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## Facilitating Preceptor and Student Communication in a Dental School Teaching Clinic

**Ronald L. Sakaguchi, D.D.S., M.S., Ph.D., M.B.A.**

Associate Dean for Research and Innovation, Oregon Health & Science University

### Abstract

Teachable moments in the dental clinic are rare and are not adequately exploited. Students often ask simple procedural questions, such as “What should I do next?” A preferred approach is one in which the clinic preceptor helps the dental student collect data about the patient’s condition, analyze the data, and consider scientific evidence and the patient’s profile in the formulation of diagnoses and treatment plans. The School of Dentistry at Oregon Health & Science University modified the one-minute preceptor method that was developed to instruct medical students in clinical office settings, using the acronym iCARE, which is an abbreviation for microskills that the dental preceptor and student follow when interacting in a dental clinic setting. From the preceptor’s perspective, iCARE stands for Inquire, Cultivate, Advise, Reinforce, and Empower; from the student’s perspective, iCARE is Initiate, Contribute, Apply, Reflect, and Execute. iCARE enhances the value achieved in preceptor and student interactions, promotes the student’s critical thinking, and encourages the student’s use of scientific evidence in formulating and supporting patient care decisions in the clinic.

### Keywords

preceptor; dental student; pedagogy; evidence-based dentistry; clinic instruction; one-minute preceptor; critical thinking

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The brevity of teachable moments in a dental clinic setting<sup>1,2</sup> is complicated by the relationships and expectations of the dental student, clinical instructor, and patient. In an effort to involve the patient, the discussion between instructor and student often occurs chair-side, making critical feedback to the student difficult and awkward. In discussions with the clinical instructor, the dental student may provide incomplete information about the patient’s condition for the instructor to evaluate the student’s tentative diagnosis and treatment plan. The dental student may also be inadequately prepared to conduct a meaningful conversation with the instructor. The instructor, as the dental preceptor, may quickly ask the dental student questions about the patient’s condition in order to make a fast assessment of the patient’s dental condition and formulate instructions for the next action.

The interaction between student and instructor may often consist of short, student-initiated procedural questions, such as “What should I do next?” The dental preceptor may quickly respond to the dental student’s question with specific instructions, then move to the next student, repeating this process. The clinic instructor, faced with responsibilities to supervise several dental students without sufficient time, may control the exchange, speak too much, too quickly, too abruptly, and perhaps too condescendingly or too patronizingly to the dental student.<sup>3</sup> The dental student does not want to be embarrassed or humiliated and does not want

to be made uncomfortable in front of the patient. The student also does not want the patient to feel uncomfortable and less confident in the quality of care. The student wants to be taught what is needed to care for the current patient, wants to be valued for existing skills and knowledge, and wants to be regarded as an equal partner in the health team.<sup>4</sup>

A goal of the clinic experience, from both the instructor's and the dental student's perspectives, is to help the student learn to gather and analyze critical facts, assess the patient's condition, arrive at a tentative diagnosis, and determine a treatment plan and course of action. Therefore, the exchange between the instructor and the student needs to be professional and needs to draw the patient into the exchange. The dental student should draw from the instructor's knowledge and experience, rather than merely relying on the instructor to be a gatekeeper and checker, and the dental student should manage the care of the patient. The instructor should share knowledge and mentor, for both the student and the patient's benefit. This is best achieved in a respectful, positive environment, in which the instructor and student are both prepared to engage in a professional and constructive discussion in front of the patient. The instructor and dental student should work as a professional team to critically analyze evidence, design a strategy for care, and exchange information in collaboration with the patient.

In medicine, various approaches to facilitating the medical preceptor and the student's exchange of information efficiently and respectfully have been offered.<sup>2,5</sup> In particular, the one-minute preceptor approach, introduced by Neher et al. in 1992,<sup>2</sup> has received much attention as a communication framework that helps the medical student learn problem-solving skills while presenting cases to the medical preceptor. This article describes the application of the one-minute preceptor approach to instruction in the dental clinic. Similar to the medical approach, the dental framework facilitates a professional exchange of information between the clinic instructor and the dental student, while educating the student and providing the best possible care for the patient.

## The One-Minute Preceptor Method

The one-minute preceptor method was originally designed as a preceptor-centered approach to help new medical preceptors teach learners, such as medical students, in a medical practice.<sup>2</sup> However, this approach has also been labeled as both a student-oriented and patient-centered method.<sup>6</sup> The one-minute preceptor approach consists of five tasks (termed "microskills") that the preceptor and the learner perform when discussing a clinical case. The five tasks are as follows:

1. **Get a commitment.** The preceptor encourages the student to commit to the next step in patient care, whether it is a diagnosis or a treatment plan, by asking "commitment" questions. The student's knowledge is applied to the patient's situation to formulate the next step in patient care. Commitment questions subtly push the student into collaborating with the preceptor to problem-solve.
2. **Probe for supporting evidence.** The preceptor asks for evidence (data) that supports the student's answer to the commitment question. Such questions prompt the student to reveal the mental processes behind the commitment. The preceptor withholds judgment, allowing the student to think out loud without feeling embarrassed.
3. **Teach general rules.** Based on what the student offers as supporting evidence, the preceptor can become aware of mistakes in logic or gaps in the student's skills or knowledge. The preceptor then provides information to address general concepts and information that can be applied to other cases by giving an objective explanation of a general point. These general rules or principles are applied to the case being discussed and to other cases that the student might encounter.

4. **Reinforce what was done right.** The preceptor reinforces a specific aspect of the student's handling of the case. Such reinforcement creates a positive relationship between the preceptor and student, and causes the patient to increase confidence in the student.
5. **Correct mistakes.** The preceptor has a responsibility to tactfully correct any mistakes or omissions on the part of the student and to explain any negative consequences associated with the mistake. An appropriate time and place must be chosen for this private exchange. It is also useful to ask the student to critique his or her own performance first, before the preceptor identifies and corrects the mistakes. Comments to correct a student's mistake should not be vague judgments but instead be specific to the student's skills and knowledge. The preceptor should describe the mistakes as "not best" rather than "bad."<sup>2</sup>

Neher and Stevens<sup>7</sup> suggest that the one-minute preceptor method needs to be viewed as a flexible framework for communication and that once the preceptor is familiar with the tasks, their order can be modified or particular tasks can be selected from the list as the situation warrants. The method sometimes includes a final, sixth task, Conclusion.<sup>8</sup> In this step, the preceptor ends the communication exchange by explaining the next step and the student's role in this next step.

### **iCARE: The One-Minute Preceptor Adapted for the Dental Clinic**

The School of Dentistry at Oregon Health & Science University (OHSU) has initiated a project to enhance the interactions between dental preceptors and students in the dental clinic, where preceptors reinforce the use of scientific evidence and critical thinking in preceptor-student discussions. This project is a result of a National Institutes of Health, National Institute of Dental and Craniofacial Research R25 grant. The project, named iCARE, is modeled after the one-minute preceptor approach as originally presented by Neher et al.<sup>2</sup> iCARE is similar to the one-minute preceptor approach in that it consists of an ordered series of tasks, takes about five to ten minutes to follow, and facilitates an efficient exchange between the dental preceptor and the student in front of the patient. iCARE enhances the one-minute preceptor approach originally presented by Neher et al.<sup>2</sup> in that it is deliberately both preceptor- and student-oriented, reinforces principles of critical thinking, and places more emphasis on evidence-based decision making.

Table 1 lists the action verbs that iCARE represents for the preceptor (left-hand column) and the student (right-hand column). The tasks are designed to guide them both in a positive conversation, so that the student ultimately learns to assess personal dental skills and his or her knowledge base, develops problem-solving skills, and becomes less dependent on the preceptor for step-by-step instructions. The lower-case "i" in iCARE represents the subordination of the preceptor's and student's egos to the clinic task at hand: to exchange information in a professional, tactful manner in order to provide the best available patient care. The upper-case "CARE" in iCARE represents the balance of teaching, training, and patient care that are embodied in the clinic setting.

From the preceptor's perspective, the iCARE approach involves the following five tasks:

1. **Inquire about the patient.** The dental preceptor inquires about the patient's history and current condition and the student's diagnosis and treatment plan. As shown in Table 1, this information can be solicited through open-ended *what* questions that give the student flexibility in formulating a response and allow the preceptor to assess the student's skills, logic, and knowledge base.

2. **Cultivate the use of evidence.** The dental preceptor elicits information from the student that serves as evidence to support the student's diagnosis and treatment plan. Table 1 offers open-ended questions for the preceptor to draw evidentiary information from the student including patient data, scientific principles, and data from published scientific literature. Through these questions, gaps will be revealed in the student's knowledge base about the patient, fundamental scientific concepts, and the scientific literature. Answers may also reveal the student's (in)ability to problem-solve and to integrate scientific evidence into diagnoses and treatment plans.
3. **Advise on general oral health principles.** The dental preceptor advises on facts about the patient that were overlooked; can guide the student to general oral health principles relevant to the current case that the student may have omitted; and can refer the student to particular published papers. By offering advice that is both directly relevant to the student's current patient and to similar clinical cases, the preceptor can help build the student's knowledge base.
4. **Reinforce what the student did well.** To establish a relationship that is conducive to the student's learning, the dental preceptor needs to reinforce what the student is doing well *before* moving to areas that need improvement. It is important for the preceptor to cultivate a positive communication exchange with the student, to treat the student as a professional, to be a role model for appropriate behavior in front of a patient, to avoid embarrassing or humiliating the student, and to be tactful at all times. Table 1 gives examples of positive comments that focus on the student through the use of "you." Critical comments can be combined with advice on oral health principles and should be accompanied with evidence to support any criticisms.
5. **Empower the student.** The final task is to empower the student to evaluate and reflect on the discussion just completed with the preceptor and to carry out the agreed-upon tasks. The student is empowered to become less dependent on the dental preceptor and to grow as a member of the care-providing team. The preceptor encourages the student to propose next actions and a timeline for their next discussion or completion. Table 1 gives an example of how the preceptor can encourage the student to learn from the discussion and to take the next step in providing health care to the patient.

Thus, from following iCARE, the dental preceptor can help the student reflect on his or her own knowledge base and understanding of the scientific literature, use scientific reasoning to problem-solve the patient's dental condition, and assess the adequacy of the student's diagnosis and treatment plan.

From the student's perspective, iCARE can be used to help formulate a description of the patient's condition and to lead the student through an assessment of his or her own problem-solving abilities. The following five tasks are involved:

1. **Initiate a presentation of the patient, diagnosis, and treatment plan.** The first step is to identify key facts that define the patient's relevant dental history and current condition followed by committing to a preliminary diagnosis and treatment plan. The student is expected to take the lead in the discussion, focusing on "my patient," and to make a commitment to the tentative decisions made. The student's identification of key facts is an important first step that enables the dental preceptor to assess the student's knowledge, skills, and logic behind the decision making process.
2. **Contribute evidence to support the diagnosis and treatment plan.** This second step helps make the student aware that any conclusions about the diagnosis or treatment plan need to be supported with facts about the patient, fundamental scientific principles, and data from published scientific research. The student should integrate principles of evidence-based decision making that include clinician skills and

experience, patient preferences, and outcomes from scientific literature to arrive at an appropriate diagnosis and plan of treatment. The student begins contributing evidence by initiating “I” statements, such as “I narrowed the list of potential diagnoses.”

3. **Apply dental principles to other cases.** The student is expected not only to apply principles learned from the exchange with the dental preceptor to the patient’s condition, but also to apply them to other cases. Application of dental principles to other cases requires critical thinking and requires the student to articulate how concepts relate to each other.
4. **Reflect on what was done well and what could be improved.** Each interaction with a preceptor should build the student’s knowledge base. Positive reinforcement from the preceptor promotes the student’s self-confidence and stimulates the student to perform at an even higher level. The student also needs to cultivate a keen self-awareness about his or her current skills, experience, and knowledge base and to strive to improve with every patient and with every new concept learned. By becoming more aware of typical actions expected of a dentist, the student can better problem-solve the patient’s dental needs and can share responsibility for dental education, by eliciting from the preceptor suggestions for improvement and suggestions for sources of additional information. The student should always be ready to learn from errors and omissions and to consider suggestions from preceptors to be edifying rather than hurtful. Table 1 shows how self-directed statements can help a student develop a growing awareness of personal development.
5. **Execute the treatment and educate the patient.** Once the diagnosis and treatment plan have been described and discussed, the student can describe the next action to the patient, advise the patient based on scientific evidence, and provide the treatment agreed upon by the patient. The patient makes a decision built on a foundation of scientific evidence and clinician experience. Table 1 presents examples of how the student can educate and advise the patient and also be responsive to the preceptor.

By following the framework described here, the student and the dental preceptor are given a strategy for interacting with each other and with the patient. The preceptor’s focus is on eliciting information from the student to enable the preceptor to assess the student’s ability to problem-solve using the student’s knowledge base and to collaboratively design care based on scientific evidence. The student’s focus is on applying evidence-based principles and demonstrating a comprehensive knowledge of the patient’s condition that has been critically analyzed. Through this framework, the student learns that all oral health care needs to be supported by evidence-based principles. The student also learns that, as a developing professional, he or she needs to educate and advise patients from a foundation of best available scientific evidence. Within this framework, the patient benefits from a collaborative approach to problem-solving, knowing that the student and preceptor were comprehensive in their exploration of solutions in which scientific evidence was integrated with clinical experience. The patient is then able to make the most informed decision for care.

## Discussion

The one-minute preceptor approach facilitates communication between the preceptor and student, maximizes the available teaching time in the clinic, and helps the student approach patient care in a positive, problem-solving manner in light of published scientific principles and data. When initially used, there may be a degree of discomfort with the approach, but as Neher and Stevens<sup>7</sup> point out, taking time to reflect briefly on the set of tasks at the end of each teaching day can increase the preceptor’s comfort level with the approach.

Since the introduction of the Neher and Stevens<sup>7</sup> one-minute preceptor approach to teaching in a clinic setting, the approach has been found to be easy to learn and effective in helping preceptors improve their teaching.<sup>8,9</sup> In one study, second- and third-year internal medicine residents were given a one-hour training session on the one-minute preceptor, including role-playing, with residents in the role of the preceptor.<sup>10</sup> Medical students reported that the residents who received training showed statistically significant improvements in all teaching domains except “teaching general rules.” The greatest improvement was noted in items that addressed “asking for a commitment,” “providing feedback,” and “motivating me to do outside reading.” Residents in the intervention group self-reported significant improvement in all teaching behaviors ( $P < .05$ ), and 87 percent of the residents rated the approach as “useful or very useful.” In another study,<sup>9</sup> teaching behaviors of board-certified internist faculty preceptors for third-year medical students were assessed after a faculty development workshop based on the one-minute preceptor model. The amount and quality of feedback were measured. After the workshops, instructors reported that they were better at letting the students reach their own conclusions ( $P = 0.001$ ).

Aagaard et al.<sup>11</sup> found that the traditional model focuses on “missed areas” and provides relatively little instruction. Aagaard et al. additionally found that preceptors using the one-minute preceptor approach were equally or better able to diagnose the patient’s condition correctly, in comparison to those using a traditional approach, and the one-minute preceptors were better able to assess students’ abilities and knowledge. The preceptors rated the one-minute preceptor approach more efficient and more effective. In comparing the one-minute preceptor approach to the more traditional model, Irby<sup>12</sup> found that preceptors using the traditional approach were more likely to teach generic skills, such as history taking and presentation skills, while preceptors using the one-minute preceptor approach were more likely to teach about the patient’s specific illness in terms of diagnostic tests and the natural progression of disease.

As noted by Pugh,<sup>4</sup> what marks clinical education as different from other branches of education is the role of the patient. The patient is the audience to the exchange between clinic instructor and student. Engrossed in their exchange of information, the preceptor or student (or both) sometime forgets that the patient is present and all too often forgets that their exchange is an opportune moment for teaching and learning. Chair-side, both the preceptor and the student need to exchange information efficiently. The preceptor quickly analyzes the student’s skills and knowledge base, assesses the student’s diagnosis and treatment plan, and teaches about dental principles and their application to patient needs. At the same time, the student assesses his or her own skills and knowledge base, assesses familiarity with the scientific literature, assesses the tentative diagnosis and treatment, and evaluates how well dental knowledge and skills were applied to the current patient’s case. The preceptor and student in the dental clinic need to be prepared for their exchange and to be appropriately responsive to each other, not only to achieve an effective exchange in the dental clinic, but also to prepare the student in the compassionate and appropriate exchange of information with the patient in the dental office after graduation.

After graduation, the new dentist practices without the daily guidance of clinic preceptors, so it is important for iCARE, as an evidence-based diagnosis and treatment framework, to be internalized through repetition in school and in the dental clinic, ultimately resulting in the framework becoming the basis for critical thinking in practice. iCARE merges evidence-based dentistry principles with effective professional communication skills. iCARE can help dental preceptors and students provide the best available care for patients while students enhance not only their knowledge of oral health principles but also their abilities to analyze and apply evidence from scientific studies to patient cases in the formulation of diagnoses and treatment plans.



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Table 1

iCARE from the dental preceptor's and the dental student's perspectives

From the Dental Preceptor's Perspective, with Examples	iCARE actions	From the Dental Student's Perspective, with Examples
<p><b>Inquire</b> about the patient's dental history and current condition and about the student's tentative diagnostic conclusion and possible treatment plans.</p> <p><i>What is this patient's medical and dental history?</i>  <i>What did your examination reveal?</i>  <i>What is your diagnosis?</i>  <i>What is your treatment plan?</i></p>	<b>i</b>	<p><b>Identify</b> key facts in the patient's dental history and current condition, and initiate a discussion of a tentative diagnostic conclusion and possible treatment plans.</p> <p><i>My patient's chief complaint is pain when drinking cold fluids. After reviewing the medical and dental history and completing an intraoral exam, I think the pain is resulting from gingival recession and exposed dentin in the lower-left quadrant.</i></p>
<p><b>Cultivate</b> the student's use of scientific evidence to support the tentative diagnostic conclusion and treatment plan.</p> <p><i>What patient data support your diagnosis?</i>  <i>What scientific evidence supports your diagnosis and treatment plan?</i>  <i>Why this treatment plan?</i>  <i>What evidence-based reasons do you have for this diagnosis and plan?</i>  <i>What are alternative diagnoses and treatment plans that have been suggested in the literature?</i></p>	<b>C</b>	<p><b>Contribute</b> evidence to support the tentative diagnostic conclusion and treatment plan.</p> <p><i>I narrowed the list of potential diagnoses and targeted dentin exposure because the radiographic and dental exams were within normal limits. I also recall literature we read in class about the hydrodynamic theory of dentin pain.</i></p>
<p><b>Advise</b> the student on general oral health principles relevant to this and other cases.</p> <p><i>Generally, when a patient presents with abfractions in posterior teeth, occlusion is the cause of the lesions. I recommend checking the occlusion for interferences along with an analysis of any clenching or bruxing habits.</i></p>	<b>A</b>	<p><b>Apply</b> relevant oral health principles to the current case and to other cases.</p> <p><i>I'm learning about those principles in our lectures. I'm working on where this information can also apply. I haven't thought of those options. I have another patient with these symptoms and will conduct these tests to determine if the etiology is the same.</i></p>
<p><b>Reinforce</b> what the student has done well and suggest what could be improved.</p> <p><i>Your analysis of the patient data and integration of findings from the literature were effective. You explained your treatment plans well; you clearly have a handle on alternatives for treatment and criteria for choosing one over another. There is another set of tests and possible diagnoses you might consider in similar situations.</i></p>	<b>R</b>	<p><b>Reflect</b> on what was done well and what could be improved. Integrate principles of evidence-based decision making.</p> <p><i>I read a few articles before this appointment that were very helpful in developing the treatment options. I should have thought more broadly about options for materials, since there is a recently published meta-analysis of restorative materials that describe their prognosis in conditions similar to what my patient presents. I was overly influenced by comments from my patient and I should have focused on a recently published systematic review that compared the prognosis of the treatment we are considering to alternative treatment options.</i></p>
<p><b>Empower</b> the student to evaluate the current diagnosis and treatment plan by considering scientific evidence, and modify if necessary. <b>Ask</b> the student to develop a timeline for next actions.</p> <p><i>Would you change anything in your initial treatment plan? Why or why not?</i>  <i>What is the next action?</i></p>	<b>E</b>	<p><b>Execute</b> and, if necessary, modify the treatment plan; and educate the patient.</p> <p><i>I still think my diagnosis and treatment plan are appropriate based on our discussion and articles I read, but I need to rethink the options for restorative materials and consider preferences indicated by my patient. I will complete the procedures we have discussed and will consult with you before making the impression.</i></p>