Introduction: The Uniqueness of Hospital Medicine

Teaching in the hospital setting is unique. The complexity and variability of patients require the hospital medicine educator (the attending physician) to adapt to the circumstances and be prepared to teach a wide range of clinical topics, while serving as a role model for an expanded patient care team. The attending is routinely required to interact with various components of the hospital system: the emergency department, the intensive care unit, the laboratory, the pharmacy, and the social work department, in addition to the variable ecosystems on each hospital ward. Furthermore, the attending must interact with multiple services, many of which are not internal medicine–based: surgery, neurology, and obstetrics, for example, in addition to subspecialty services.

On top of all of this is the pressure to ensure timely patient throughput and adherence to billing, coding, and documentation standards. Through each patient's course, the attending has the responsibility of ensuring patient safety and quality, while addressing systems issues that might impair either. And at the end of each patient's course is the responsibility of ensuring a safe and effective transition of care from the inpatient system to the ambulatory system. A whole other series of challenges for the attending arise from the hospital medicine system and the responsibilities of teaching students and residents. Traditional ward

teams are distinctly heterogeneous, both in level of training and career interest. Experienced senior residents and novice third-year medical students on the same team are the rule, making it challenging to find content that is suitable for all learners.

Even with the new work hours regulations, the team is also likely to be fatigued, and the unpredictability of a ward service often leads to meals that do not come at planned times. The attending's audience, the students and residents, will more often than not arrive tired, hungry, and distracted by the stress of the rapidly changing patient care environment. Work hours regulations have increased the intensity of the work day (there is more to be done in a shorter amount of time) and have increased the fragmentation of care (for example, shift work, day call, night float). The attending may be faced with a dynamically changing team composition, depending on the residency program's system of shift-based coverage, clinic scheduling, and required days off. The team that was present on Monday is unlikely to be the team that is present on Tuesday.

The attending physician is faced with the challenge of assuring the balance of patient safety and sufficient resident-physician autonomy, a critical component to active and sustained learning. The balance of trust and supervision varies for each resident, even at the same level of training; it requires that the attending physician quickly analyze and assess the resident's performance and determine the latitude that she will allow for that resident to make decisions him- or herself.

The attending physician is accountable to the educational and hospital systems, ensuring simultaneous compliance with accrediting bodies such as the Joint Commission, the accrediting body for hospitals; the Accreditation Council for Graduate Medical Education (ACGME), the accrediting body for graduate medical education; and the Liaison Committee on Medical Education, the accrediting body for medical schools.

The attending is tasked with all of these responsibilities, working within a system that does not have defined units of time (like clinic visits), with time requirements changing from day to day. And at the end of the day, the attending physician is simultaneously charged with the tasks of reviewing the previous day's work in the form of the residents' and students' notes, recording a note herself, and preparing for the day that will follow. It is little wonder that great education is often lost in this environment, defaulting to just getting the work done and hoping for a better day tomorrow.

But despite its challenges, I wouldn't do anything else. Indeed, it is because of its challenges that I chose medical education in hospital medicine as a career. For with great challenges come great opportunities, and

nowhere is that more true than on the inpatient medical wards. The rapid pace of the wards and the complexity and diversity of each day can be daunting, but both provide the opportunity to see students and residents at their best. Almost every aspect of medical care can be taught, and at a magnification that allows for precise assessment of learners' skills, deficits, and needs. If medical education were a stress test, the hospital medicine environment is a 5-MET stress, allowing for the easy diagnosis of learners' abilities and requirements.

Because of the fast-paced and diverse environment, I have the opportunity to role-model skills and behaviors in a manner not available to teachers in other settings. Professionalism, communication, interpersonal skills, patient advocacy, systems change, and "equanimitas" are but a few of the opportunities. The diversity of patient care experiences adds to this, while allowing me the opportunity to teach about a broad range of topics. And finally, the wards offer an opportunity to be a part of a team. If only for a month or so at a time, the intensity of the experience creates the perception of having walked that common road for much longer. The fulfillment that comes with the team interaction is immeasurable.

Hospital medicine, however, is not a venue where education can be left to chance. The demands are too severe and the pace is too fast. To be successful in meeting these responsibilities while ensuring effective clinical education requires planning, and not in the form of simply assembling PowerPoint lectures.

This book is designed to empower hospital medical educators with the tools and skills necessary to be successful during their time on the wards, as well as enable them to extract the greatest fulfillment from this experience. Chapter 1 ("Teaching to Improve Performance: The Clinical Coach") outlines the essential attributes of making the transition from phase 1, 2, and 3 teaching (phases in which the teacher is mostly concerned with himself) to phase 4 teaching (in which the teacher focuses on the learner's performance). This chapter provides practical strategies for making this transition from "the teacher" to "the coach." It also outlines simple strategies to establish and maintain the "glue" that holds the ward team together, thereby improving each learner's performance.

Establishing expectations is the cornerstone of ensuring that a ward month operates efficiently and effectively. Furthermore, it is central to establishing the culture on the wards (ideally, a culture of accountability without "blame," wherein learners feel free to express concerns about issues related to patient safety, and to admit errors so that they can be corrected. Chapter 2 ("The First Day On Service: The Attending's Role in Setting Expectations") provides techniques for establishing and communi-

cating expectations for each member of the ward team. A sizable proportion of an attending physician's expectations will be unique to him or her. This is the artistry of attending on the wards, which is to be embraced. Some proportion of these expectations, however, are relatively universal, and this chapter outlines elements to be considered in delivering expectations, along with strategies for making the expectations explicit.

Inpatient attending physicians must use their time effectively, avoiding wasted or duplicated efforts. They must multitask, such as documenting clinical care while teaching how to write progress notes. They must enter the hospital each day with a general idea of the direction in which the patient care needs will take the team, and have an idea of how they will meld educational opportunities during that journey. Chapter 3 ("Strategies for Succeeding as an Inpatient Attending Physician") provides suggestions for time management and discusses two of the more challenging issues for hospital medicine attendings: dealing with heterogeneity in the team and establishing the appropriate level of autonomy for each learner. The chapter provides strategies for conducting rounds to optimize education without sacrificing patient care. Chapter 3 also addresses strategies for the practical aspect of attending on the wards: billing, coding, and ensuring safe and effective transitions of care as the patients leave the hospital.

A large part of the attending's role is to teach and evaluate clinical reasoning. The attending physician should anticipate that most learners will be somewhere to the left or middle on the reporter-interpreter-manager-educator spectrum (1). Chapter 4 ("Teaching Clinical Reasoning on the Inpatient Service") provides strategies for assessing each learner's clinical reasoning abilities and strategies to move learners farther along the spectrum toward the educator physician. An important goal of hospital medicine is patient safety and quality, and this chapter also discusses methods for teaching these skills in the context of diagnosing and correcting medical errors.

The ACGME's Six Core Competencies shifted the paradigm of graduate medical education, moving the focus away from "knowledge-only" and toward a paradigm of overall competence. Chapter 5 ("Teaching the Important Nonclinical Skills on the Inpatient Service") provides strategies for improving the learners' performance in the components that will be lifelong requisites for their success in medicine: time management, data organization, interpersonal skills, independent study, and communication skills.

To truly assume the role of "coach" in augmenting performance, attending physicians must be astute in evaluation, reading small clues about each team member's needs and abilities. They must be prepared to integrate that information into decisions on to how much autonomy they

will allow for each team member. At least twice during a rotation (mid-rotation and end of rotation), the attending should consolidate the day-to-day formative feedback into summative feedback, ensuring that each learner precisely knows the magnitude of his or her abilities, and where improvement is needed. Without a proper method, feedback and evaluation can be uncomfortable, usually translating into feedback and evaluation that are ineffective. Chapter 6 ("Feedback, Evaluation, and Remediation on the Inpatient Service") provides strategies and methods for delivering feedback and enabling continued improvement if the attending is not there.

Section II of this book is unique. It presents actual examples of the dialogues, referred to as teaching scripts, between an inpatient teacher and his team, focused on the clinical content of 15 common internal medicine problems. Ten are presented in this book; the remaining five appear in the Web-based version of this series, available at www.acponline.org/acp_press/teaching. The scripts here unfold in Socratic fashion, emphasizing that learners understand the methods of approaching diagnostic conundrums rather than merely memorizing protocols. Each dialogue, or script, is a product of the author's approach, which should not be construed as the best or only approach. Each attending will develop his or her own teaching scripts over time, and this too should be embraced as part of the artistry of hospital medicine education. Section II seeks merely to provide examples and, where no teaching script exists in the reader's repertoire, to provide a starting point from which the reader's own personalized teaching script will emerge. The purpose here is to have inpatient attendings consider not only how they will teach a given topic but also the clinical approach they will encourage their learners to learn. Thus, this section is both pedagogic and clinical.

In total, this book will, it is hoped, provide attending physician with the skills, strategies, and knowledge necessary to appreciate the fulfillment that is found in hospital medicine education like nowhere else: The fulfillment of watching students and residents develop into competent and compassionate physicians.

The dialogues that appear throughout this book rely on a cast of characters of a typical ward team, consisting of Dr. Phaedrus, the attending physician; Moni, the resident physician; Stef, the intern physician; and Paul, the medical student.

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New Orleans, Louisiana, 2010

Section I

Core Competencies of Hospital Teaching

1

Teaching to Improve Performance: The Clinical Coach

Jeff Wiese, MD, FACP

Many physicians mistakenly see teaching merely as the dissemination of knowledge. Yet while knowledge is necessary, it is not sufficient. It is of little consequence that students have vast knowledge if they cannot enact it for the benefit of the patient. The translation of knowledge to practice, or *performance*, is what matters, and changing the paradigm from being a great "teacher" to being a great "coach" (ensuring performance) is the first step to educational excellence in the hospital setting.

There are four critical components to becoming a effective clinical coach: *motivation, visualization*, *anticipation,* and selecting *content* that has *utility*. The attending must recognize that even the most motivated learners will not be so each day. This chapter identifies strategies to motivate learners to want to learn the knowledge and skills the attending has to impart. Providing a vision of how learners will use the skill (visualization), the attending can increase learner interest and help learners see the practical application of the skill rather than just knowledge acquisition. By anticipating where learners will make mistakes as they attempt to apply the skill, the attending can prevent these areas of error or confusion. This can be done even as the initial content is taught. Choosing content that has utility refers to identifying topic areas that are most likely to be useful to the learners' future career. The attending has to remain flexible: What has utility for one learner may

KEY POINTS

- Inpatient attendings should consider a new paradigm for teaching in which the attending functions as a coach.
- Four measures that enhance inpatient teaching effectiveness are motivation, visualization, anticipation, and selection of content focused upon utility.
- Inpatient attendings may progress through four phases of development as inpatient teachers: phase 1: the teacher needs to establish credibility; phase 2: the teacher begins to receive positive comments; phase 3: teachers are focused on gaining recognition, such as teaching awards; and phase 4: teachers are focused less on their own success and more on the success and skill of their students.
- Inpatient teachers can motivate students in several ways, including addressing them by name, using physical touch, tapping into the students' own motivation for learning; using visualization; emphasizing methods rather than content; and taking steps to ensure that not only the quality but also the quantity of teaching is appropriate.
- Several techniques are available to promote learners' memory and retention, including use of advanced organizers (such as illustrations and pneumonics) and ensuring that what is taught follows an orderly sequence, starting from a foundation and building upward.
- Inpatient teachers should take care to use questions appropriately: Socratic questions move students to higher levels of understanding, while non-Socratic questions can be used to assess students' levels of understanding and learning and, therefore, as a check on the coach's success in enabling learning.

not have utility for others. This chapter addresses strategies for defining utility for different learners; chapter 3 discusses strategies for dealing with the heterogeneity of the ward team (that is, different definitions of utility for different team members).

Mastery of each of these four central tenets of "clinical coaching" enables successful evolution through the four phases of the educator's development until phase 4 is reached—the point at which ensuring learners' optimal performance is the goal.

❖ The Phases of a Teacher's Development

Phase 1: "It's All About Me"

The phase 1 teacher is focused on himself. After years of not knowing acid-base, he finally has his arms around it. To prove this competency to himself (and to impress his students), he sets out to teach it. Perhaps you remember the days, sitting in the back of a dark lecture hall in medical school, listening to a lecturer drone on about the details of acid-base—right down to the chloride channels, and how ammonia does this and aldosterone does that. All the while, you ask yourself, "Wow, this looks like a lot of work. I'm not sure the juice is worth the squeeze on this one … maybe I'll just take the hit on the exam and learn it later." And after successive iterations of the same internal dialogue over the next few year, you finally learn it. To prove it, witnesses will be required—students who will see a barrage of details littering a white board, right down to the difference between the Bartter and the Gitelman syndromes. And while the teacher feels proud of all that he can recall, a student sits in the back of the conference room saying to herself, "Wow, this looks like a lot of work. I'm not sure the juice is worth the squeeze on this one … maybe I'll just take the hit on the exam and learn it later." Phase 1 teaching is about teachers showing how much they know, but it has little effect on the student's performance.

Phase 2: "It's About How It Makes Me Feel"

Despite its inefficacy in improving performance, eventually an approbation will evolve—some student will say, "Wow, thank you for teaching us. That was really great." This is roughly equivalent to saying, "Thank you for acknowledging my presence." It is a sad commentary on the paucity of teaching on the clinical wards as the pace and time pressures have increased over the years. But the approbation feels good, and it becomes its own motivation for subsequent teaching. And that's fine—at least teaching occurs. Still, it is all about the teacher: The motivation is what makes her feel good, with little regard for the performance of the student.

Phase 3: "Going for the Prize"

After enough approbations, some student group nominates the teacher for an award. Given the paucity of grants and research, the attending exalts, "This could be a way for me to get promoted!" The award feels good, further motivating the teacher to teach. There is nothing wrong with this, except that the motivation for the teaching continues to be all about the teacher—what feels good … what is good … for *the teacher*, with little regard for the student's performance. It is fine to classify phases 2 and 3 together as an ego-motivated exercise driven by public opinion. Yet as any great artist will

say, once artists pander to public opinion, they have given away their art. Imperceptibly, the teacher begins to teach what students want to hear, but not necessarily what they need to hear. Put another way, no coach gained great favor by making his players run wind sprints, but that is exactly what they needed to be ready to perform come game time.

Phase 4: "It's About the Student's Performance"

And then there is phase 4, the nirvana of clinical coaching. Phase 4 is defined by its image, and the image is important—for the more this image rests in the back of the attending physician's mind, the more it will drive her practice of clinical education, and the better the result will be. The image is this: Someday, you will turn the corner on some lonely hospital ward, and at the end of the hallway, you will see a former student doing right by a patient because of something you have enabled him to do. There will be no applause at that moment, and there will be no awards. In fact, no one else will know about it all—but you will. For you will know that the performance you have enabled in that student has benefited a patient. Enabling performance distant from the time of contact with the student is at the heart of phase 4, and it is what sets clinical education in the hospital setting apart from classroom instruction. To achieve phase 4 requires a paradigm switch away from the mere dissemination of knowledge and toward a focus on performance: in a word, coaching.

❖ Motivation Techniques

One of the unique aspects of education in the hospital setting is the nature of those being coached. The wards are a flurry of activity, with someone always wanting something for a patient: the nurses needing orders to be written; the social workers needing forms and discharge instructions to be completed; the pharmacist needing detailed patient data to release the appropriate pharmaceuticals; and the hospital administration pressing for discharge by 11 a.m., patients from the intensive care unit to be transferred immediately, and emergency department consults within the hour. The residents and students are working just shy of 80 hours per week—tired and hungry, their meals coming at odd hours, they struggle to satisfy everyone, all the while wondering what will become of their careers (*"Will I pass the boards? Who will write my letters? Did I get my applications in on time?"*). And after all of this, the student or resident has very little emotional voltage remaining to *learn*. This monstrous challenge before the teaching moment even begins is what makes teaching on the hospital

wards challenging and unique, but it is also what makes motivation a critical component in ensuring performance.

The first step in motivating your learners is to acknowledge and deal with the sentiment that will hold you back if it is not consciously addressed: "Should I *have* to motivate students and residents to learn clinical medicine? I mean, seriously, it's only something as *trivial* as a patient's life!" Here's an analogy to answer that question. Should an NFL football coach have to motivate a prima donna wide receiver to catch the ball—even after he's been paid 5 billion dollars to do so? No. But if he doesn't, then the receiver doesn't catch the ball and the team loses. Should the attending physician have to motivate students to learn medicine? No. But if the coach does not motivate, the student's performance falls short and patient care suffers. So, *should* you have to motivate students to learn? The short answer: No. *Must* we motivate students to learn in order to be effective? Yes.

Using Names

There is one word that will ensure your motivational effectiveness. To any given person, in any society, in any time in history, the most magical, motivating word is … her name.

And using people's names cannot be done enough. Take this example extracted from the wards:

> *"Paul, you had a patient with a hemoglobin of 9, Paul … and you diagnosed anemia, Paul. Fantastic. And Paul, the way you ordered a ferritin, Paul, well it was … inspirational! And Paul, the way you did the rectal exam, Paul, to exclude GI bleeding, Paul … I mean, what more can I say, Paul? Fantastic, Paul."*

The remainder of the team might be thinking, "Who is this freak?"; but not Paul. He's thinking, "This guy is great—I'm going to nominate him for a teaching award!" And that's the simple trick to winning awards (if you are only interested in phase 3). Just walk around the hospital or medical school calling people by their names for a year; you'll win an award.

Why is using people's names so powerful? It communicates that you care about the person as a person—as a unique person; not just a moon that orbits your planet. With this one word, it establishes the relationship requisite for the coach–player relationship. It says, "I see you as a person who is valuable to me; and I care enough about you as a unique person to know your name."

The hospital wards can be a lonely place, with most students and residents feeling lost and over their head. Sum this up in one sentiment:

People are not going to care what you know until they know that you care. The best way to achieve that critical first step is simply to use people's names.

And if you are thinking, "That's fine and all … but I'm just not very good with names." Well, here is the inside-the-actor's-studio tip number two: You don't have to be good with names. All you have to remember is one person's name. Begin with this student or resident each day, using the name as often as possible, and then end that segment of rounds by saying, *"Paul, I've picked on you enough. Choose someone else on the team, but call him by name."* Paul will give you the next person's name. See? Easy. Just offload the responsibility of remembering names onto someone else.

Physicality

The second step in motivation is to use *physicality*. Recognize that the students we coach have grown up with a very different perspective of entertainment. As opposed to previous generations, for whom entertainment was "live" (the symphony had in-person artists playing, the play or musical had in-person performers, sports events were intimate enough that the players appeared in person), this generation has grown up in front of a glass screen. DVD players, TVs, movies, computers … these have been the source of this generation's entertainment. If at any time the entertainment went south or became uncomfortable, they simply changed the channel, left the room, or engaged in another activity (such as answering a cell phone). Students will carry this psychological perception of entertainers "behind glass screens" with them onto the wards, seeing their attending (that is, the entertainer) as being behind a protective glass screen. It is the reason that a hospital ward team is spatially defined by an attending, surrounded by a 3-foot force field with all team members in orbit at a safe distance. Do not be perplexed when a student answers his cell phone during rounds or begins to surf the Web on his BlackBerry. He is simply changing the channel, and feels comfortable enough to do so because of the psychological glass screen.

After mastery of names, the next step in motivation is to *break the glass screen*. If you find yourself in a small conference room on the wards doing a quick talk, immediately move away from the whiteboard or chalkboard. As you circulate about the room, you'll see the progress notes go back into the pockets and the phones back into their holsters. The energy of the room will rise, and this energy is what you need to fuel the motivation for the session. If you are on the wards conducting rounds, simply step across the semi-circle that surrounds you and assume a new position on the ward team. Even though the 3-foot force field will reset, it will tem-

porarily bring down the glass screen and generate some much-needed energy.

Use the *power of physical touch*. A simple handshake for a job well done or a touch on the shoulder for encouragement sends the sentiment you long for: "I see you as a person. I am not a hologram, I am your coach." The power of touch is motivating, especially when well timed; it acknowledges great performance in a way that words cannot achieve and supports the player during difficult times (the pat on the shoulder) when things don't go well. And while shaking hands is a filthy custom, it is ours—so embrace it. It will remind you to wash your hands and ensure that your students do the same. Finally, despite the power of touch, it is worth noting that there are safe touch zones and unsafe touch zones. Further explanation is not needed.

Given enough time on the wards as a clinical coach, you will encounter those special students who have lost all pluripotency—there is no longer flexibility in the career decision, and the student has differentiated into, say, orthopedics (or some other career not remotely close to your own). Sadly, many of these students will arrive with the mental stance that they "don't need to know internal medicine to do orthopedics." So the question becomes, "What do I do with this student? Should I simply sequester him in the back, and teach to the students who might want to do medicine? After all, it's his problem, not mine. Right?" Wrong. This student, more than any other, needs a healthy dose of internal medicine—it may be his last trip through formal instruction in internal medicine, and the truth is that the more internal medicine he knows, the better an orthopedic surgeon he will become. But how do you motivate the student who doesn't want to learn internal medicine?

The Hook

The answer is the *hook*. Every student has one: some reason that she will want to know what it is you have to teach. As an example, take this excerpt from the clinical wards:

> *"So Stef, you told me that you are going to do orthopedic surgery. Is that correct?"*
>
> *"That's right." Stef's face momentarily lights up, though the arms remain crossed.*
>
> *"Okay, well listen, let me paint a mental image for you.… It's 3 years from now, 5 p.m. on Friday. You've had a busy day on the orthopedics service, doing some really exciting cases. And you're*

super excited because you have dinner plans with your family, and you're ready to leave the hospital. Can you see yourself there?"

"Yes." Stef's grin begins to show the twinge of nervousness at the thought of being the resident.

"All right, well imagine that just as you start to leave the hospital, the pager goes off. The 62-year-old woman for whom you put in an artificial hip is now in atrial fibrillation with a rapid ventricular rate. Wow … what to do? So here will be your two options, Stef. Option 1, you can call me when that day arrives. As the med consult, I'll come see her, but it might take awhile. I have a lot of consults on Friday afternoon, for whatever reason, and it will probably mean that you are going to have to call your family and cancel that dinner …. Or option 2, I can teach you in the next 5 minutes all that you need to know about rate control and clot control, and when that day comes, you can fix the problem yourself and be home in time for dinner. So which option do you want?"

"Hey, sounds good to me. Tell me what I need to know." Stef's apprehension is turning to genuine excitement.

The unique feature of hospital medicine teams is the great heterogeneity of the team members. Some students will be interested in internal medicine as a career; others will have other careers in mind. Even among the residents there will be diverse career trajectories: some in general medicine, some in subspecialties, and some in careers that are not internal medicine (such as the preliminary interns). Each of these members will have a hook, and couching the instruction in utility—how the student will eventually use the information—generates the motivation that you need to ensure performance down the line.

But how do you deal with this heterogeneity? Doesn't couching the content in the orthopedic student's future career alienate the other team members? The answer is no. Despite our evolution, people have retained their *herd mentality*. When the lion stares down one antelope, the whole herd feels the same emotion. So it is with hooks on the wards—as the content is couched in utility for one team member, the other team members will begin to envision their own future and feel the same utility. The effect of motivation will be felt by all.

But how do you teach content that has no obvious utility? What if, say, a faculty member wonders, "I want to teach prion disease, and I just can't see how any of my students are going to use that. What do I do?" The answer is, "Well … don't teach that." The truth is that in the grand scheme, the teacher's time with a ward team is short—it is impossible to teach all

of internal medicine in this time frame, and something will have to be sacrificed. You might as well sacrifice according to utility: Teach what people will use, and this will establish the motivation necessary for overcoming the monstrous time and energy challenges that oppose you.

❖ Using Visualization to Empower Interest and Promote Retention

As noted in the preceding section, one of the most powerful hooks is the ability to create a vision for how the student will use the skill or knowledge. That hook is important because it generates motivation for learning the skill and keeps the content of the coaching session focused on topics that have utility. When you consider that the mind has a difficult time distinguishing between what was imagined and what actually happened, the principle of visualization takes on even greater importance. The coach who can create a palpable vision of performing the skill effectively gives the student one "repetition" of doing that skill without ever having done it. It is the reason that great coaches in whatever venue—performing arts, music, athletics—have the same mantra: "See it before you do it." It is the same reason that you'll find actors backstage and athletes in the locker room, all with eyes closed, rocking back and forth, seeing themselves doing the dance steps, or hitting the ball, or whatever task is immediately before them as they prepare to perform.

Teaching procedures on the internal medicine wards, though not as involved as on a surgical service, is the most tangible example of this coaching strategy. The time for the teacher to get the residents to visualize each step of the procedure is before they begin the procedure, as the "hard stop" is proceeding with the nursing and ancillary staff. The art lies in asking the questions that drive the vision:

> *"Can you see yourself prepping and draping the patient? Don't do it yet … just visualize it. Can you see it? Yes, good. Where will your procedure tray be? What will it look like? Is there anything not on that tray that you need? Now would be the time to get it.*
>
> *"Can you see yourself finding the landmarks? Will you do that before or after your drape the neck? Can you see yourself putting the iodine on? Okay, now, can you see yourself loading the anesthesia syringe? Where will you inject? What will you do with the needle after you are finished with it? Where will you position your body as you insert the finder needle? Can you reach everything on your tray? It would suck to have found the vein, but have to change body positions to reach the inserting needle, huh?*

"Can you hear the pager going off? Who will answer it? Yeah, maybe it's best to hand off the pager now before you begin.…

"Now the inserting needle is in. Can you see the blood return in the syringe? It's dark red, isn't it? That's good, because that means you're in the vein. Now, how is the guidewire positioned? Can you see the little 'J' at the end? Probably good to insert the wire such that the 'J' is pointing toward the heart. That will make sure that the wire, and eventually the catheter, heads down toward the heart and not up to the head.… Okay. The guidewire is in. See yourself holding it as you remove the needle. Don't let go."

But visualization is not exclusive to procedure training. The more that teaching topics can be pursued with a vision of how students will use it, with as much detail created in their minds as possible, the better the retention of that topic will be. And retention is requisite for phase 4 performance. It will matter little if the student masters the topic in the moment but cannot recall it at a later date. Long-term performance suffers without proper visualization. Later in this chapter, examples of creating a vision are discussed, although there are an infinite number of degrees of freedom: Visualization is the art of the attending physician.

It is important that all visions be positive. Positive visualization leads to positive results; negative visions lead to negative results. Students and residents, on average, are terrified of failure, and it is the prospect of failure or mistakes that dominates their thoughts. This is of great risk to their performance. The analogy is the golfer who hits the golf ball into the water and then immediately proclaims, "I knew I was going to do that." And he's absolutely right. If failure is on your mind (hitting the ball in the water), the body will accommodate accordingly. The coach's job is to ensure that the vision is positive—it is appropriate to get the student to visualize the pitfalls and potential mistakes inherent in a clinical task, but it is vital that the vision is created such that the residents can see themselves avoiding the pitfall or overcoming the obstacle.

You may wonder, "But do I have time to create these visions?" If you stay with the paradigm of teaching as much knowledge as you have (phase 1), the answer is no. But if performance is the goal, then the paradigm shift to being a coach liberates you from the compulsion to teach all details, enabling the time to create the vision. Therein lies retention, and eventually performance.

❖ Anticipating Learner Pitfalls: The Power of Methods

The goal in hospital medicine is to establish a culture where everyone feels free to admit and learn from mistakes because this atmosphere advances patient safety and quality. A central tenet of this "no-blame culture" is that mistakes will be made and are an inherent part of practicing medicine, especially in a training environment. Building this culture begins with acknowledgment that medical errors can and do occur, and the focus will be on strategies to address and hopefully prevent them.

The art of the coach is to anticipate where mistakes will be made and to address these potential pitfalls even as the topic or skill is being taught. Regardless of an attending's self-esteem as to how much she does or does not know, this is her area of expertise—all physicians have been down the road that the students and residents are just now embarking upon. We have made the mistakes and are familiar with these pitfalls; this is an area of expertise that, unlike details of medical content, cannot be easily obtained from textbooks.

A great sports coach would not merely teach the team the playbook and then call it a day. No, she would teach the offensive plays (the playbook) but would then alert the players about what the opposing team (the defense) will try to do to prevent the team from succeeding. The analogy in clinical coaching is teaching students where the common errors lurk and preparing them accordingly while the topic is being taught.

The important maxim of anticipation is that people do not rise to some super-human level of understanding in the setting of crisis; instead, they fall to their lowest level of incompetence. A cluster of residents can sit through an hour-long lecture on hypotension on a Friday afternoon, and at the conclusion of that lecture can readily recite the causes of hypotension. In the traditional model, this recitation (an examination score) would mark success. But the experienced clinician knows that it is a very different task to recite those same causes of hypotension at 2 a.m. after being awoken from sleep in a hospital call room. Rushing to the patient's bedside, the resident can only say, "Call 911" and, to his dismay, is reminded that he *is* 911. The coach must anticipate the drop-off in performance under periods of crisis and plan accordingly to temper the resident's fall in competence. The two best measures to prevent the sudden decline in performance during duress are *to teach methods instead of details* and *to create realistic visions of what the resident can expect* when the time comes.

❖ Techniques to Promote Retention

The presumption in medical education is that once knowledge is acquired, it is the student's to keep (dashed line 1 in Figure 1-1). The reality is that knowledge, like all things in the universe, decays. It is the reason that despite taking three semesters of French in high school, one might find that, years later, uttering the phrases, "I love you" and "Where is the bathroom?" in French might be all that remains.

The clinical coach must recognize the way in which medical students have been socialized to learn. The "bulimic" method of learning is characterized by doing without knowledge for a prolonged period (from, say, the beginning of a college semester or a medical school "block" until the week before midterm or block examination), gorging on knowledge (cramming), and vomiting the knowledge onto a Scantron examination, with subsequent removal of the knowledge from the system. The method of instruction (that is, in which content from one parcel of time is mutually exclusive from other parcels) and a focus on details have created an incentive for short-term memory strategies. While many colleges and medical schools are restructuring curricula to emphasize active learning, iterative learning, and long-term retention, the clinical coach should be prepared that many medical students will come to the wards with this bulimic mentality.

Any doubt about this mindset will be dispelled by laboratory coats laden with cards and textbooks and "quick fix" strategies (with titles such as "How to Survive on the Wards"). Failure to acknowledge and correct this mentality will limit the coach's success in teaching long-term strategies for retention and performance (methods of approach as opposed to

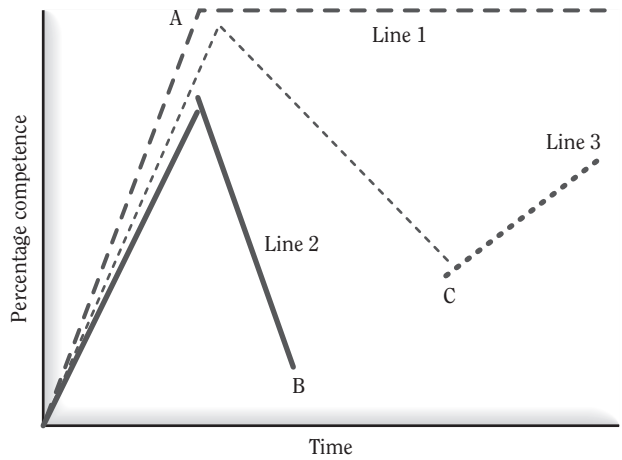

Figure 1-1 Skills decline graph.

details) because the student will resort to rote memorization of concrete facts in lieu of understanding the method. Even as coaching ensues, the student will frequently revert to the old strategy of trying to memorize content. The coach must recognize this behavior and redirect the student to the better strategy of learning methods and understanding as opposed to memorization.

If clinical education is focused on long-term performance, its goal should not be how high the "peak" rises (point A in Figure 1-1) but rather the slope of the decline in skill. In addition to visualization, there are three other methods for lessening the slope of the decline in skill: *teaching less by focusing on methods rather than details*, *using the Socratic method*, and *using advanced organizers*.

Teaching Less; Focusing on Methods Instead of Details

Sir William Osler (1) noted that, "The problem with medical students is that they try to learn too much; the problem with medical educators is that they try to teach too much. Teach them methods and the art of observation, and then give them patients to practice their skills." The clinical coach should be aware that medical students will come to the wards with the same mentality that was successful for them in the preclinical years: an obsessive focus on details and a belief that the knowledge base for clinical medicine can be "memorized" in lieu of understanding it. In the preclinical environment, there was a defined knowledge domain (for example, only renal disease in the renal block), and boundaries were clearly defined (students are accountable only for what was in the lecture or assigned readings). The distinguishing feature between an "A" grade and a "B" grade was the ability to recall details, and the two forces combined to create a mentality that everything about a topic *could* be learned (if only for a short time) and that it could be memorized. The clinical wards are different: No knowledge is out of bounds (that is, you can't say that it's unfair that a patient has a disease for which you have not been given a reading assignment), and all quarters of knowledge can be in play for any given patient (for example, the merging of the pulmonary, renal, and cardiac blocks). The result is that while some facts must be memorized, the "memorize it all strategy" is untenable. Even if that strategy is possible, memorized facts have a steep slope on the skills decline graph (solid line 2 in Figure 1-1), and the strategy is not effective in ensuring long-term performance (point B in Figure 1-1). This is especially important in hospital medicine, where multiorgan disease is the rule more than the exception, and the "typical" presenting pattern of a disease is changed to an "atypical" presentation that is not consistent with the student's memorized pattern recognition.

The role of the coach is to recognize that students will come with this mentality and to refocus them on learning strategies more conducive for long-term performance: methods of approach and understanding of disease. The first step is to teach less, jettisoning the details (as contained in phase 1 teaching) to free up more time for creating visualization, and for more in-depth time to ensure that students understand (as opposed to memorizing) the methods.

To balance this approach, the coach should be prepared to assign readings that will enable students to acquire the details on their own time. It is important to be realistic and honest in our abilities as educators: Even the greatest attending physicians cannot compete with a textbook or the Internet. Textbooks enable students to read and synthesize the content at their own pace, turning back the pages to re-review concepts that are not fully understood and referencing other information to help supplement the learning. A didactic lecture, at the teacher's pace (not the students'), has none of these luxuries (2). Details are best left for textbook reading; methods and approaches are the domain of the clinical coach. Chapter 5 outlines reading strategies that coaches can teach their students.

Asking Questions: The Socratic Method

It is important to begin with what the Socratic method is *not*. The Socratic method is not "pimping," the method of quizzing students about what they do and do not know. Pimping, otherwise known as the "traumatic Socratic," induces a high level of stress, redirecting students' mental energies away from the cerebral lobes and hippocampus (understanding and memory) and toward the amygdala (fight or flight). It is not effective for long-term performance, and it is usually a waste of time: If the student knows the answer to the question, there is no point in asking the question; if the student doesn't know the answer to the question, then the same time spent in asking the question could have been used to provide the answer. Proponents of the traumatic Socratic point to its utility as a motivating measure to ensure that residents are reading. This presupposes that the resident is reading *everything* in medicine (to prepare for every possible question), which is unrealistic. The reality is that the student cannot predict the questions that will be asked; thus, this approach does not accurately measure the student's reading. Further, the method induces anxiety, making reading uncomfortable, not motivating. The result is that residents read less, and the ward environment becomes a daunting exercise of day-to-day humiliation, which students learn to loathe.

The true Socratic method can be found in Plato's *Meno* (3). The method is not about ascertaining the student's knowledge but rather about

moving the student's understanding from a baseline level of understanding to a higher level by asking questions that link concepts together. Consider the method as an exercise in "building neuron connections," with each neuron representing a concept, and each synapse representing the link between concepts. Each question in the Socratic method is meant to build a synapse. The questions are asked in a fashion that the answer is so intuitive (such as "But yes, of course" or "No, that wouldn't make sense") that the student's mental energy is devoted to the intuitive link between the two concepts, not on factual recall. Because the questions are intuitive, no mental energy is wasted on the amygdala (that is, the stress of fight or flight).

The power of the Socratic method is twofold. First, when knowledge has waned (see point C in Figure 1-1), students can re-create the knowledge by working through the line of questions on their own; this will raise the slope above the level of incompetence (dotted line 3 on Figure 1-1). Second, when an actual patient problem is not "typical" (for example, a patient with multiorgan dysfunctions or comorbid conditions that subsequently change the presenting pattern of the disease), the method allows the student to apply standard understanding of one problem (renal failure) to the complex patient, reasoning out the features unique to that patient.

The Socratic method in hospital-based medicine often follows the line of pathophysiology (see the teaching script for hyponatremia in section II of this book). The additional value is twofold: First, it draws on the student's past training in pathophysiology, linking scientific understanding to clinical medicine (as opposed to blind memorization of protocols); second, it allows transposing one topic to another (see the teaching scripts on acute renal failure and on hyponatremia in section II; the lines of questioning are very similar, although the answers are different).

Important to the Socratic method is that *wrong answers are not the fault of the student but rather of the coach*. The questions should be intuitive; wrong answers are usually due to questions that did not lead to an intuitive answer. In the neuron-building analogy, a wrong answer is the equivalent of a stroke. If a student answers incorrectly, the coach cannot merely correct the answer and move forward; this will require some rehab. The coach must back up three or four questions and repeat the line of questioning up to and through the missed question (with the student hopefully getting it right this time). The Socratic method works best one person at a time because this sets the expectation that the student (not someone else in the crowd) will be responsible for the next question in the sequence, thereby linking the concepts together. Do not worry; other learners on the team will follow along with the line of questioning by proxy, establishing

the same linking of concepts. For instruction of topics that progressively build in their complexity, the earlier and easier parts of the Socratic method can be devoted to the least experienced learner. The line of questions can be of shifted to more experienced learners as the complex portion of the teaching ensues (see the teaching script on electrocardiograms in the online portion of this book, available at www.acponline.org/acp_press/teaching/).

Advanced Organizers

Students will arrive on the wards with a belief that they can memorize clinical medicine. While memorization is effect for short-term recall, it is prone to a steep decline in competence over time. And yet if an alternative method of organizing content is not provided, students will resort to memorization. Central to Shulman's concept of pedagogic content knowledge, described in *Methods for Teaching Medicine*, another book in the *Teaching Medicine* series (2), advanced organizers, such as acronyms, pneumonics, algorithms, and diagrams, are mental constructions useful to organizing knowledge: They are "advanced" because they draw on previous experiences, and "organizers" because they are used to organize complex thoughts. Many of the teaching scripts in section II of this book illustrate this point. Advanced organizers are powerful because they enable students to organize their thoughts and methods and construct a differential diagnosis distant in time from the coaching session. There are no "right" advanced organizers; indeed, the way in which content is organized may be tailored to the students' interests and backgrounds. The artistry of clinical coaching is in discovering and developing your own advanced organizers. The teaching scripts in section II are meant to start this creative process.

❖ Blocking Coaching Sessions: Foundation Before Drywall

Like a house being constructed, a coaching session should be constructed in blocks. This is particularly important on the inpatient wards because time available for coaching often varies, with some days enabling longer coaching times and other days, far less time. By proactively thinking about the natural break points in a coaching session, the coach can do manageable components of a session, deferring subsequent components to future coaching sessions (see the teaching scripts on acid-base [in section II of this book] and electrocardiograms [at www.acponline.org/acp_press/teaching]). This goes against the natural tendency of most teachers, however, wherein the predilection is to start and finish a lecture on a topic, including all of the details (phase 1 teaching), in one session. The reality is that the

time to complete a topic from start to finish is rarely, if ever, present. The unpredictability of the inpatient wards makes it important to have considered the natural break points in a coaching session ahead of time because an unplanned interruption due to a change in a patient's condition can be accommodated by quickly finishing one block and then deferring subsequent blocks to later sessions.

To accomplish this task, however, the coach must think a priori of where the natural break points exist; otherwise the content is fragmented and disorganized. An important principle of learning is that *knowledge and skills are laid down in the student's mind in the way that they are delivered*. The transcription to the brain is like taking notes on a lecture with a pen and paper: As content is delivered, it is recorded. It is *not* like transcribing the lecture on a computer, where cutting and pasting can be used to easily reorganize the data. *Disorganized and random dissemination of knowledge on a topic leads to random and disordered thinking by the student*. Even when a lecture is well planned, students may try to take it to a higher level too early or to a lateral point in the content by asking the untimely question. The coach must have the discipline to maintain the linear nature of the lecture, delivering content in the way in which the coach would like to see the student recall the information later. This is particularly important in teaching methods and approaches, as illustrated in the teaching script on acid-base in section II of this book.

The a priori blocking of content into sessions that fit the rhythm of the inpatient service also has utility with respect to retention. At each break point between the blocks is the opportunity for the coach to assess the student's mastery to that point by asking questions or assigning tasks. Failure to demonstrate mastery of the "foundation" block necessitates that the coach and student return to the first block and not progress to the next "drywall" block.

When blocks are distributed over time, the first 2 minutes of each block should be devoted to a quick review of earlier blocks. This ensures that the content is being "laid down" in the student's mind in the correct order (see the teaching script for electrocardiograms at www.acponline.org/acp_press/teaching/).

❖ Checking on Learning

In this context, checking on learning relates not to the student's performance but rather to the *coach's* efficacy in ensuring the learner's performance. At each break point between blocks, the student's mastery of the preceding block should be ascertained before moving on to the next block.

There are numerous methods to ascertain competence, and it is part of the artistry of clinical coaches to design their own. Four of the most commonly used strategies for assuring yourself of the student's mastery of a block are 1) asking probing questions (non-Socratic) that establish the student's understanding of the content (see below), 2) asking the student to apply the content to a related but slightly different clinical task (see the teaching script on electrocardiograms in the online portion of this book, available at www.acponline.org/acp_press/teaching/), 3) asking the student to apply the material to new clinical data (see the teaching script on acid-base in section II), and 4) asking more experienced learners (residents) to teach the same content to less experienced learners (students).

Using Non-Socratic Questions to Assess a Learner's Competence

Questions asked outside of the Socratic method can help reduce the slope of skills decline, and when used, should have one of two primary purposes: 1) establishing the student's baseline understanding of the disease or concept and 2) evaluating the student's mastery of the topic as the coaching proceeds (evaluation of the coach's teaching by assessing the student's competence to that point). For both types of questioning, it is important that the questioning not induce excessive stress on the student; the fight-or-flight impulse will limit self-reflection, and the goal of discovering what the student knows may be obscured by the student's defensiveness.

To establish a baseline of understanding without inducing stress, ask questions with a broad latitude: "How have you seen this approached?" "After all that you have seen thus far, do you have a good method for approaching this problem?" Both examples have no "wrong" answer; whatever students have seen is what they have seen, even if it is incorrect. Broad-latitude questions encourage the student to engage in self-reflection before formulating an answer. In the second scenario, the questions should be designed to evaluate concepts taught in the preceding "block."

Importantly, when the teacher asks questions that require reasoning or introspection, the learner should be given protected time to think, formulate an answer, and then question. These questions should be directed to one learner at a time, and other team members who attempt to jump in on the designated learner's opportunity to answer the question should be restrained by the simple, *"Thanks, Stef, you're next. But let me give Paul a chance to answer this question."* Students and residents learn by experience; if the attending provides the answer to the question too quickly, or allows other learners to jump the question, they will either 1) guess at the answer in a hastened effort to get it in, which subverts the goal of analyzing the student's understanding of the concept, or 2) learn that it is futile to try

to think about and answer subsequent questions because insufficient time will be provided to formulate an answer. The latter will be manifest as the quick "I don't know," and should be a sign to the attending that the answers are coming too quickly after the question was asked. *At least 5 seconds of protected time should be provided after each question to ensure appropriate introspection.*

Wrong answers can sometimes provide greater insight into a student's understanding of a concept than correct answers. The attending physician should avoid the temptation of brushing past a wrong answer by immediately correcting the response. Instead, see it as an autopsy moment: The bad event (the wrong answer) provides an opportunity to dissect and determine where the pathology rests. Great insight can be obtained by exploring why students came to the conclusions that they did (see the teaching script on antibiotics in section II). Once the systematic thought error is identified, it can be corrected.

Clinical medicine is about understanding disease; it is not about telepathy. Any question that begins with "This is a 'What am I thinking?' question" should not be asked. Just tell the student what you are thinking.

The Exponential Power of Teaching Others to Teach

Asking more experienced team members to teach less experienced team members is a powerful method to address several challenges of the hospital medicine ward team. Involving the more experienced members as the teachers and the less experienced ones as the learners addresses the challenge of dealing with the team's heterogeneity by actively involving all team members at once. Further, it allows teaching of the team when not all team members can be present. For example, when the students are in their clerkship classes or have the day off, the attending physician can teach the resident team members, with the directive that they will be teaching the students when they return. Even in the attending physician's absence, additional teaching can occur (the residents to the students), effectively doubling the attending physician's teaching efforts for the month. If the attending physician is present, it is an opportunity for him to sit in the back of the conference room and complete billing or coding cards while simultaneously listening to how the resident is teaching the material.

Observing a learner teach a block will clearly define, both to the coach and to the learner, her mastery of the topic. Areas of uncertainty or nonmastery will be painfully evident, serving as a powerful method of assessing the coach's teaching skills (that which she taught effectively and that which she did not) and the resident's mastery of the block prior. Further, this method allows the attending physician to teach topics that she believes

the resident might not know, but also might find insulting if the attending physician tried to teach it. For example, a resident's ego may preclude an attending physician from teaching a "baby" topic such as anemia, even though the resident's competence may not be consistent with his ego. By couching the topic in the context of "I want you to teach this to the students," the attending physician is given the luxury of assuring that the resident has mastery over "baby" topics without insulting his ego.

❖ Conclusion

People are a product of their experience. Most students and residents will come to the hospital wards expecting to be taught in the same way in which they were taught in the classroom: The teacher talks, the students acquire knowledge. But as the Accreditation Council for Graduate Medical Education and Liaison Committee on Medical Education have defined, the practice of medicine is more than just medical knowledge (4). Proficiency is required in multiple skill domains: interpersonal skills/communication, using the practice to define areas of uncertainty (and the ability to shore up those areas of weakness), understanding the system in which the physician works, and demonstrating selflessness and empathy in caring for patients. In aggregate, each of the competencies contributes to the most important competency of them all: patient care. For learners to transition from students to fully competent physicians, they must be able to apply their knowledge for the benefit of their patients. Where *application* is the goal, *performance* is the measure of success in meeting that goal. The focus of the attending, then, is to ensure this performance by designing educational strategies (coaching) that motivate the learners to want to learn, anticipate where the learners are likely to go astray (and to prevent falling into those pitfalls), choosing content that has utility to the learners, and creating a vision for how the information or skill will be used.

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