Medical Student Education

Implementation of a Smoking Cessation Counseling Module in a Preceptorship Program

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Background: Family medicine preceptorships are underused opportunities for learning smoking cessation counseling skills. To prepare students for their future roles in preventing health problems in patients who use tobacco, we implemented a patient-centered instructional module within the elective Texas Statewide Family Practice Preceptorship Program. Methods: Seventy-eight preclinical medical students learned to screen for tobacco use and perform smoking cessation counseling using brief motivational methods. Students practiced these skills under the supervision of community preceptors. Program evaluation included measurement of the percentage of students who documented that they could screen for tobacco use, their increase in knowledge and sense of self-efficacy in conducting smoking cessation counseling, and performance of appropriate and time-efficient interventions. Results: Fifty-four of 78 students screened 1,891 patients and documented 593 current tobacco users. The students provided appropriate smoking cessation intervention for 539 (91%) of these patients. Each intervention session took approximately 5 to 10 minutes. There was more than 50% increase in the proportion of students who “agreed” or “strongly agreed” to having increased their knowledge and confidence in conducting smoking cessation counseling between the orientation and the end of their summer preceptorship. Conclusions: With focused training, preclinical medical students can successfully learn and practice patient-centered screening and smoking cessation counseling skills in a community preceptorship setting that fits the needs of busy preceptors and prepares students for their future roles in tobacco control.

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Tobacco use stands out as the major preventable cause of morbidity and mortality in the United States today. Despite the high risks of smoking to health, 23% of the adult population, 28% of the high school population, and 13% of the middle school population use tobacco products. These statistics suggest that many physicians should engage their patients in a treatment plan aimed at eliminating dependence on tobacco.

Researchers who directly observed the performance of smoking cessation activities in the offices of primary care physicians, however, report great variation in smoking cessation practices coupled with a frequent disregard for recommended changes in behavior. The frequency of patient relapse following smoking cessation interventions reinforces the view that smoking cessation therapy is time consuming and can frustrate and deter physicians from pursuing smoking cessation counseling. In addition, insufficient knowledge about intervention strategies contributes to poor intervention rates, such as failure to do the following: identify smokers, discuss obstacles to quitting, set a quit date, prescribe medications, schedule follow-up visits, and provide self-help materials. Failure to offer effective interventions such as those recommended by the US Department of Health and Human Services (HHS) has been attributed in part to a lack of physicians’ perceived sense of self-efficacy.

Medical students who will practice in the 21st century need training that will allow them to become effective and efficient with their smoking cessation interventions. Yet, most US medical school graduates don’t receive adequate instruction in treating nicotine dependence. In an evidence-based review of smoking cessation curricula in US medical schools, Spangler and colleagues found that innovative teaching methods (eg, the use of patient-centered counseling, standardized patient instructors, role-playing, or a combination of these) are more effective for teaching tobacco intervention than traditional didactic methods alone and
that these methods can be easily inserted into medical school curricula. Core competencies related to disease prevention and health promotion, essential to all medical disciplines, have been clearly described. Research has suggested that the progress patients make following behavioral interventions tends to be a function of their degree of readiness to change. When a smoker’s degree of readiness to change is known, messages can be tailored to the appropriate goal for that patient’s condition. The “stages of readiness to change” construct from the Transtheoretical Model explains change as occurring in five stages: precontemplation, contemplation, preparation, action, and maintenance. Motivation of the patient determines his or her ability to move through the various stages and, in the end, maintain smoking cessation behaviors.

A few educational interventions have reported improvements in students’ awareness, history taking, and counseling skills related to tobacco use. Primary care clerkships and ambulatory preceptorships have been infrequently used as settings for teaching students to practice patient-centered smoking cessation counseling skills, in part due to the preceptors’ discouragement with their own ability to change patients’ smoking habits. To address this problem and prepare students for their future roles in this area of preventive medicine, we implemented a patient-centered preventive instructional module for tobacco use assessment and smoking cessation counseling in the Texas Statewide Family Practice Preceptorship Program (TSFPPP).

Methods

Orientation Workshop

The TSFPPP is an elective clinical experience for students between the first and second years of medical school. The tobacco instruction module is the second in a series of educational interventions based on the concept that setting aside some of the preceptor’s clinical time to oversee students working directly with patients on preventive activities adds value to the experience for unpaid volunteer preceptors and serves as a novel opportunity to teach preventive skills in the community environment. The goal of the tobacco instruction module is to teach preclinical students the skills of screening for tobacco use and of making brief behavioral interventions for smoking cessation.

Following Internal Review Board approval for this instructional module, medical school students from the University of Texas Health Science Center at Houston completed the intervention as part of an elective summer rotation during which they worked with family physicians throughout Texas who served as their preceptors. These physicians, who volunteer their services as teachers of the students, belong to a preceptor network of more than 800 family physicians. They were informed in a letter prior to the preceptorship program and then agreed in writing to have students participate in smoking cessation counseling activities. The preceptors also received the packet of patient educational materials collated by Tobacco Outreach Education. These materials, for use in the students’ smoking cessation intervention, included tobacco assessment forms, the HHS Guidelines for Treating Tobacco Use and Dependence, and recent literature that provides evidence for incorporating smoking cessation interventions into practice. Postcards used to collect feedback from patients were also included in the packet.

We began the intervention with orientation sessions for 78 students who were assigned in the summers of 2002 and 2003 to 37 preceptors who were associated with the University of Texas Health Science Center at Houston. Faculty from the Department of Family and Community Medicine served as trainers. Prior to the orientation sessions, students were given four readings, including “The Clinical Guidelines for Treating Tobacco Use” and articles on using the stages of change and brief interventions in medical settings.

The 2002 orientation session included presentations on behavioral change, the effects of tobacco use, and smoking cessation, along with didactic lectures on preparing for the preceptorship, a typical day in the preceptorship, and practicing universal precautions. At the close of the session, we asked the students to screen all of their patients for tobacco use and to provide brief counseling for at least 10 smokers.

We asked the students to document the screening and counseling on a tobacco assessment form that we had prepared (Table 1). When we summarized the smoking cessation data at the end of the summer of 2002, we acknowledged that the students’ level of tobacco screening was not satisfactory. Following interviews with the students who had done the preceptorship, we concluded that the orientation needed revision because we had presented too wide a variety of information, had been too didactic in our approach, and had not spent sufficient time on practicing the smoking cessation activities.

The 2003 orientation session focused almost exclusively on smoking cessation and practicing methods of changing unhealthy behaviors. After the students discussed their own experiences with behavioral change, they were told how to apply a smoking cessation intervention to the preceptorship. Specifically, we instructed the students through the use of didactics, role-plays, and practice and to apply Miller and Rollnick’s scaling techniques and to use two rulers in this brief motivational counseling. The students documented, on a scale from 1 to 10, the patient’s perception of the importance of smoking in his or her life and the patient’s level of confidence about his or her ability to quit smoking. They then used a third ruler to locate the patient’s stage of readiness to change. Specific counseling techniques
were suggested depending on the patient’s responses to each of the three rulers (eg, asking a patient why she located herself as a 4 on the ruler rather than a 3). Once the students felt comfortable with the rulers, they were led through an exercise in which they practiced in pairs, using a personal health behavior as the target behavior for change.

**Evaluation**

By the end of the 2-year project we implemented a five-step, quasi-experimental evaluation design that emphasized the students’ ability to use the written educational materials in the preceptorship setting as evidence that they had learned the smoking cessation counseling skills taught at the orientation. The evaluation process was based on one conducted earlier to promote diabetic foot examination and foot care by patients with diabetes.26,29

First, we assessed the success of the program in terms of the percentage of students who returned the Tobacco Assessment Form (Table 1) to the preceptorship office at the end of the summer.

Second, we measured the fit of the students’ actions with the readiness to change model. We assessed whether students spent more of their time counseling patients who expressed a readiness to quit as compared to those patients who stated that they were not ready to quit. The latter patient group was classified as being in the earlier stages of readiness.

Third, in the second year of the intervention, we measured knowledge and perceived sense of self efficacy for smoking cessation counseling of the students at the beginning and at the end of the workshop, as well as at the end of the summer program. The students were asked at each of these stages in the program to rate the following two statements on a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5): “I know how to counsel patients regarding smoking cessation.” “I am confident in counseling patients.”

Fourth, we assessed the patients’ responses to receiving counseling by students. On a self-addressed pre-stamped postcard provided to each of the patients counseled by a student, the patients were asked to indicate their sex, ethnic group, and age and to respond to three items: (1) Did the session change your tobacco use in any way since we talked? (2) Describe your use of tobacco since we talked. (3) Was the session valuable to you?

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**Table 1**

Texas Statewide Family Medicine Preceptorship Program

Tobacco Assessment Form

Directions: Complete the following section for all patients you see during the summer. When writing, press firmly. We need three legible copies of this form.

Student Name: ________________________________________________________

Patient Information:
Case Number: ___________________ Sex: M F Age: ___________________

Patient’s Ethnicity: (please circle) Black White Hispanic Asian Other _______

ASK All Patients

Tobacco use? (Check one) Type of tobacco? (If patient ever used tobacco, check all that apply)

Never ______________ Cigarettes ________ (Quantity/day)__________

Former _____________ Smokeless ________ (Quantity/day)__________

Current _____________ Cigar __________________ (Quantity/day)__________

Pipe _____________ (Quantity/day)__________

Complete the following section for at least 10 current smokers.

ASSESS willingness to quit.

Stage of Change: (check one) ___ Precontemplation ___ Contemplation _____ Preparation

Importance Score: _______ (0–10) How important patient views making a change.

Confidence Score: _______ (0–10) Confidence of patient that he/she can make this change.

ADVISE all smokers to quit. Advised patient to quit? (circle one) YES NO

ASSIST

Discussed quit date YES NOT APPROPRIATE

Time spent on tobacco counseling? (please check one)

_____ Under 3 minutes ____ 4–5 minutes _____ 6–10 minutes _____ Over 10 minutes

Medication recommended by preceptor? YES NOT APPROPRIATE

Additional counseling recommended? YES NOT APPROPRIATE

Written materials given to patient? YES NOT APPROPRIATE

ARRANGE follow up with preceptor? YES NO If you circled yes, when? _________ (date/time)

Physician Signature ____________________ Physician Name __________________
Patients were asked to mail the pre-stamped postcard to the preceptorship office beginning 2 weeks from the time of the counseling.

Fifth, we sent a questionnaire to preceptors regarding their experiences and reactions to the smoking cessation intervention program. Specifically, we asked them to respond to whether or not: (1) the students had done tobacco screening in their offices, (2) the methods and materials that the students used were different from their own, (3) the students’ action had led to a change in their own approach to tobacco assessment or counseling, and (4) the counseling by students had saved them time. When they acknowledged time savings, they were asked to identify the number of minutes that were saved.

**Statistical Analysis**

We calculated frequencies for the individual survey items documented or rated by students and preceptors. The amount of time spent by students for counseling and the amount of time that the preceptors identified as saved as a result were averaged and compared. Comparisons were also made between the frequencies from the original program in 2002 and the revised program in 2003. Chi-square statistics were produced to determine whether there was a relationship between characteristics of the patients and their responses to the postcard questionnaire. Differences between years and 95% confidence intervals (CIs) were calculated using chi-square tests. Spearman’s rank correlation tests were used to examine the relationship among the stages and scores of importance and confidence. All analyses were performed with SAS software (Version 8.2, SAS Institute, Cary, NC).

**Results**

**Student Reports**

Of the 78 students participating in the TSFPPP, 54 of them (69.2%) returned 1,891 tobacco assessment forms (Table 2). Compared to 2002, the percentage of students who submitted tobacco assessment forms doubled from 43.2% to 92.6%. The average number of tobacco assessment forms submitted tripled from 14.2% to 43.8% in 2003. In both years, the students counseled the recommended number of 10 patients each. Most students reported that they spent about 5 minutes per patient completing smoking cessation activities.

The students found that 593 (31.5%) of the patients they saw currently used tobacco products. These products included cigarettes, cigars, pipes, and smokeless tobacco. Students assessed the readiness to change of 539 (90.9%) of the patients who used tobacco. Of the 539 patients, students reported that 185 (34%) were in the precontemplation stage, 196 (37%) were in the contemplation stage, and 158 (29%) were in the preparation stage. The students further advised 511 (94.8%) patients to quit tobacco use and, with the preceptor’s approval, provided counseling, which included discussing a quit date and recommending medication or written materials, to 335 (62.2%) patients (Table 3). Patients in the preparation stage received 46.5% (95% CI=37.6% to 55.5%) more counseling compared to those in the precontemplation stage. Patients in the preparation stage received 18.7% (95% CI=10.1% to 27.4%) more counseling than those in the contemplation stage. The students also found that the more advanced stages were correlated with higher importance ($r=.55$, $P<.01$) and confidence scores ($r=.34$, $P<.01$).

Figure 1 shows the changes in self efficacy of students in delivering smoking cessation at three points in time: before the orientation, after the orientation, and at the end of the summer preceptorship program. The proportion of students who responded that they “agreed” or “strongly agreed” that they knew how to provide smoking cessation counseling to patients increased significantly between before the orientation and after the orientation (difference of proportion=61.9%, 95% CI=44.7% to 79.2%). The students’ confidence in their ability to provide smoking cessation counseling after the orientation also increased by 34.4% (95% CI=13.0% to 55.8%) compared to before orientation. The students’ confidence in providing smoking cessation counseling at the end of the summer preceptorship program was further increased 19.4% (95% CI=1.1% to 37.8%) compared to after the orientation. The proportion of students who responded that they “agreed”

<table>
<thead>
<tr>
<th>Items</th>
<th>Year 2002</th>
<th>Year 2003</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total students who participated in TSFPPP</td>
<td>37</td>
<td>41</td>
<td>78</td>
</tr>
<tr>
<td>Students and (%) submitting assessment forms</td>
<td>16 (43.2%)</td>
<td>38 (92.6%)</td>
<td>54 (69.2%)</td>
</tr>
<tr>
<td>Total forms submitted</td>
<td>227</td>
<td>1,664</td>
<td>1,891</td>
</tr>
<tr>
<td>Average number (and range) of submitted forms</td>
<td>14.2 (3–39)</td>
<td>43.8 (6–102)</td>
<td>35.0 (3–102)</td>
</tr>
<tr>
<td>Average number (and range) of patients counseled by students</td>
<td>9.3 (4–21)</td>
<td>10.2 (1–23)</td>
<td>10.0 (1–23)</td>
</tr>
</tbody>
</table>

TSFPPP—Texas Statewide Family Practice Preceptorship Program
"strongly agreed" that they knew how to provide smoking cessation counseling to patients did not increase between the post-orientation period and the end of the summer preceptorship program (difference of proportion=0.0%, 95% CI=-14.3% to 14.3%).

Patient Reports

Over the 2 years of the program, 99 (29.6%) postcards were returned from 335 patients who had received the brief counseling intervention from the students. Forty-seven percent of patients who responded said that they had changed their tobacco use. Nine percent had ceased smoking, and 37% reported they had cut down on the amount of cigarettes they smoked. Patients who were less than age 60 years were more likely to state that the intervention led to a change in their tobacco use when compared to those who were 60 years and older (difference of proportion=30.4%, 95% CI=6.4% to 54.4%). Minority-group patients were also more likely to admit that the intervention had led to a change in their tobacco use (difference of proportion=24.8%, 95% CI=3.8% to 45.9%).

Preceptor Reports

Twenty-five of 41 individual preceptors submitted their evaluation questionnaires regarding their responses to the tobacco assessment and brief motivational counseling program that occurred in their offices. Of the 25 preceptors, 100% reported that their students documented tobacco screening in their office. On average, a student’s screening saved the preceptors 5 to 10 minutes of clinical time. Twelve (48%) preceptors admitted that the methods and materials for screening were different from their own, and 11 (44%) preceptors had decided to change their approach to tobacco assessment or counseling as a result of this program. Moreover, they suggested that cancer screening and nutrition screening would be useful topics in the future.

Table 3

Demographic Characteristics of Patients Who Reported Current Tobacco Use and Characteristics of the Assessments and Interventions Made by Preclinical Medical Students

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>2002 (n=150)</th>
<th>2003 (n=389)</th>
<th>Total (n=539)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Demographics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>55.5</td>
<td>46.7</td>
<td>49.1</td>
</tr>
<tr>
<td>Female</td>
<td>44.5</td>
<td>53.3</td>
<td>50.8</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>11.4</td>
<td>15.8</td>
<td>14.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>14.8</td>
<td>20.7</td>
<td>19.1</td>
</tr>
<tr>
<td>Caucasian</td>
<td>72.5</td>
<td>60.9</td>
<td>64.1</td>
</tr>
<tr>
<td>Others</td>
<td>1.3</td>
<td>2.6</td>
<td>2.2</td>
</tr>
<tr>
<td>Type of tobacco</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cigarettes</td>
<td>97.3</td>
<td>90.2</td>
<td>92.2</td>
</tr>
<tr>
<td>Smokeless</td>
<td>1.3</td>
<td>4.9</td>
<td>3.9</td>
</tr>
<tr>
<td>Cigar</td>
<td>1.4</td>
<td>4.1</td>
<td>3.3</td>
</tr>
<tr>
<td>Pipe</td>
<td>0.0</td>
<td>0.8</td>
<td>0.6</td>
</tr>
<tr>
<td>Assessments and Interventions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage of readiness to change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Precontemplation</td>
<td>26.0</td>
<td>37.5</td>
<td>34.3</td>
</tr>
<tr>
<td>Contemplation</td>
<td>43.3</td>
<td>33.7</td>
<td>36.4</td>
</tr>
<tr>
<td>Preparation</td>
<td>30.7</td>
<td>28.8</td>
<td>29.3</td>
</tr>
<tr>
<td>Advised patients to quit</td>
<td>100.0</td>
<td>92.8</td>
<td>94.8</td>
</tr>
<tr>
<td>Counseling* provided</td>
<td>68.7</td>
<td>59.6</td>
<td>62.6</td>
</tr>
<tr>
<td>Time spent on counseling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 3 minutes</td>
<td>24.5</td>
<td>21.2</td>
<td>22.1</td>
</tr>
<tr>
<td>4–5 minutes</td>
<td>43.9</td>
<td>47.7</td>
<td>46.7</td>
</tr>
<tr>
<td>6–10 minutes</td>
<td>15.1</td>
<td>25.4</td>
<td>22.7</td>
</tr>
<tr>
<td>Over 10 minutes</td>
<td>16.5</td>
<td>5.7</td>
<td>8.5</td>
</tr>
</tbody>
</table>

* Included brief counseling, quit date, medication, patient education materials

Figure 1

2003 Smoking Cessation Counseling Module: Students’ Change in Sense of Self Efficacy in Performing Motivational Smoking Cessation
Discussion

We implemented and evaluated an intervention for teaching smoking cessation counseling skills that was based on theory. We demonstrated that preclinical medical students could learn and apply smoking cessation counseling in a community-based ambulatory primary care clinical setting. We evaluated and improved the program and the evaluation tools over a 2-year period. Program evaluations showed that by the end of the second summer of the intervention, more than 90% of students were involved with smoking cessation interventions, and they performed counseling with preceptor supervision on an average of 10 patients. Moreover, students gained a sense of self efficacy in applying the brief motivational counseling as a result of their brief orientation and their preceptorship experience. The time that the students devoted to the intervention was consistent with the time that the preceptors reported had been saved as a result of the students’ interactions with the patients. The documentation on the Tobacco Assessment Forms indicated that the students correctly used the readiness to change model and that their recommendations were consistent with the smokers’ stages of readiness to change.

We implemented earlier curriculum suggestions for smoking cessation made by Oswald and colleagues by requiring that the students interact directly with patients while learning smoking cessation counseling skills and that they practice these new skills in a clinical setting with preceptor supervision. However, unlike many other educational smoking cessation counseling programs for medical students, we purposely included a focused evaluation component. We believe that the students’ higher level of involvement during the workshop coupled with immediate feedback resulted in the doubling of the number of screenings and counseling sessions that were conducted during 2003.

Limitations

One limitation of our study was that the education program was incorporated into preclinical training at one medical school in Texas as an elective experience with a relatively small number of medical students. However, the faculty who conducted the training were core family medicine faculty who were available to teach these skills to other students within our medical school and to students at the seven other Texas medical schools. A second limitation was that our focus was on the educational nature of the intervention rather than its clinical effect. Patient confidentiality issues prevented us from obtaining specific information regarding the impact of smoking cessation counseling on these patients. Thus, our follow-up with patients was short term and limited to anonymous postcards returned by patients. Nevertheless, we have some anecdotal information of success from the preceptors and students who did TSFPPP rotations in the summer of 2002 and 2003. The quasi-experimental evaluation design method prevents us from making a conclusion that the change in educational technique was the cause of the increase in screenings.

Conclusions

Our results suggest that medical students can learn smoking cessation counseling techniques and apply these techniques when treating ambulatory patients who use tobacco. The orientation increased the number of students who agreed or strongly agreed they had knowledge of smoking cessation counseling. Students’ self-perceived knowledge of counseling remained stable at the end of the preceptorship. The orientation increased the students’ knowledge of how to counsel patients for smoking cessation more than it increased their sense of self efficacy in performing counseling. It took clinical practice to bring the students’ self efficacy in counseling to the same high level as their knowledge. This suggests that practice in ambulatory settings is necessary to achieve a strong sense of self efficacy in smoking cessation interventions. Some preceptors also indicated that they had changed their approaches to smoking cessation counseling as a result of their interactions with the medical students.

A decade ago it was reported that although 70% of smokers visit a physician each year, most are not advised to quit or assisted in their attempts to quit. The model suggested in this paper can easily be adopted and should provide medical students and their physician supervisors with necessary behavior modification skills to make successful smoking cessation interventions.

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References