

Special Communication

A Five-Step "Microskills" Model Of Clinical Teaching

Jon O. Neher, M.D., Katherine C. Gordon, M.A., Barbara Meyer, M.D., M.P.H.,
and Nancy Stevens, M.D.

Abstract: Teaching family practice residents in a clinical setting is a complex and challenging endeavor, especially for community family physicians teaching part-time and junior faculty members beginning their academic careers. We present a five-step model of clinical teaching that utilizes simple, discrete teaching behaviors or "microskills." The five microskills that make up the model are (1) get a commitment, (2) probe for supporting evidence, (3) teach general rules, (4) reinforce what was done right, and (5) correct mistakes. The microskills are easy to learn and can be readily used as a framework for most clinical teaching encounters. The model has been well received by both community family physicians interested in teaching and newer residency faculty members. (*J Am Board Fam Pract* 1992; 5:419-24.)

The task of teaching family practice residents in a clinical setting has a number of features that place special demands on the physician educator (preceptor) and extend beyond direct patient care issues. First, preceptorial encounters are rich with opportunities to teach residents not only new information but also new ways of thinking. Second, these encounters are frequently the principal contacts that residents have with the seasoned family physicians they are trying to become. Finally, these teaching moments must be highly efficient because they frequently take place when both the resident and preceptor are responding to many time demands. For all of these reasons, preceptorial skills require conscientious development and continuous refinement.

Geyman¹ has stated that each physician should develop his or her own style of teaching, and we agree. Most preceptors have experienced good and poor teaching styles during training and are sensitive to the impact these styles have on residents' competence and confidence. The physician who is starting out in clinical teaching, however, can be uncertain about what constitutes a successful teaching interaction. It was for these beginning teachers — the senior residents, new

faculty members, and community attending physicians who teach only episodically — that this five-step microskills model of clinical teaching was developed. The five microskills can be learned in 1 or 2 hours, practiced immediately, and remembered for years. They provide a basic framework that can be built upon throughout the course of the professional educator's career.

Background

Clinical teaching skills are not innate. Studies of untrained medical educators in clinical settings^{2,3} show 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. Fortunately, measurable improvement in teaching behaviors can be effected with appropriate intervention.⁴

Family practice residents have precious little contact with family practice educators. Schwenk, et al.,⁵ in an analysis of several residency sites, found that only 12 to 30 percent of direct one-on-one teaching was performed by family physicians. In a separate study, Schwenk and Whitman⁶ found that residency teaching time provided by practicing family physicians was generally less than 5 percent. Additionally, in the outpatient setting, where much family practice clinical instruction occurs, time for teaching encounters is scarce, often just a few seconds or minutes at a time. The bulk of encounters with preceptors

Submitted, revised, 2 January 1992.

From the Department of Family Medicine, University of Washington, Seattle. Address reprint requests to Jon O. Neher, M.D., Valley Medical Center Family Practice Residency, 3915 Talbot Road South, Suite 401, Renton, WA 98055.

must therefore be kept brief, a requirement noted previously by Geyman.¹

Our response to this situation was to create a model that incorporates successful teaching behaviors for family practice preceptors. Several studies in the medical education literature^{7,8} have examined specific behaviors and ranked them according to their acceptability by various groups. One of the most elegant examinations of clinical teaching behaviors was by Koen and Vivian.⁹ Their analysis identified five major modes and 18 microskills found in effective clinical teaching. Working with Koen, we developed a model with a minimal number of microskills that are desirable in all but the most rudimentary preceptor-resident encounters.

Five-Step Microskills Model

Our model of clinical teaching consists of the following five imperatives (or microskills):

1. Get a commitment
2. Probe for supporting evidence
3. Teach general rules
4. Reinforce what was done right
5. Correct mistakes

These particular microskills (described in more detail below) were included in the model to focus the preceptor-resident encounter on the decision-making process used by the resident. In this way, the preceptor has access to both the constellation of facts that the resident uses in decision making and the decision-making process itself. The model was also designed to keep the encounter to 5 minutes or less. Naturally, the length of the encounter will vary according to the needs of the resident and the complexity of the case. Finally, the model lists microskills in a specific sequence to maximize the benefit of the teaching encounter even if it is terminated early.

Get a Commitment

Early into a consultation with a preceptor, a resident should be encouraged to make a commitment to a diagnosis, work-up, or therapeutic plan. By making a commitment, the resident feels responsible for patient care and enjoys a more collaborative role in problem solving. Making a commitment encourages a resident to process information collected during the patient encounter

within the resident's own unique database and to create a personal formulation of the clinical situation.

Failure to commit to a formulation indicates that the resident has not processed information, is reluctant to expose a weakness, or is dependent on the thinking of others. Making a mistake in problem formulation usually indicates a teaching opportunity and is much better than making no commitment. It is important, therefore, that the model is used in a supportive environment of intellectual honesty. Only then will a resident be willing to accept the risk of incorrect intellectual commitments as part of the learning process.

The cue for this microskill occurs when a resident presents the facts of a case and then stops, waiting for the preceptor to offer an interpretation. At this point the preceptor need only resist the urge to fill in the verbal blank and instead ask what the resident thinks about the data just presented. Examples include the following:

1. "What do **you** think is going on with this patient?"
2. "What laboratory tests do **you** feel are indicated?"
3. "What would **you** like to accomplish on this visit?"
4. "Why do **you** think this patient has been noncompliant?"

The resident's commitment can be as tentative as a hunch or a best guess. The resident is simply disclosing the beginning of the problem-solving process so that the preceptor can assess more efficiently the resident's needs as a learner.

Getting a commitment must not be confused with collecting further data about the case, for example, asking for more information than was initially presented. Such additional data gathering can be appropriate and necessary but is best limited to no more than a few questions, e.g., "How old is the patient?" or "What else was going on when the headaches started?" It is difficult for some preceptors to resist getting "on top" of the problem themselves by asking many data questions. Such questioning, however, leads the learner through the preceptor's thinking process rather than disclosing the problem-solving process of the resident. There are opportunities later for the preceptor to complete a personal database

(with a trip to the examination room, for example).

Probe for Supporting Evidence

Once the resident has made a commitment, the preceptor can help the resident reflect upon the mental processes used to arrive at that decision. Because trainees proceed with problem solving logically from their database, this microskill also helps the preceptor and resident identify what the resident does and does not know.

The cue to use this microskill comes when the resident commits to a particular stance and looks to the preceptor for confirmation. The preceptor should suppress the desire to pass judgment but instead ask the resident what evidence supports this commitment. An alternative method is to ask what other choices were considered and what evidence supported or refuted these alternatives. Examples might include the following:

1. "What were the major findings that led to your diagnosis?"
2. "Why did you choose that particular medication given the availability of many others?"
3. "What factors did you take into account when making your exercise prescription for this patient?"
4. "What else did you consider? What kept you from that choice?"

It is important that these questions not become a means of grilling residents about general concepts. Such questioning serves only to make residents less likely to make intellectual commitments in the future. "Thinking out loud" must be a low-risk way for a resident to make mistakes, and it is an excellent way for a preceptor to identify prime teaching points for subsequent instruction.

Teach General Rules

From what the resident has revealed, a teaching point will be apparent from any gaps or mistakes in data, knowledge, or missed connections. If the resident has performed well and the preceptor has no new information to add, this microskill can be skipped. It is not imperative that the preceptor "teach something" in every preceptorial encounter. In some cases, when neither the resident nor the preceptor have the needed information, this

microskill might appropriately teach how to go about accessing expert resources. In all cases, such strategically targeted teaching minimizes misjudging a resident's sophistication and either insulting or overwhelming the resident and wasting the valuable time of both preceptor and resident.

Instruction is more memorable and more transferable to other cases when it is offered as a general rule. The preceptor should try to keep the information general, avoiding anecdotes and idiosyncratic preferences. Consider the following examples of teaching general rules:

1. "If the patient has a cellulitis, incision and drainage are not possible. An abscess, which can be drained, is heralded by the development of fluctuance."
2. "Patients with cystitis usually experience pain with urination, increased frequency and urgency of urination, and perhaps discolored urine. The urinalysis should show bacteria and white cells, and could have some red cells as well."
3. "I haven't encountered this condition before either. The best dermatology references are _____ and _____. In this clinic the person to check with would be _____, and our specialist consultant is _____."

Reinforce What Was Done Right

Some appropriate actions are pure luck, others are more deliberate. To become firmly established, competencies must be repeatedly rewarded in some fashion. In addition, positive feedback helps build the resident's professional self-esteem.

It is appropriate to use this microskill whenever a resident has handled a situation in a manner benefiting the patient, colleagues, or clinic. Comments on what was done right should focus on those specific behaviors that the resident will be able to repeat consciously. Also, the preceptor should inform the resident of the positive impact the action has had on others. The following are examples of this microskill:

1. "Obviously, you considered the patient's finances in your selection of therapy. Your sensitivity to this will certainly contribute to improving his compliance."

2. "I noticed that you kept an open mind until the patient revealed her true agenda for coming in today. In the long run, you saved yourself and the patient a lot of time and unnecessary expense by getting to the heart of her concerns first."
3. "When prescribing that medication, you appropriately considered the patient's age and the prolonged half-life of its active metabolites in the elderly. That will certainly decrease the risk of the patient falling because of oversedation."

It is important to realize that this microskill is not general praise, which serves to reinforce no particular behavior. Telling residents that they "did a good job" does not reinforce why the job was good or map out a way that the job could be done better. Both praise and criticism (see below) need to be as specific as possible.

Correct Mistakes

Correcting mistakes was placed last because it is the nature of many to put this microskill first. Correcting mistakes is very important, but it is only one part of the teaching encounter, and it requires tact to be effective. First, an appropriate time and place must be chosen. While it is best to give both positive and negative feedback as soon as possible after an event, the sensitivity of the situation could require that this microskill wait until a calmer, more private setting can be arranged. Second, it is generally a good idea to ask residents to critique their own performance first. If a resident is aware that there was a problem, this approach provides an opportunity to acknowledge it and to seek out the preceptor's recommendations about how to prevent the same thing in the future. If, however, a resident is unaware of an error, the preceptor should be prepared to discuss both what was wrong and the potential negative consequences of the event. When appropriate, the mistake should be framed as "not best" rather than "bad." Finally, when a preceptor corrects a resident's mistakes, a major focus should be on how to correct the problem or avoid it entirely in the future. Good examples of correcting mistakes might be as follows:

1. "You could be right that this child's symptoms are due to a viral upper respiratory tract infec-

tion. But without checking the ears, you could easily overlook an otitis media. At a minimum, a missed ear infection will result in a cranky baby and perhaps more telephone calls or a needless visit to the emergency department. At the worst, the infection can spread into the mastoid or cause meningitis. So, try to include an ear examination on every patient with URI symptoms."

2. "I agree it is reassuring that 2 months ago your patient had a normal Papanicolaou smear. But I don't think we can afford to ignore the cervical lesions that you astutely picked up while evaluating her vaginitis today. Papanicolaou smears are not 100 percent sensitive and can occasionally be normal even in the face of a high-grade malignancy. In general, any unusual lesion of the cervix should be biopsied, regardless of the Papanicolaou smear result."

Vague, judgmental statements are not appropriate. Such a comment as, "That whole case was handled badly," is probably not accurate and provides no instruction on how better to manage similar cases in the future.

Experience with the Five-Step Microskills Model

Workshops lasting 1 to 2 hours, which described the five-step microskills model of clinical teaching, were presented to faculty in family practice and other specialties at several national and regional meetings. Workshop evaluations have been positive on measures of relevance and applicability to clinical teaching.

A similar five-step microskills-based teaching workshop was incorporated into the curriculum of the University of Washington Family Practice Network Faculty Development Fellowship. Founded in 1987, the program has taught this teaching model to 36 junior faculty during the last 4 years. We sent a questionnaire to all the fellows inquiring about their use of the model, 33 of whom responded. Of these, 4 questionnaires were not completely filled out and were not included in our analysis. Our sample, then, was 29 respondents from a possible 36, or 80 percent.

Of the responding fellows 23 (80 percent) were full-time residency faculty, with 2 in full-time private practice, 1 on a medical undergraduate

faculty, and 3 with multiple part-time duties. Twenty-six of the respondents (90 percent) spent at least one-quarter of their time teaching in a clinical setting. The majority of the respondents (18) spent more than 60 percent of their clinical teaching time with residents, with less time overall spent teaching medical students and colleagues (26 respondents spent less than 20 percent of their teaching time with these groups).

Twenty-six of the respondents reported using material learned from the five-step microskills model in 90 percent of their teaching encounters. Earlier graduates of the program continued to use the model as frequently as later graduates. There was no difference with which any particular microskill was utilized. All of the respondents believed that the model was at least "somewhat helpful," while 17 (58 percent) thought that it was "extremely helpful" to them as clinical teachers.

Discussion

In 1983, Esposito, et al.¹⁰ published a problem-oriented teaching method that they had used with some success. Their method is based on the preceptor correctly diagnosing and treating the problems that the resident is having. In this way, the preceptorial encounter mirrors the physician-patient encounter. The latter steps of the model (developing teaching goals, devising methods to achieve these goals, and evaluating outcome), however, are extremely complex educational tasks, and while these tasks are within the grasp of a seasoned residency faculty, they would be difficult for the individual part-time preceptor or faculty members with only sporadic resident contact. The five-step microskill model has an advantage in these situations.

In addition, because it can be learned in 1 or 2 hours, the five-step process can be taught to new or visiting preceptors as they supervise their first clinic. The model focuses on a few relatively simple teaching behaviors that are easily performed. Because it deemphasizes bestowing "new knowledge" on residents, the five-step model helps younger faculty and retired physician-preceptors recognize that they have many other valuable skills to offer. Finally, the model focuses on the role of positive and negative feedback in the learning process. The

importance of feedback to the trainee has been emphasized elsewhere.^{7,8}

The five-step microskill model has limitations. The resident-preceptor interaction is complex, and any attempt at breaking it down into components risks losing subtler elements of the relationship. One such limitation with this model is that it has no direct provision for addressing the psychological state of the resident. If countertransference between the resident and the patient contributes to the resident's difficulties, the preceptor might not pick up on it, especially if the resident is not psychologically minded and tends not to make psychological "commitments" or use feelings as supporting evidence. Another limitation is that the model cannot improve decisions made on poorly collected data; therefore, the preceptor still needs to enter the examination room.¹ Finally, because the model is based on a commitment — even if that commitment is wrong — this model might not be appropriate for teaching at the bedside.

Summary

The five-step microskills approach is an extremely practical clinical teaching model that consists of five sequential teaching behaviors. The model addresses both a resident's database and cognitive processes, guides appropriate teaching, and makes use of immediate, specific feedback. The model can be learned in 1 to 2 hours. It can help physicians who are new to the teaching role gain confidence and provide residents with at least a basic level of preceptor support.

References

1. Geyman JP. The practicing family physician as a teacher and learner in a family practice residency. *J Assoc Hosp Med Educ* 1976; Summer-Fall:30-2.
2. Bazuin CH, Yonke AM. Improvement of teaching skills in a clinical setting. *J Med Educ* 1978; 53: 377-82.
3. Collins GF, Cassie JM, Daggett CJ. The role of attending physician in clinical training. *J Med Educ* 1978; 53:429-31.
4. Greenberg LW, Goldberg RM, Jewett LS. Teaching in the clinical setting: factors influencing residents' perceptions, confidence and behaviour. *Med Educ* 1984; 18:360-5.
5. Schwenk TL, Sheets KJ, Marquez JT, Whitman NA, Davis WE, McClure CL. Where, how and from

- whom do family practice residents learn? A multisite analysis. *Fam Med* 1987; 19:265-8.
6. Schwenk TL, Whitman N. Teacher-learner contact time in a family practice residency. *J Fam Pract* 1984; 18:617-8.
 7. Stritter FT, Baker RM, McGaghie WC. Congruence between residents' and clinical instructors' perceptions of teaching in outpatient care centers. *Med Educ* 1983; 17:385-9.
 8. Wolverson SE, Bosworth ME. A survey of resident perceptions of effective teaching behaviors. *Fam Med* 1985; 17:106-8.
 9. Koen FM, Vivian AS. Learning the skills of clinical pharmacy teaching. *Am J Pharm Educ* 1980; 44: 61-5.
 10. Esposito V, Schorow M, Siegel F. A problem-oriented precepting method. *J Fam Pract* 1983; 17: 469-73.