to a large number of resources related to traditional teaching, active learning and clinical education.
http://cte.umdnj.edu/resource_center/index.cfm

General Internal Medicine Faculty Development Project. This website contains PowerPoint presentations, handouts and overviews of a variety of teaching methods in all types of settings.
http://www.im.org/facdev/gimfd/MeetingOverview.shtml

Guidebook for Clerkship Directors – 3rd Edition. Excellent resource for all teachers not just clerkship directors.
http://familymed.uthscsa.edu/ACE/guidebook.htm

Council on Medical Student Education in Pediatrics: COMSEP. This website is dedicated to medical student education with resources for teaching and faculty development.
http://www.comsep.org/index.htm

The Ambulatory Pediatric Association Educational Guidelines. Site has objectives for residents, evaluation forms, and faculty development tools.
http://www.ambpeds.org/guidelines/index.cfm

The Resident's Teaching Skills Web Site. University of California Irvine College of Medicine.
www.ucimc.netouch.com

Preceptor Development e-learning Program. Has modules on a variety of educational topics such as: feedback and evaluation, teaching at the bedside and the effective preceptor.
http://www.mahec.net/pdp/e-Learning_Tools.asp

Twelve active learning strategies to use with PowerPoint.
http://www1.umn.edu/ohr/teachlearn/tutorials/powerpoint/learning.html

How do I conduct a review of a colleague's teaching?
http://www.provost.wisc.edu/archives/ccae/MOO/reviewer.html

Constructing Written Test Questions for the Basic and Clinical Sciences – 3rd edition from the National Board of Medical Examiners.
http://www.nbme.org/PDF/ItemWriting_2003/2003IWGwhole.pdf

Texts

Whitman N. There is no gene for good teaching: a handbook on lecturing for medical teachers. 1982. As of June, 2007, available through Dr. Whitman at University of Utah School of Medicine, Department of Family and Preventive Medicine.

Whitman N, Schwenk TL. A handbook for group discussion leaders: alternatives to lecturing medical students to death. 1983. As of June, 2007, available through Dr. Whitman at University of Utah School of Medicine, Department of Family and Preventive Medicine.

Whitman N, Schwenk TL. Preceptors as teachers: a guide to clinical teaching. 1985. As of, June, 2007, available through Dr. Whitman at University of Utah School of Medicine, Department of Family and Preventive Medicine.

Journals
Clinical Teacher
www.blackwell-synergy.com

Medical Education
www.blackwell-synergy.com

Medical Teacher
www.informaworld.com

Teaching and Learning in Medicine
www.siumed.edu/tlm

RESOURCES FOR USE WITH YOUR TEACHING
"*Don't reinvent the wheel, just realign it*" Anthony J. D'Angelo

Web sites
Medical Image Databases on the Internet. Project of the libraries at the University of Texas Health Sciences Center in San Antonio. Great list of databases for medical images and other material. Most, but not all, can be downloaded and used by anyone.
www.library.uthscsa.edu/internet/ImageDatabases.cfm

Neonatology photos through AAP.
www.pedialink.org/pedialink/neopix/index2.cfm

PicSearch. A general source of low resolution photos, including a broad range of medical topics. Not necessarily better than Google.
www.pixsearch.com

Atlas of Dermatology.
http://www.meddean.luc.edu/lumen/MedEd/medicine/dermatology/melton/atlas.htm

Auscultation assistant. Great site for heart sounds.
http://www.med.ucla.edu/wilkes/intro.html

Breastfeeding. A module for online learning on breastfeeding.
http://www.cwru.edu/med/breastfeeding/

Bright Future Cases (Behavior and Development). This site offers behavior and development cases that can be led by residents or faculty. Answers and handouts are provided for each case. Thirty-three cases in all.
http://www.pedicases.org/

Case Based Pediatrics for Medical Students and Residents.
http://www.hawaii.edu/medicine/pediatrics/pedtext/pedtext.html

Case studies in Environmental Health.
http://www.swcpeh.org/cases.htm

COMSEP (Council on Medical Student Education in Pediatrics). Provides goals and objectives for medical students on core pediatric rotations as well as cases to discuss (no answers) for this level of learner.
http://www.comsep.org/AboutUs/WelcomeToCOMSEP.htm

Computer Assisted Learning in Pediatrics. This site requires a fee (based on number of people using); has extensive library of pediatric cases for medical students.
http://www.clippcases.org/

Dental atlas.
http://www.drdorfman.com/index.php?fuseaction=atlas.display&at_id=40

Dermatlas. Excellent pictures that can be used in teaching.
http://dermatlas.med.jhmi.edu/derm/

Dermatologic Image Database.
http://tray.dermatology.uiowa.edu/DermImag.htm

Environmental Health.
http://www.cehn.org/cehn/trainingmanual/manual-contents.html

Eye Atlas.
http://www.eyeatlas.com/

Genetics in Primary Care. Three pediatric cases (with answers) emphasizing the importance of genetics in everyday patient encounters.
http://genes-r-us.uthscsa.edu/resources/genetics/primary_care.htm

General Pediatrics. General pediatrician's view of the Internet with lots of links to a variety of educational sites.
http://www.generalpediatrics.com/

Growth Charts. Contains some of the content used in the BMI teaching activity. http://www.cdc.gov/nccdphp/dnpa/growthcharts/training/modules/module1/text/mainmodules.htm

Health Education Assets Library. Offers pictures and videos. http://www.healcentral.org/index.jsp

Holistic medicine. Go to teaching toolbox for both one page summaries and complete chapters on common topics in general pediatrics. http://www.holistickids.org/

Immunizations. Great teaching site for immunizations. http://www2.edserv.musc.edu/tide/menu.lasso

MedEdPortal. Sponsored by the American Association of Medical Colleges, this site offers a wide variety of online teaching tools that can be used or downloaded free. www.aamc.org/mededportal.

Medical Student Site for Heart Sounds. http://www.medstudents.com.br/cardio/heartsounds/heartsou.htm.

Medical Student Site for Lung Sounds. http://www.medstudents.com.br/pneumo/lungsounds/lungsou.htm.

Normal and Abnormal EKG's and Heart Sounds. http://www.bioscience.org/atlases/heart/.

Oral Health. http://www.mchoralhealth.org/PediatricOH/.

Orthopedic Cases. http://gait.aidi.udel.edu/res695/homepage/pd_ortho/educate/clincase/clcasehp.htm.

Pedialink. Provides self-assessments for individualized learning plans, also has a new EBM learning module, as well as lots of resources. http://www.pedialink.org.

Pediatric Board Game. Targeted to medical students, although the harder questions can also challenge residents. http://msig.med.utah.edu/boardgame/.

Pediatric Cardiology.
http://www.kumc.edu/kumcpeds/cardiology/cardiology.html.

Pediatric Education. A great site with cases, discussions, learning points and additional links where one can learn more.
http://www.pediatriceducation.org/.

Pediatric Electrocardiogram of the Week. Offers weekly EKG's on Thursdays with the answers. There is also an archive of old cases.
http://www.paedcard.com/.

Pediatric Jeopardy. Provides a template for you to create your own questions.
http://www.virtualpediatrichospital.org/providers/PedJeopardy/instructions.shtml

Pediatric Nutrition Notes. Focused on student education.
http://www.hscbklyn.edu/peds/pednutrition.html.

Pediatric X-ray Cases. Excellent site with lots of X-ray cases. There are 7 volumes with virtually everything you can imagine.
http://www.hawaii.edu/medicine/pediatrics/pemxray/pemxray.html.

Pediatrics in Practice. Health promotion curriculum with modules, tools, manual with the answers and cases to illustrate points. Great resource for primary care issues. Also a case on advocacy.
http://www.pediatricsinpractice.org/.

Pneumatic Otoscopy Cases. Videos of pneumatic otoscopy.
http://www.aap.org/otitismedia/www/vc/ear/rvw/rvw1.cfm.

Quiz Star online quiz generator. At this site you can have learners take quizzes that you create. Does require some time (~ 1 hour) to learn how to use the site. Once the quiz is created, learners can log nto the site and the quiz and data are generated for you.
http://quizstar.4teachers.org/.

Respiratory Sounds.
http://www.rale.ca/.

SurveyMonkey. A survey tool with a free plain vanilla subscription, which includes the basic features of SurveyMonkey. It's a great option for individuals who don't need the advanced features. Unlike other services, there are no annoying banner ads on your surveys. In addition, all of your survey responses

remain absolutely confidential. Free subscribers are limited to a total of 10 questions and 100 responses per survey.]
http://www.surveymonkey.com/home.asp?bhcd2=1063049544.

University of Chicago Pritzker School of Medicine Pediatric Clerkship Curriculum Cases.
http://pedclerk.bsd.uchicago.edu/.

UTMB Otitis Media Cases.
http://www.utmb.edu/pedi_ed/AOM-Otitis/home.htm.

Virtual Children's Hospital.
http://www.vh.org/.

Virtual Stethoscope.
http://sprojects.mmi.mcgill.ca/mvs/mvsteth.htm.

Articles

Howard T. Additional resources for medical student educators: an annotated review. Acad Emerg Med. 2005;12:302.e11-302.e15

RESOURCES TO HELP DOCUMENT YOUR TEACHING

A group of Centurians were gathered at the base of the cross, and one said, "I understand that he was a great teacher." To which another added, "Yes, but what has he published?" Source unknown.

How can I show evidence of my teaching?
http://www.provost.wisc.edu/archives/ccae/MOO/summative.htm.

An example of what one medical school (Baylor College of Medicine in Houston, Texas) has done to support documentation of teaching excellence and to recognize such excellence. Explore especially the Fulbright and Jaworski Awards.
www.bcm.edu/fac-ed/educator_recognition.htm.

Teaching documentation guidelines. University of Illinois at Chicago.
www.uic.edu/depts/oaa/cetl/resources/tdr.htm.

This site is geared primarily to community teaching, but click on "The Educator's or Teaching Portfolio" for a nice discussion of the educator's portfolio in general.

http://depts.washington.edu/ccph/toolkit-teachport.html.

Documenting your Scholarship in Teaching. East Carolina University School of Medicine.
http://deptmed.med.som.jhmi.edu/faculty/body11.html.

The educator's portfolio. As more and more medical schools recognize excellence in teaching, educational scholarship, and educational research as a basis for promotion, documentation of teaching activities and excellence becomes paramount for those seeking academic promotion. The educator's portfolio is one way of achieving this.
Regan-Smith MG. Teaching portfolios: documenting teaching. J Cancer Educ. 1998;13:191-93.

Tigelaar DE, Dolmans DH, de Grave WS, Wolfhagen IH, van der Vleuten CP. Portfolio as a tool to stimulate teachers' reflections. Med Teach. 2006;28:277-82.

Speer AJ. Elnicki DM. Assessing the quality of teaching. Am J Med. 1999;106:381-84.

Coates WC, Hoggood H, Birnbaum A, Farrell SE, SAEM Undergraduate Education Committee. Faculty development: academic opportunities for emergency medicine faculty on education career tracks. Acad Emerg Med. 2003;10:1113-17.

Chapter 20

A Challenge to Go Forth and Teach

"A good teacher is like a candle - it consumes itself to light the way for others."
Unknown

Teaching is a challenge, and you should meet that challenge with enthusiasm, dedication, and innovation. Make teaching fun for both the learners and yourself. Try different teaching activities, explore new methods of interacting with learners, look for new ways of presenting your material, and experiment with different techniques for providing feedback. Become familiar and comfortable with a variety of ways to engage and teach your learners. The best teaching is learner-centered. Develop your own unique style, but always remember that the methods and activities you chose should be based primarily on the learners' needs rather than on your preferences.

Create something educational that didn't exist before, something that is yours—be it a lecture, a handout, a conference, or some other product or activity. If you are involved in a journal club, consider making it lighter by including articles from the lay press. If you sometimes bring food to rounds or to clinic, bring food from a different country or a different culture and talk about some health issues related to ethnicity or culture. On an inpatient service, let the senior resident on your team lead one of the case discussions, and critique his performance, in front of the group if it was great or in private if there was need for improvement. If feasible, arrange for a home visit to one of your patients or take your team to the clinical laboratory or to pathology.

If you want to improve your teaching, you have to work at it. And obviously, if you are reading this, you do want to improve your teaching skills. Read other materials. Explore some of the books, articles, and websites referenced in this book and especially in Chapter 19 on educational resources. Get as much feedback as you possibly can from your learners and your peers. Ask a colleague or an educational expert to observe some of your teaching sessions and give you an honest critique of your performance. Reflect on your performance, your learners' responses and progress, and any feedback from learners or peers.

There is so much that you can do. Go forth and teach.

Index

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Martin Lorin M.D. is Professor of Pediatrics and Vice Chairman for Educational Affairs with the Department of Pediatrics at Baylor College of Medicine. He has almost four decades of experience in medical education and is the recipient of numerous teaching awards. His current educational interests include the lecture as an effective teaching tool and the development of junior faculty as successful clinician-educators.