

SNAPPS: A Learner-centered Model for Outpatient Education

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ABSTRACT

The unique character of medical education in the outpatient setting has created challenges in teaching and learning that cannot be solved by the adaptation of traditional inpatient approaches. Previous work and the authors' own observational study describe a relatively passive learner focused on reporting history and physical examination data to the preceptor. Based on the work of Bordage in cognitive learning, and that of Osterman and Kottkamp on reflective practice for educators, the authors have developed a collaborative model for case presentations in the outpatient setting that links learner initiation and preceptor facilitation in an active learning conversation. This learner-centered model for case presentations to the preceptor follows a mnemonic called SNAPPS consisting of six steps: (1) Summarize briefly the history and findings;

(2) Narrow the differential to two or three relevant possibilities; (3) Analyze the differential by comparing and contrasting the possibilities; (4) Probe the preceptor by asking questions about uncertainties, difficulties, or alternative approaches; (5) Plan management for the patient's medical issues; and (6) Select a case-related issue for self-directed learning. The authors conducted a pilot study of SNAPPS, introducing the model to both third-year medical students and their preceptors. Feedback was enthusiastic and underscored the importance of the paired approach. SNAPPS represents a paradigm shift in ambulatory education that engages the learner and creates a collaborative learning conversation in the context of patient care.

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The ambulatory teaching environment, uniquely different from the hospital setting and built on brief teacher–learner interactions, continues to challenge medical educators and keeps them searching for methods to optimize the teaching and learning that takes place there.¹ This article examines the ambulatory setting as a unique learning venue, addresses the integral role of the learner in maximizing the experiential setting of the office, and describes our initial experiences with a new

precepting model that positions the learner in the lead role when discussing patients with the preceptor.

THE OFFICE AS A UNIQUE LEARNING VENUE

As medical education shifted from the inpatient to the ambulatory setting, Yonke and Foley² questioned whether educational techniques that worked effectively in the hospital would transition successfully to the office. Their concerns proved remarkably insightful ten years later. As educators, we are struggling to fit an inpatient model of patient case presentations into the office. We are condensing it, minimizing it, and feeling frustrated that it does not fit into the brief five-minute learning moments available between patient visits.

A fundamental distinction between the hospital and the office centers on educational time commitments. In the hospital setting, the teacher blocks off time on his or her schedule and goes to where the learners are working. In the office setting, the learner blocks off time on his or her schedule and goes to where the teacher is working. The

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learner makes the time commitment to education while the teacher is immersed in the service of the practice. The time relationship between the teacher and learner in the office setting is opposite that in the hospital setting. It seems logical that the individual with committed educational time should assume a central role in structuring the learning interaction. We expect the preceptor to prepare for and direct hospital teaching rounds. Should we expect the learner to prepare for and direct the office learning encounter?

ROLE OF THE LEARNER IN THE EDUCATIONAL INTERACTION IN THE OFFICE

In the office, where learning moments are seldom longer than five minutes, teaching functions best when opportunities for experience and education occur in concert. In experiential learning, where actual experience and learning are integrated, the learner takes on a central role and the instructor's role as expert changes to one of facilitator. The instructor's role is no longer to deliver but to guide. The success of the learning endeavor is no longer the isolated responsibility of the instructor or learner, but it becomes the responsibility of both.³ The learner is active and directive in the educational encounter, joining the preceptor in a collaborative office learning interaction.

What do we know about the learner's role in medical education? Foley et al.,⁴ in a classic article published two decades ago, directly observed teaching encounters. They found that students were passive and received a preponderance of low-level, factual information. Even in settings where medical students did a large portion of the talking, they tended to report factual content. Questions were seldom asked of students, and they were rarely required to verbalize their problem-solving efforts. In his 1995 thematic review of the literature on ambulatory teaching and learning, Irby⁵ observed that the preceptor-learner interaction was still predominantly focused on the communication of factual information.

Our recent observational study of resident-preceptor interactions in the outpatient setting compared first-year internal medicine residents with third-year residents, anticipating a progressive increase in the verbalization of higher-order cognitive thinking.⁶ Residents' case presentations to preceptors were recorded on audiocassettes and analyzed using Connell et al.'s validated three-point rating scales for measuring the cognitive activity of preceptors and their learners.⁷ Remarkably, it made no difference whether the learner was a first- or third-year resident. The majority of the interaction with the preceptor focused on giving the facts of the case or responding to the preceptor's questions about the

facts of the case. Although senior residents became more efficient in their interactions with preceptors and had significantly shorter presentations than did interns, they continued, predominantly, to assume a reporter's role in their preceptor-resident encounters. The informal curriculum of the office with associated time pressures seems to communicate to learners that facts and efficiency are target behaviors. Summarizing and reporting factual information are skills residents have practiced and are comfortable with, and they are clearly less risky and less time-intensive than are verbalizing thoughts and questions. Our study points to the need to clarify the goals of teaching and learning in the ambulatory setting and to develop methods that enable learners to articulate questions and uncertainties that arise in the process of patient care.

These observations of learner-teacher interactions, separated by two decades, clearly identify relatively inert, passive learners who depend to a large extent on the energy and expertise of the preceptors to drive the learning encounters. The question is—can we do something to empower the learners and enable them to contribute more to the encounters? Connell et al.⁷ addressed this through faculty development. They studied the promotion of thinking and reasoning by preceptors in the outpatient setting. Preceptor-learner encounters were analyzed before and after a series of workshops that engaged preceptors in changing the focus of case presentations from the predominant reporting of factual information to the expression of thinking behaviors and the expression of uncertainties or difficulties. They used two three-point rating scales they had developed to measure the cognitive activity of preceptors and their students. Baseline interaction scores revealed a major emphasis on eliciting and clarifying facts. After a series of three intensive faculty workshops, half of the preceptors showed marked improvement in eliciting thinking behaviors from the learners in their offices. The length of the encounters, approximately eight minutes, remained the same both before and after the intervention.

Another intervention presented in faculty development programs is learner-centered precepting. In this approach, the preceptor encourages the learner to identify teaching needs at the beginning of the case presentation and later to formulate specific questions about information needed for patient care.⁸

Studies such as Connell et al.'s and techniques such as learner-centered precepting focus on the teachable moment and optimize it through faculty development. We have chosen to build on these contributions while changing the focus to the learnable moment and addressing it through learner development.

A LEARNER-CENTERED MODEL FOR OUTPATIENT EDUCATION

Given the role changes inherent in the office environment that result in committed educational time for learners rather than teachers, we argue for a new outpatient education model that targets the learner as an equal, if not more important, contributor to a successful educational interaction in the office. A learner-driven educational encounter in the office setting emphasizes the roles of the learner and the teacher in a collaborative learning conversation. In this cognitive “dance,” one partner may lead but each must know the steps. We propose that in the office the learner can and should be taught to lead. The preceptor may coach the learner until the steps become automatic but should avoid taking over the conversation. The theoretical framework for this position is well established. Research has identified the learner’s approach to learning to be the crucial factor in determining the quality of educational outcomes.⁹

SNAPPS

A six-step mnemonic called SNAPPS (see List 1), structures the learner-led educational encounter that is facilitated by the preceptor. In this model, the learner’s case presentation to the preceptor includes a concise summary of the facts followed by five steps that require the verbalization of thinking and reasoning. These steps are drawn, in part, from the cognitive activity rating scales developed by Connell et al.⁷ The model encourages a presentation that is intended to redirect (but not lengthen) the learning encounter by condensing the reporting of facts and encouraging the expression of thinking and reasoning. Though we recognize that learners enter the office setting with diverse abilities and expertise, case presentations should generally not exceed six to seven minutes in length. The SNAPPS model depends on a

List 1

SNAPPS, a Mnemonic for a Learner-centered Model for Case Presentations to Preceptors in the Outpatient Setting

The learner will:

1. Summarize briefly the history and findings
2. Narrow the differential to two or three relevant possibilities
3. Analyze the differential by comparing and contrasting the possibilities
4. Probe the preceptor by asking questions about uncertainties, difficulties, or alternative approaches
5. Plan management for the patient’s medical issues
6. Select a case-related issue for self-directed learning

learner–teacher continuum that should ultimately be learner driven, but may initially need the preceptor’s coaching to help the learner gain ease and proficiency with the steps. It also depends on having faculty set the expectation that the learner can and should assume a central role and can and should ask questions. We, as teachers, have helped learners to master inpatient presentations. We can serve in the same role in the office with a model designed for that educational venue.

The six steps of the SNAPPS model are now described in more detail.

Summarize Briefly the History and Physical Findings

The learner obtains a history, performs an appropriate examination of a patient, and presents a concise summary to the preceptor. Though the length may vary, depending on the complexity of the case, the summary should not occupy more than 50% of the learning encounter and, generally, should be no longer than three minutes. The summary should be condensed to relevant information because the preceptor can readily elicit further details from the learner. In this step, the learner should be encouraged to present the case at a higher level of abstraction (i.e., to use semantic qualifiers: yesterday becomes acute, third time becomes recurrent) because successful diagnosticians use these qualifiers early in their presentations.^{10,11}

Narrow the Differential to Two or Three Relevant Possibilities

The learner verbalizes what he or she thinks is going on in the case, focusing on the most likely possibilities rather than on “zebras.” For a new patient encounter, the learner may present two or three reasonable diagnostic possibilities. For follow-up or sick visits, the differential may focus on why the patient’s disease is active, what therapeutic interventions might be considered, or relevant preventive health strategies. This step requires a commitment on the part of the learner, similar to the microskills model of clinical teaching,¹² and, as the authors suggest, may initially represent early steps in the problem-solving process such as a hunch or best guess. In the SNAPPS method, the learner must present an initial differential to the preceptor before engaging the preceptor to expand or revise the differential.

Analyze the Differential by Comparing and Contrasting the Possibilities

The learner initiates a case-focused discussion of the differential by comparing and contrasting the relevant diagnostic

possibilities and discriminating findings. A learner's discussion of the cause of a patient's chest pain might proceed as follows: "I think that angina is a concern because the pain is in his anterior chest. At the same time I think that a pulmonary cause is more likely because the pain is worse with inspiration, and I heard crackles when I examined the lungs." Often the learner may combine this step with the previous step of identifying the diagnostic possibilities, comparing and contrasting each in turn. This discussion allows the learner to verbalize his or her thinking process and can stimulate an interactive discussion with the preceptor. Learners will vary in their fund of knowledge and level of diagnostic sophistication, but all are expected to utilize the strategy of comparing and contrasting to discuss the differential.

Probe the Preceptor by Asking Questions about Uncertainties, Difficulties, or Alternative Approaches

During this step, the learner is expected to reveal areas of confusion and knowledge deficits and is rewarded for doing so. This step is the most unique aspect of the learner-driven model because the learner initiates an educational discussion by probing the preceptor with questions rather than waiting for the preceptor to initiate the probing of the learner. The learner is taught to utilize the preceptor as a knowledge resource that can readily be accessed. The learner may access the preceptor's knowledge base with questions or statements ranging from general to specific. Examples include, "What else should I include in the differential?," or "I'm not sure how to examine for a knee effusion," or "We could taper his corticosteroids since his Crohn's flare is nearly resolved, but what protocols can be used to avoid problems with steroid withdrawal?" The preceptor can learn a great deal about the learner's thought process and knowledge base by such interactions.¹³ In the first two interactions, the learner recognizes a need for help with knowledge or skill deficits. In the third, the learner demonstrates a more sophisticated level of knowledge. The preceptor may discuss steroid withdrawal protocols and introduce new learning issues such as the patient's risk for steroid osteoporosis.

Plan Management for the Patient's Medical Issues

The learner initiates a discussion of patient management with the preceptor and must attempt either a brief management plan or suggest specific interventions. This step asks for a commitment from the learner, but encourages him or her to access the preceptor readily as a rich resource of knowledge and experience.

Select a Case-related Issue for Self-directed Learning

This final step encourages the learner to read about focused, patient-based questions. The learner may identify a learning issue at the end of the patient presentation or after seeing the patient with the preceptor. The learner should check with the preceptor to focus the reading and frame relevant questions. The learner should devote time to reading as soon after the office encounter as possible. We encourage learners to read nightly in a regular, disciplined, and patient-based manner rather than in long, unfocused bursts. For example, a learner would be encouraged to read to answer a question such as, "What is the rationale for the use of ace inhibitors in congestive heart failure?" rather than reading an entire chapter in a review text on heart failure. Learners should have an index card or personal digital assistant with them in the office to note learning issues. At the next office visit, the learner can utilize the preceptor as a resource as he or she refers to the list and further probes the preceptor with questions based on the readings.

IMPLEMENTING A LEARNER-DRIVEN APPROACH

We propose that learners along with their preceptors receive training in this model prior to entering the office setting. The learner is responsible for giving a case presentation that verbalizes his or her thinking. The preceptor facilitates the presentation and responds to the learner's uncertainties. Both learners and preceptors have important roles in building an educational encounter that stimulates thinking and questioning. In the SNAPPS method, the learner organizes a six-step case presentation to the preceptor and is expected to take the lead role in moving through the steps. The preceptor may need to coach initially but should rapidly transfer the lead role to the learner. The learner's ambulatory care educational skills need as much, if not more, development than the preceptor's. A learner-driven and preceptor-facilitated approach to ambulatory education has important implications for educators.

To implement a learner-driven approach, we need to reevaluate who we have been talking to about changes in medical education, or perhaps more accurately, who have we not been talking to. We have been talking to the faculty, but we need to talk to the learners as well and provide them with strategies to strengthen their role. The SNAPPS model heralds a change in preceptor training, pairing faculty development and learner development as companion pieces for office-based education. It arises from a strong precedent in reflective practice where, "the learner assumes a central position and the model of instructor as expert gives way to

that of the instructor as facilitator. The role of leader is no longer to deliver but to guide.”³

EXPERIENCE WITH THE SNAPPS MODEL FOR OUTPATIENT EDUCATION

We piloted the SNAPPS model for outpatient education with third-year medical students during their ambulatory medicine rotation at our institution during the 2001 to 2002 academic year and are currently designing a randomized, controlled trial. A total of 50 students participated in the pilot and were introduced to the model at the start of their three-week ambulatory rotation, which includes four half-days per week in a general internist’s office and four half-days per week in subspecialty offices. The SNAPPS method for case presentations was introduced in a 45-minute workshop that included a role-play scenario demonstrating the use of the model. Students were given a pocket card detailing the six SNAPPS steps and received twice-weekly e-mail reminders to continue to use the SNAPPS model during their office rotations. The model was introduced to preceptors during a lunchtime orientation meeting. In addition, preceptors were given a pocket card, identical to that given to the students, outlining the steps of the method. At the beginning of each three-week ambulatory rotation, preceptors were contacted to remind them that students rotating in their offices would be using the SNAPPS model and would appreciate their help facilitating its use.

The students’ comments have been most enlightening. They agreed that the office is usually a passive learning setting and were enthusiastic about a model that allows them to take an active role. Key aspects of the students’ feedback included:

- They feel capable of assuming an active role and identifying learning points that are uniquely helpful to them, based on their prior rotations and experience.
- They believe that the SNAPPS method is intuitive and easy to learn because it is an adaptation of the established format of history and physical, differential diagnosis, assessment, and plan.
- They appreciate the unique approach of questioning the preceptor and selecting a focused issue for self-directed learning.

Feedback from the preceptors has focused on the emergence of students’ questions and engagement under the guidance and expectations of the SNAPPS model. Key aspects of their comments include:

- Although students rarely came up with questions when prompted as part of a traditional office interaction, students readily came up with questions for the preceptor when using the SNAPPS approach.
- The questions were appropriate to the case, at times directing the delivery of content to the student, and at other times generating an interactive discussion.
- Preceptors remarked that they enjoyed teaching the engaged student who is asking questions.
- The preceptors felt relieved of the pressure of thinking up learning points, and could instead respond to the student’s questions.
- Answers to student-initiated questions could develop in a variety of directions, depending on the case at hand, but remained stimulating because of their relevance to the student’s learning needs and to the context of the patient being seen.

We introduced SNAPPS into the office setting as a collaborative effort emphasizing student initiation and preceptor facilitation. The feedback we have received underscores the importance of developing this paired approach. Although the key element of SNAPPS is the learner-centered paradigm, it serves to structure an interactive discussion between the teacher and learner. Our experience piloting the model during the 2001 to 2002 academic year has made it clear how important it is to develop faculty understanding and facilitation. The faculty member plays a key role in moving away from the usual comfort zone of instructor as expert to the new zone of instructor as facilitator. The faculty member needs to learn the SNAPPS procedure, allow the students to use it, and find a new level of comfort as a participant/facilitator in a learning conversation. The instructor is still an expert resource in the student’s eyes, but he or she needs to help the student take control of his or her own learning.

CONCLUSIONS

The SNAPPS model for case presentations to a preceptor we have outlined in this article looks at the particular strengths and learning conditions of the ambulatory setting and builds on the structure of office-based patient care. This new model grows out of the unique environment of the office and is not an adaptation of an inpatient model. Because the teaching-learning moments are brief but multiple, the model engages the learner directly to identify learning needs in the context of the patient being seen. It offers the prerequisite skills for maintaining professional competence in the workplace by shaping ongoing practice-based and self-directed learning skills.³ It calls for a paradigm shift in ambulatory teaching

that positions the faculty and learners as partners in skill-development programs and as partners in office learning.

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REFERENCES

1. Bowen J, Irby D. Assessing quality and costs of education in the ambulatory setting: a review of the literature. *Acad Med.* 2002;77:621–80.
2. Yonke AM, Foley RP. Overview of recent literature on undergraduate ambulatory care education and a framework for future planning. *Acad Med.* 1991;66:750–5.
3. Osterman D, Kottkamp R. *Reflective Practice for Educators: Improving Schooling through Professional Development.* Newbury Park, CA: Corwin Press, 1993.
4. Foley R, Smilansky J, Yonke A. A teacher-student interaction in a medical clerkship. *J Med Educ.* 1979;54:622–6.
5. Irby DM. Teaching and learning in ambulatory care settings: a thematic review of the literature. *Acad Med.* 1995;70:898–931.
6. Wolpaw TM, Glover PB, Papp KK. An exemplary model of learning in the rheumatology outpatient setting. *Arthritis Rheum.* 2001; 44(9): S208.
7. Connell KJ, Bordage G, Chang RW, Howard BA, Sinacore J. Measuring the promotion of thinking during precepting encounters in outpatient settings. *Acad Med.* 1999;74(10 Suppl):S10–2.
8. Alguire PC, DeWitt DE, Pinsky LE, Ferenchick GS. *Teaching in your office: a guide to instructing medical students and residents.* Philadelphia, PA: American College of Physicians, 2001.
9. Pangaro L. A new vocabulary and other innovations for improving descriptive in-training evaluations. *Acad Med.* 1999;74:1203–7.
10. Chang RW, Bordage G, Connell KJ. The importance of early problem representation during case presentations. *Acad Med.* 1998;73(10 suppl): S109–11.
11. Nendaz MR, Bordage G. Promoting diagnostic problem representation. *Med Educ.* 2002;36:760–6.
12. Neher JO, Gordon KC, Meyer B, Stephens N. A five-step “microskills” model of clinical teaching. *Clin Teach.* 1992;5:419–24.
13. Dillon J. *The Practice of Questioning.* London: Routledge, 1990.