

Promoting the Development of Doctoring Competencies in Clinical Settings

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Background and Objectives: *This UME-21 project was developed to promote a variety of clinical competencies during a 12-week medicine clerkship for third-year students. **Methods:** The clerkship is divided into three 4-week rotations—two inpatient rotations and one outpatient rotation. During each rotation, students select a competency, review the module about that competency on the clerkship Web site, and perform a literature search. Learning exercises prompt students to ask their preceptor to model and discuss the performance of the competency on at least one patient and to provide feedback on their performance at least twice. At the end of each rotation, students are required to write about what they learned from the articles they read, write a critical analysis of their performance of the competency on one patient, and complete an evaluation questionnaire. This report is based on the results from the students' evaluation questionnaire. **Results:** At the end of the first six rotations, 120 students completed 330 evaluations of the course (93% response rate). The most frequently selected competency modules were behavior modification and patient education. In 81.5% of the evaluations, students felt that there was at least moderate improvement in their ability to perform the selected competency during the rotation. By the end of the rotation, in 85.3% of the evaluations, students indicated that they were confident performing the competency most or almost all of the time. Observing the preceptor was the component of the curriculum most often rated as helpful (59.1%), followed by literature review (57.9%), reviewing the Web site module (45.2%), and observation and feedback by the preceptor (32.7%). **Conclusions:** Based on student reports, the approach described in this paper appears to be a promising way to teach important doctoring competencies in a clinical setting.*

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During the past 5 years, numerous reports by national organizations have identified competencies that should be taught to medical students and residents.¹⁻⁵ These competencies generally involve specific sets of knowledge, attitudes, techniques, and skills that are used to accomplish tasks, such as helping patients stop smoking. For the most part, the teaching of these competencies has been confined to the classroom, where knowledge is gained from lectures, discussions, and readings, and skills are developed through surrogate clinical experiences, such as role-play or the use of standardized patients. For many competencies, however, these approaches cannot fully substitute for real-world clinical experiences. Without reinforcement of the lessons learned in the classroom during clinical rotations, students will conclude that the competencies they have

been taught are either not really important or that they cannot be practiced in the real world as they were described in the classroom. It is not surprising, therefore, that doctor-patient communication competencies that are learned in the first 2 years of medical school frequently deteriorate as students progress through their clinical rotations.^{6,7}

Students commonly believe that learning doctoring competencies is simply a matter of practice, which they can do on their own. However, this process can lead to the continuous repetition of the same mistakes throughout the students' career. The development of doctoring competencies can only be optimized by providing students with (1) a framework for understanding why, when, and how to perform the competency, (2) opportunities to observe others and receive feedback on their own performance, (3) encouragement to reflect on their experience and test new approaches, and (4) reinforcement on the importance of the competencies in caring for specific patients.⁸

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The overarching goal of this project, therefore, was to implement a curriculum that would help students improve their ability to perform a variety of clinical competencies during their third-year clerkship in internal medicine. In addition, we hoped that students would learn a process for improving these competencies that they could use in other clinical settings.

Methods

The Drexel University College of Medicine Doctoring Curriculum

This curriculum is a required component of the third-year internal medicine clerkship. The clerkship is divided into three 4-week block rotations. Two of these rotations are spent in inpatient settings, and one rotation is based in outpatient practices. The inpatient and outpatient teaching sites are scattered throughout Pennsylvania and New Jersey. The clerkship Web site is used to communicate information about the curriculum to students and preceptors, to provide basic didactic information about each competency to be learned, and to facilitate the evaluation of the curriculum.

Thus far, we have developed modules on seven competencies (Table 1). These seven competencies are not meant to be exhaustive of all possible competencies that could be taught during a medicine clerkship but rather were selected based on (1) the likelihood of adequate opportunities to practice them during a 4-week rotation, (2) the curriculum director's expertise, and (3) informal feedback from students.

During each of their three medicine block rotations, students choose a competency and a preceptor with whom they would work. During the ambulatory rotations, students always selected a faculty physician as their preceptor; however, on inpatient rotations, students selected residents 75% of the time.

The curriculum has been designed to promote knowledge, demonstration, practice, observation and feedback, reflection, and reinforcement in each of the selected competencies. After selecting a competency, students review the module on that competency that can be found on the clerkship Web site. Each module includes illustrative common scenarios involving that

competency and a concise framework for understanding why, when, and how it should be performed. Students also give their preceptor a copy of the module and the "Preceptor's Instruction Sheet," which outlines the preceptor's role in teaching the competency. After reviewing the module, students are instructed to perform a literature search to gather more information on that competency and to discuss what they have learned with their preceptor.

Every time they see a patient, the students are asked to consider if and how they might apply this competency and, whenever possible, to try it out and to indicate on their patient log whether or not they practiced it. Preceptors are encouraged to reinforce the importance of the competency, whenever appropriate, as they discuss patients with their student. Learning exercises prompt the students to ask their preceptor to model and discuss the performance of the competency on at least one patient and to observe them performing the competency and provide feedback at least twice.

At the end of each 4-week rotation, students are required to write a brief paper in which they list at least two articles they read and discuss what they learned from them. They also review a patient encounter in which they applied the competency and reflect on what worked, what did not work, and whether or not there was anything they feel they might have done differently. The curriculum director reads each paper and e-mails his comments back to each of the students.

Curriculum Evaluation

The evaluation reported here is based on data accumulated during the first 24 weeks of the curriculum.

Thus far, the evaluation of the curriculum has focused on the students' self-reported attitudes about both the doctoring curriculum and their ability to perform the competencies that they selected. Students completed an evaluation questionnaire on the clerkship Web site and e-mailed it to the curriculum director at the end of each 4-week rotation. Students could therefore complete up to three questionnaires over the course of the 12-week clerkship. Students who failed to e-mail a completed questionnaire within 2 days of the end of each rotation were e-mailed a reminder letter from one of the clerkship directors.

In the questionnaire, students indicated the type of rotation they have been on (ambulatory or inpatient) and the competency they selected for that rotation. They rated their confidence at the end of the rotation in performing the competency on a 4-point Likert scale (responses range from 1=rarely confident to 4=almost always confident) and the change, over the course of the rotation, in their ability to perform the competency (1=no change to 4=a great deal of change). They also indicated all of the components of the curriculum they felt helped them learn the competency from a list of

Table 1

Doctoring Curriculum Competencies

- Patient education
 - Modifying maladaptive patient behaviors
 - Involving patients in the decision-making process
 - Counseling patients with stress-related problems
 - Making cost-effective decisions
 - Preventing and resolving conflicts with patients and colleagues
 - Understanding and responding to personal reactions when caring for patients
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components, which included (1) reviewing the information about the competency on the Web site, (2) observing the preceptor perform the competency, (3) reading articles about the competency, and (4) having their preceptor provide feedback on their performance of the competency.

Data Analysis

A chi-square test was used to determine whether students made different choices of competencies in the ambulatory and inpatient rotations. It was followed up with chi-square tests comparing the percentage choosing each skill (one at a time) in the ambulatory versus the inpatient rotations. A *P* value of $<.007$ was the definition we used for statistical significance for these follow-up tests, based on the Bonferroni criterion to adjust for multiple comparison. Differences between competencies on confidence and improvement ratings were assessed with one-way ANOVAs, followed up (when significant) with Games and Howell post hoc test (a variant on Tukey). We recognize that treating each competency/student combination as an independent entity violates the assumption of statistical independence, so we therefore attempted to correct this by performing the ANOVA using randomly selected evaluations from each student.

Results

One hundred percent of the students completed the required written assignment (ie, the literature review and case discussion) at the end of each rotation, and a total of 330 evaluation questionnaires were returned from 120 students (93% return rate).

As can be seen in Table 2, the most frequently selected modules were modifying maladaptive patient

behaviors (behavior modification) and patient education. It should be noted that the least frequently selected competency, counseling patients with stress-related problems, was not available for the first two block rotations. Approximately 50% of students selected the behavior modification module, and 64% of students selected the patient education module at least once during their three 4-week medicine block rotations. There were modest differences in the selection of modules based on the type of rotation (ie, inpatient versus outpatient) ($P=.016$). In particular, there was a significantly increased rate of choosing the behavior modification competency in the ambulatory setting compared to the inpatient setting ($P=.004$).

In 81.5% of the evaluation questionnaires, students indicated that they had experienced moderate or a great deal of improvement in their selected doctoring curriculum competency over the course of the 4-week rotation (Table 3). There were statistically significant differences among the competencies in these improvement scores ($P=.005$). When a repeat analysis using only one of each student's three evaluations, randomly selected, was run to correct for the nonindependence of the data, this more conservative test resulted in nonsignificant results. Therefore, the initial statistically significant results should be regarded as suggestive rather than definitive. Post hoc analysis of differences between the individual competencies revealed only that the competency on the students' personal reactions to patient care issues showed greater improvement than the competency on involving patients in the decision-making process ($P=.006$). The patient involvement competency, however, was associated with the highest ratings of students' confidence in their performance ability at the end

Table 2

What Competencies Were Selected

Competency	Inpatient # (%)	Ambulatory # (%)	Total # (%)
Behavior modification	50 (23.3)**	43 (37.4)**	93 (28.2)
Patient education	58 (27.0)	29 (25.2)	87 (26.4)
Patient involvement	28 (13.0)	17 (14.8)	45 (13.6)
Personal reactions	30 (14.0)	6 (5.2)	36 (10.9)
Cost-effective decisions	22 (10.2)	6 (5.2)	28 (8.5)
Resolving conflict	18 (8.4)	4 (3.5)	22 (6.7)
Stress counseling*	9 (4.2)	10 (8.7)	19 (5.8)
	215	115	330

n=330 assessments from 120 students

* Available for only four of the six block rotations

** Differences between the selection rates on inpatient and ambulatory rotations are significant at the $P=.004$ level.

Table 3

Students' Self-assessed Ratings of Their Ability to Perform Competencies by the End of the Rotation

Competencies	Mean Improvement (1=no change to 4=great deal of change)	Mean Confidence Rating (1=rarely confident to 4=almost always confident)
Behavior modification (n=93)	3.0 (±.63)	3.1 (±.63)
Patient education (n=87)	3.0 (±.74)	3.1 (±.58)
Patient involvement (n=45)	2.7 (±.69)*	3.2 (±.56)
Personal reactions (n=36)	3.2 (±.48)*	2.9 (±.76)
Cost-effective decisions (n=28)	3.1 (±.54)	2.9 (±.77)
Resolving conflict (n=22)	3.0 (±.53)	2.9 (±.75)
Stress counseling (n=19)	2.7 (±.89)	3.1 (±.93)

* Post-hoc analysis revealed that personal reactions improved more than patient involvement ($P=.006$)

n=330 assessments from 120 students

of the rotation (3.2), whereas the personal reaction competency was among the competencies with the lowest-rated student confidence (2.9) in their performance ability (Table 3).

There were no significant differences among the competencies in the students' ratings of their performance ability at the end of the rotation. Overall, in 85.3% of the evaluations, students indicated that they were confident performing these competencies "most of the time" or "almost always."

Students rated each component of the curriculum as helpful at least 30% of the time (Table 4). The literature review and the opportunity to observe their preceptor perform the competencies were the curriculum components that the students most frequently indicated were helpful, while observation and feedback from the preceptor was the curriculum component that was least frequently felt to be helpful. The average number of curriculum components rated as helpful, per evaluation questionnaire, was 1.95.

Discussion

Based on the belief that students should use their clinical experiences during the medicine clerkship to improve important clinical competencies, faculty at Drexel University introduced a new doctoring curriculum. There were substantial barriers to implementing such a curriculum, which involves hundreds of preceptors and students disbursed throughout two states. The Internet was used to facilitate communication with students and their preceptors, provide instructional modules on each of the competencies, and transmit the written assignments and evaluation questionnaires from the students to the curriculum director.

Our initial evaluation data have been encouraging. Students selected a wide range of competencies on both inpatient and outpatient rotations. More than 80% of the time, students felt that there was at least moderate improvement during the rotation in their ability to perform their selected competency. By the end of the rota-

tion, in more than 85% of the evaluations, students indicated that they felt confident performing this competency most or almost all of the time. Not surprisingly, there were modest differences among the competencies in terms of the amount of improvement the students felt they experienced during the rotation. However, even in the competency with the lowest improvement score, involving patients in the decision-making process, there was at least moderate improvement during the rotation 69% of the time, and, by the end of the rotation, this competency was associated with the highest-rated level of students' confidence in their performance.

Limitations

Our results must be tempered by the fact that student self assessments may not correspond to real improvement or ability, and there was no control group, so we do not know how much improvement there would have been without the doctoring curriculum. Nonetheless, it appears both from the data and from informal comments made by students that many, if not most, of the students felt that the curriculum helped them improve their performance of these important competencies. Reviews of their written doctoring assignments suggest that the vast majority of students have learned and used at least some of the specific principles and recommendations discussed in each of the modules. Given the lack of attention to the development of these competencies during the medicine clerkship prior to the introduction of this curriculum, it is likely that our findings reflect real improvement.

All of the various components of the curriculum were rated as helpful at least 30% of the time. Other than the completion of the literature review and case write-up, however, it is difficult to be certain that the curriculum was carried out exactly as planned. The biggest concern is the involvement of the preceptors. Receiving feedback from preceptors was the least likely component of the curriculum to be perceived as helpful, but there are a number of problems associated with the preceptors' involvement in this curriculum. First, there were hundreds of physicians who served as preceptors for this curriculum, including residents who were frequently selected during students' inpatient rotations. This makes communication with and education of the preceptors difficult. Second, the preceptors' interest in teaching these competencies and their ability to model them and critique their students' performance of them were likely to be quite variable. As a result, we instructed the students to involve their preceptors in the selection of the competency to increase the likelihood that a competency was selected about which the preceptor had some interest in teaching, and we recommended that the student download the preceptor's instruction sheet and the contents of the selected module

Table 4

Components of the Curriculum That Were Helpful

<i>Curriculum Component</i>	#	(%)
Reviewing the Web site module on the competency	149	(45.2)
Reading articles on the competency	195	(59.1)
Observing the preceptor perform the competency	191	(57.9)
Receiving feedback from the preceptor on your performance of the competency	108	(32.7)

n=330 assessments from 120 students

for their preceptor. More specific preceptor training efforts may be warranted.

Future Plans

While our initial efforts to promote the teaching of doctoring competencies in clinical settings were generally perceived as helpful by our students, much work still needs to be done to both improve the curriculum and further evaluate its effect. We plan to add the following new modules: (1) end-of-life care, (2) recognizing and managing depression, (3) establishing therapeutic doctor-patient relationships, and (4) practicing evidence-based medicine. Because it is difficult to count on preceptors to model the optimal performance of each doctoring competency, we plan to videotape outstanding clinicians performing these competencies and to place these tapes on the clerkship Web site as part of each module. We also plan to develop interactive cases for the Web site that illustrate the application of each competency.

We are interested in expanding our evaluation of the doctoring curriculum as well by expanding the student questionnaire and adding a preclerkship student's self-assessment questionnaire. We will also include data from faculty evaluation questionnaires and from OSCE evaluations at the end of the third year.

Conclusions

There are ways that the basic curriculum described in this paper can be improved and better evaluated. We

are encouraged, however, that we have made a good start at accomplishing the task of helping students use their clinical experiences to improve important doctoring competencies.

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