

For the Office-based Teacher of Family Medicine

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Feature Editor

Editor's Note: In this month's column, Sarah Parrott, DO; Alison Dobbie, MD; Heidi Chumley, MD; and James Tysinger, PhD, summarize evidence supporting the efficiency and effectiveness of the well-known five-step microskills model of clinical teaching, also known as the "One-minute Preceptor" model. Drs Parrott, Dobbie, and Chumley are with the Department of Family Medicine at the University of Kansas Medical Center in Kansas City, while Dr Tysinger is with the University of Texas Health Science Center at San Antonio.

I welcome your comments about this feature, which is also published on the STFM Web site at www.stfm.org. I also encourage all predoctoral directors to make copies of this feature and distribute it to their preceptors (with the appropriate *Family Medicine* citation). Send your submissions to williamh@bcm.tmc.edu. William Huang, MD, Baylor College of Medicine, Department of Family and Community Medicine, 3701 Kirby, Suite 600, Houston, TX 77098-3215. 713-798-6271. Fax: 713-798-7789. Submissions should be no longer than 3-4 double-spaced pages. References can be used but are not required. Count each table or figure as one page of text.

Evidence-based Office Teaching—The Five-step Microskills Model of Clinical Teaching

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The five-step microskills model of clinical teaching, also referred to as the "One-minute Preceptor" model, offers the office-based family physician a structured set of learner-centered steps for conducting an ambulatory teaching encounter. While many family physicians have learned the five-step microskills from the Society of Teachers of Family Medicine's PEP2 materials¹ or through this column,² some may still not have heard of the model or fully realize its benefits. In this article, we summarize evidence from the literature to illustrate how using the five-step microskills model in

ambulatory teaching encounters can benefit office-based teachers and their learners.

Description of the Five-step Microskills Model of Clinical Teaching

Neher and colleagues first described the five-step microskills model in 1992 as a "specific sequence (of questions) to maximize the benefit of the teaching encounter."³ (See case example in Table 1.) Using the first microskill, "Get a commitment," the teacher asks an open-ended question to encourage the learner to commit to one or more aspects of the assessment or management of the patient. Using the second microskill, "Probe for supporting evidence," the teacher uses more direct questioning to bring out and evaluate the learner's knowledge base and clinical reasoning underlying the commit-

ment. The third microskill, "Teach general rules" allows the teacher to generate and communicate a general teaching point resulting from the case. The final two microskills, "Reinforce what was done right" and "Correct mistakes," prompt the teacher to deliver the positive and constructive feedback that students greatly desire.⁴

Usage of the Five-step Microskills in Actual Practice

In their initial paper, Neher and colleagues reported that most physicians trained in using the five-step microskills continue to use them. In their study, 26 out of 29 faculty development fellows who learned the five-step microskills model in a single workshop reported using this material in 90% of teaching encounters up to 4 years later.³ Huang and colleagues reported that even preceptors who have

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Table 1

Case Example Using the Five-step Microskills—A Third-year Medical Student Presents a Young Pregnant Woman With Dysuria

Preceptor:	What do you think is going on with this patient?	First microskill—Get a commitment
Student:	I think the patient has a urinary tract infection	
Preceptor: (nodding)	What clinical findings led you to that conclusion?	Second microskill—Probe for supporting evidence
Student:	She has symptoms of frequency and dysuria, lower abdominal tenderness to palpation, and her urine dipstick is positive for nitrites and leucocytes.	
Preceptor:	That's an excellent summary. It shows that you've taken a good history, performed a focused physical exam, and performed the proper lab studies. I agree with your diagnosis. Now, how do you want to manage her urinary tract infection?	Fourth microskill—Reinforce what was done right First microskill—Get a commitment
Student:	I want to obtain a urine culture and sensitivity and start her on a 3-day course of ciprofloxacin.	
Preceptor:	I agree that we should culture the urine. However, remember that she is pregnant, and that will affect the choice of antibiotic. The general rule to learn from this case is that ciprofloxacin is contraindicated in pregnancy. So we should choose some other antibiotic, such as nitrofurantoin or amoxicillin, which is safer for a pregnant woman. Please look up ciprofloxacin on your PDA so we can further discuss this contraindication at the end of today's clinic.	Third microskill—Teach general rules Fifth microskill—Correct mistakes

Note: The five microskills do not need to be used in strict order. For example, the preceptor repeats the first microskill to encourage the student to commit to different aspects of the diagnosis and management throughout the encounter.

received no training in the five-step microskills use them to some extent. In their observations of 86 teaching encounters by 12 community preceptors who had received no formal microskills training, they discovered that the preceptors spontaneously used the first three microskills in 40%–60% of encounters. However, the preceptors used the feedback microskills (reinforce what was done right and correct mistakes) in only 12.8% and 18.6% of encounters, respectively.⁵

Studies Investigating the Usefulness of the Five-step Microskills Model

Recent studies have investigated the effectiveness of the five-step microskills model. Irby et al and Aagaard et al videotaped teaching encounters of two different cases (a patient with a pneumothorax and a patient with a hiatal hernia and gastroesophageal reflux) using two different teaching models, the

five-step microskills model and a traditional precepting model. In the traditional model cases, there was more focus on correctly treating the patient and less emphasis on the learner's educational needs and participation in the medical decision making. The investigators asked 116 clinical teachers to view each of the four encounters and then diagnose the clinical condition and rate the student's knowledge and skills, their own confidence in evaluating the student, and the efficiency and effectiveness of the teaching encounter.^{6,7}

Salerno et al recorded the teaching encounters of nine board-certified internal medicine preceptors before and after they learned the five-step microskills and then analyzed the preceptor-student discussions for the presence of a number of teacher and student behaviors. The preceptors and students also completed surveys on various aspects of the encounter before and after the teachers learned the

microskills.⁸ Furney and colleagues conducted a randomized controlled study in which the intervention was training 28 internal medicine resident-teachers to use the microskills. They compared the change in teacher self-ratings and learner ratings after the intervention with the change in these items for a control group of 29 internal medicine resident-teachers who did not receive any training.⁹

Evidence Supporting the Efficiency of the Five-step Microskills Model

The clinical teachers in the Aagaard et al study rated the encounters in which the five-step microskills model was used as more efficient than the encounters in which the traditional model of precepting was used. One contributing factor was that the teachers were able to glean more clinical information despite the identical length of the tapes.⁷ Salerno and colleagues also found the five-step

microskills model to be efficient since they observed that the duration of the teaching discussion was the same after preceptors learned the microskills, yet the preceptors spent more time listening to their students.⁸

Evidence Supporting the Effectiveness of the Five-step Microskills Model

The clinical teachers in Aagaard and colleagues' study also rated the five-step microskills encounters as more effective than the traditional precepting encounters.⁷ That study and the others have identified a number of factors that contribute to the effectiveness of this model. Some of these factors are supported by direct observation while others are supported by more-indirect methods such as teacher or learner ratings. These factors are as follows:

The Clinical Teacher's Ability to Correctly Diagnose the Patient's Problem. The clinical teachers in the Aagaard et al study were more likely to correctly diagnose the hiatal hernia/gastroesophageal reflux case when the five-step microskills model was used than when the traditional precepting model was used.⁷

The Clinical Teacher's Confidence in Evaluating the Learner. The clinical teachers in the Aagaard et al study rated themselves as more confident in their ability to evaluate the learner's presentation skills, clinical reasoning skills, and fund of knowledge when the five-step microskills model was used.⁷ Similarly, in the Salerno et al study, the preceptors' self-ratings of the opportunity to evaluate student competence during the encounter improved after they received training in the microskills.⁸

The Clinical Teacher's Ability to Encourage the Learner to Do Independent Learning and Outside Reading. In the Salerno et al study, the preceptors' self-ratings of their ability to prompt students to reach their own conclusions and help them create plans for post-encounter learning improved after they received the training in the microskills.⁸ Similarly, the learners in Furney and colleagues' study also more highly rated their teachers for the item "Motivate you to do reading" after the teachers received training in the microskills. Furney and colleagues postulate that this finding was due to learners being regularly prompted to make a commitment about a patient's diagnosis or management.⁹

The Quality of Feedback That Clinical Teachers Give to Learners. Salerno et al reported that after receiving training in the microskills, the preceptors in their study gave twice as much higher-order feedback (mostly specific feedback) and almost twice as much negative feedback to students after receiving training in the microskills.⁸

The Frequency With Which Clinical Teachers Give Feedback to Learners. In analyzing the audiotapes of actual preceptor-student discussions, Salerno et al observed no significant difference in the frequency of feedback that preceptors gave to their students after learning to use the microskills.⁸ However, Furney et al reported some indirect evidence that suggests that the frequency of feedback may increase after training teachers in the five-step microskills. In their study, the teachers' self-ratings on the items "Offered suggestions for improvement" and "Gave feedback frequently" improved after they received microskills training.⁹ Similarly, the learners in this study gave the teachers higher ratings on these same two items after the teachers had received the training.⁹

Limitations of the Five-step Microskills Model

The five-step microskills model has several limitations. If applied rigidly and used as the preceptor's only teaching technique, it can be overly simplistic and may reduce the ambulatory teaching encounter's richness. For example, the model includes no provision for assessing the learner's psychological reaction to the encounter.³ Also, the model cannot enable learners to make good decisions if they gathered poor-quality data. Preceptors still must satisfy themselves that the learner's presentation and exam findings are accurate.

Conclusions

Despite its limitations, the five-step microskills model of clinical teaching is a practical, easy to use, and well-accepted teaching tool. Recent reports from the literature provide evidence of its efficacy. For preceptors, the model will likely increase the efficiency and effectiveness of their ambulatory teaching encounters since it does not prolong the teaching process and helps the preceptor feel more confident in diagnosing patients and evaluating learners. Usage of this model also encourages preceptors to give more-specific feedback and motivate their learners to continue learning by doing outside reading.

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