Tobacco Intervention Training
Current Efforts and Gaps in US Medical Schools

John G. Spangler, MD, MPH
Geeta George, MPH
Kristie Long Foley, PhD
Sonia J. Crandall, PhD

Context Research has documented that US medical schools inadequately teach tobacco intervention skills.

Objective To examine effective training methods for tobacco intervention in undergraduate medical education.

Data Sources Using indexing terms related to tobacco intervention and medical education, we searched MEDLINE (1966–June 2002) and the Cochrane Database of Systematic Reviews (through issue 2, 2002). Reference lists of relevant articles were also read to identify additional articles. Because of their importance to tobacco intervention, we also reviewed Ockene and colleagues’ tobacco education research and the tobacco treatment guidelines of the United States Public Health Service and the United States Preventive Services Task Force.

Study Selection All study designs that incorporated process or outcome evaluation of tobacco intervention educational methods for medical students were included in this review. Of an initial 1241 articles retrieved, 82 included medical students. Reviewing abstracts and references of these articles identified 13 pertinent studies.

Data Extraction Quality criteria for inclusion consisted of explicit evaluation of the educational methods used. Data extraction identified all evaluations and any problems in program implementation.

Data Synthesis Enhanced instructional 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 are traditional didactic methods alone and can be effectively inserted into medical school curricula.

Conclusions Various educational methods have been used to train medical students in tobacco intervention. Nonetheless, gaps still exist within undergraduate medical education, including a lack of integration of tobacco dependence information throughout all 4 years of medical school curricula, specific training in smokeless tobacco intervention, tobacco intervention training that addresses cultural issues, and long-term studies showing that such training is retained.

JAMA. 2002;288:1102-1109

Author Affiliations: Department of Family and Community Medicine (Drs Spangler and Crandall) and Department of Public Health Sciences (Dr Foley), Wake Forest University School of Medicine, Winston-Salem, NC; and Department of Behavioral Science, University of Texas M. D. Anderson Cancer Center, Houston (Ms George).

Corresponding Author: John G. Spangler, MD, MPH, Department of Family and Community Medicine, Wake Forest University School of Medicine, Medical Center Boulevard, Winston-Salem, NC 27157-1084 (e-mail: jspangle@wfubmc.edu).

Reprints not available from the author.

©2002 American Medical Association. All rights reserved.
to treat nicotine dependence. Using a 13-item questionnaire based on the US Public Health Service's guidelines and a National Cancer Institute expert panel, Ferry and colleagues surveyed 122 of the 126 US medical schools. These investigators found that only 3 schools had a required course devoted specifically to tobacco treatment. About a third of the schools surveyed (31.4%) spent 3 hours or less teaching smoking cessation counseling during the 4 years of medical school education. Moreover, most medical schools (69.2%) did not require clinical training in smoking intervention techniques. A major deficit in medical school education nationally, as Ferry et al suggest, is the lack of smoking intervention instruction and evaluation in the clinical years. Unfortunately, no national curricular models exist to guide schools in determining the content of tobacco dependence instruction or how it should be implemented.

**GUIDELINES FOR TOBACCO INTERVENTION COUNSELING**

Major health care organizations and authorities recommend that physicians provide their patients routine tobacco interventions. The most explicit and comprehensive tobacco intervention guidelines were recently published by the US Public Health Service and have been found to be cost-effective if used intensively. According to these guidelines, the key elements of smoking intervention counseling include providing reinforcement through repeated and consistent advice from a team of practitioners to stop smoking, setting a specific quit date, and scheduling follow-up visits. With the addition of pharmacotherapy and individual contact using problem solving and social support approaches, cessation rates can be increased by a factor of 2 or more.

Because physicians often cite lack of time as a barrier to providing tobacco interventions, it is important to know if brief tobacco interventions improve patient outcomes. This is especially important before educational resources are devoted to training medical students in brief tobacco interventions. A recent Cochrane review of pooled data from 16 studies found evidence that brief tobacco interventions by physicians lead to higher odds of a patient quitting (summary odds ratio [OR], 1.69; 95% confidence interval [CI], 1.45-1.98).

A meta-analysis of 7 studies by the US Public Health Service found that brief physician advice (eg, ≤3 minutes) resulted in a small but statistically significant increase in cessation rates (summary OR, 1.3; 95% CI, 1.1-1.6). Additionally, a 43-study meta-analysis by this group indicated that minimal counseling (≤3 minutes) by clinicians increases patient abstinence rates (summary OR, 1.3; 95% CI, 1.01-1.6). Finally, a 35-study meta-analysis by the US Public Health Service indicated that a total contact time of 1 to 3 minutes focused on tobacco intervention increased abstinence rates (summary OR, 1.4; 95% CI, 1.1-1.8). The cumulative effects of providing at least brief advice to all patients who smoke could result in thousands of additional US citizens quitting smoking each year.

The US Public Health Service guidelines do not emphasize smokeless tobacco intervention to the same extent as that for smoking intervention, given the greater prevalence of cigarette smoking. Nonetheless, smokeless tobacco use is increasing within certain populations. Thus, these guidelines suggest that smokeless tobacco users should also be identified, strongly urged to quit, and provided the same treatment as smokers. Brief advice to quit has also been found to increase smokeless tobacco abstinence rates.

**METHODS**

We systematically searched MEDLINE (1966–June 2002) and the Cochrane Database of Systematic Reviews (through issue 2, 2002) using the following search terms: health promotion, counseling, tobacco, tobacco use, smoking cessation, spit tobacco, and smokeless tobacco. Each of these terms was then separately combined with the following terms: medical education, medical students, residents, standardized patients, simulated patients, role playing, and curriculum. Only studies that involved process or outcome evaluation of medical student educational methods were selected for review. Given the varied nature of education research, all types of study designs were included. Of an initial 1241 articles retrieved, 82 were identified as including medical students. Abstracts and reference lists of these articles were read, identifying 13 studies that evaluated outcomes of medical student tobacco educational activities (Table). Because of their importance to tobacco treatment education, we also reviewed tobacco education research by Ockene and colleagues and the tobacco intervention guidelines of the US Public Health Service and the US Preventive Services Task Force.

**EDUCATIONAL METHODS FOR MEDICAL STUDENTS**

Given the barriers to incorporating tobacco curricula into medical schools, it is frequently difficult to carry out educational studies with randomized or even prospective designs. With these caveats in mind, we dichotomized tobacco education research into traditional didactic approaches, such as lectures or provision of reading materials alone, and more “enhanced” methods of teaching that include instruction in patient-centered counseling, critiqued interaction with standardized and real patients, and role playing.

**Traditional Didactic Approaches.** Lectures and assigned readings are straightforward means of conveying tobacco control information to medical students, and several investigators have evaluated them. At the University of Hong Kong (Hong Kong, China), Chung et al provided students with a brochure on tobacco intervention and incorporated a tobacco control lecture, a tobacco epidemiology videotape, and small-group discussions on the health effects of tobacco use into the second-year curriculum for all medical students (n=151). Changes in tobacco knowledge and attitudes were
Table. Studies of Medical Student Education Methods for Tobacco Intervention Training*

<table>
<thead>
<tr>
<th>Source</th>
<th>Participants</th>
<th>Interventions</th>
<th>Evaluations</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alter et al, 1990</td>
<td>Second-year medical students rotating through introductory family medicine course at the University of Minnesota</td>
<td>Random assignment to 2-hour workshop (n = 98) consisting of lecture on patient-centered counseling, videotape review, and role-playing or to control condition (n = 90)</td>
<td>Self-assessment of knowledge and attitudes; OSCE evaluation with SPI who smoked</td>
<td>Intervention students more confident in tobacco counseling by self-assessment, asked more open-ended questions, and performed better overall on OSCE</td>
</tr>
<tr>
<td>Bland et al, 2001</td>
<td>Second-year medical students during 5-week human reproduction block at the University of Ottawa</td>
<td>All students (n = 84) received lectures on substance use disorders during pregnancy, a 2-hour problem-based small-group tutorial, and 2-hour interaction with SPI</td>
<td>Fifty-one-item questionnaire given before and after training regarding attitudes toward and counseling for substance use disorders during pregnancy</td>
<td>Students achieved a statistically significant increase in comfort level regarding tobacco counseling and were less tolerant of any tobacco use during pregnancy</td>
</tr>
<tr>
<td>BoeHlecke et al, 1996</td>
<td>Two consecutive classes of second-year medical students during physical diagnosis course at the University of North Carolina</td>
<td>First class of students (n = 155) received tobacco intervention lecture, and 60% of their preceptors received a 1-page smoking history guide; second class (n = 158) received the lecture and the guide, and half their preceptors received a telephone reminder about the guide</td>
<td>Smoking history-taking skills at OSCE evaluation</td>
<td>Students who received the guide performed significantly better on taking a smoking history during the OSCE; one-time prompting preceptors also had positive effect</td>
</tr>
<tr>
<td>Chung et al, 1996</td>
<td>Second-year medical students at the University of Hong Kong</td>
<td>All students (n = 151) received tobacco control brochure, 30-minute lecture on health risks of tobacco, 45-minute tobacco control videotape, and 1-hour small-group tutorial</td>
<td>Before-and-after test of knowledge and attitudes regarding tobacco control; students’ assessment of usefulness of activity</td>
<td>Statistically significant increases in students’ knowledge and attitudes; majority of students found activity useful/very useful</td>
</tr>
<tr>
<td>Coutlas et al, 1994</td>
<td>First-year medical students in patient-physician communication course at the University of New Mexico</td>
<td>Random assignment to intervention (n = 33) with 4 hours of tobacco control lectures and 3 hours of small-group time including interaction with SPIs and patient-centered role playing or control condition of usual course (n = 43)</td>
<td>Baseline videotape and follow-up videotape 18 months post-training during an OSCE, scored by 22-item checklist</td>
<td>At 18-month follow-up, intervention students asked significantly more questions about past experiences, quit attempts, and motivation</td>
</tr>
<tr>
<td>Eyster et al, 1997</td>
<td>Third-year medical students rotating through general internal medicine at the University of Michigan</td>
<td>All students (n = 159) received required readings and 1-hour session with SPI</td>
<td>SPI assessment and student self-assessment using URRFIS</td>
<td>Overall, students scored acceptably on URRFIS; compared with SPIs, students underestimated the benefits of quitting smoking and overestimated their competence on a number of counseling skills</td>
</tr>
<tr>
<td>Geller et al, 2000</td>
<td>Two consecutive classes of second-year medical students at Boston University</td>
<td>All students (n = 226) rotated through 6 cancer skills workshops including smoking intervention role-playing station and a station reviewing anti-tobacco advertisements</td>
<td>Before-and-after self-assessment of tobacco intervention skills</td>
<td>Statistically significant increase after intervention in the percentage of students reporting feeling somewhat/very skilled at smoking cessation counseling</td>
</tr>
<tr>
<td>Papadakes et al, 1997</td>
<td>First-year medical students during an introductory epidemiology course at the University of California, San Francisco</td>
<td>All students (n = 122) received two 1-hour lectures on tobacco epidemiology and treatment, 6 of 10 small groups randomized to intervention (n = 35) with SPI interaction and feedback or control group (n = 37) with role playing</td>
<td>Each student assessed after intervention by SPI interaction and evaluated on cognitive, counseling, and global tobacco treatment skills; costs of SPI vs role playing calculated; students rated usefulness of activity</td>
<td>Students in SPI group evaluated the activity more favorably but did not score better on follow-up SPI interaction than students in role-playing group; SPIs cost more than role playing ($2500 vs $500 for a typical class of 100 students)</td>
</tr>
<tr>
<td>Roche et al, 1996</td>
<td>Fifth-year medical students during clinical rotations at the University of Queensland, Queensland, Australia</td>
<td>All students randomized by rotation block to 3-hour lecture (n = 53); 1-hour lecture and audiotape review of patient-physician counseling session (n = 50); 1-hour lecture and 2 hours of role playing with peer feedback (n = 49); or 1-hour lecture and videotaped role playing reviewed with faculty (n = 58)</td>
<td>All students assessed before and after SPI activity on history taking, advice giving, behavioral strategies, and interaction skills</td>
<td>At 3 experimental groups had higher posttest scores than the control group, with improvements greatest in advice giving and behavioral strategies; no significant differences among the 3 strategies</td>
</tr>
<tr>
<td>Seim and Verhoye, 1995</td>
<td>Fourth-year medical students rotating through ambulatory family medicine at the University of Minnesota</td>
<td>Students randomized by rotation block to formal training group (n = 37) receiving a 2.5-hour seminar on patient-centered counseling with review of algorithm and videotape vignettes; brief training group (n = 32) with 5-minute introduction to patient-centered counseling and algorithm</td>
<td>All students assessed after intervention by SPI interaction (audiotaped and scored by the investigators) on 3 communication skills and 6 tobacco counseling content areas</td>
<td>Formal training group scored higher on 2 of 3 skills (providing information and eliciting/responding to feelings) and 3 of 6 content areas (exploring past experiences, resources for change, and negotiating a plan)</td>
</tr>
<tr>
<td>Spangler et al, 2001</td>
<td>Two consecutive classes of third-year medical students rotating through family medicine at Wake Forest University</td>
<td>Tobacco material integrated throughout all 4 years of the curriculum; all third-year students (n = 216) received 2-hour tobacco intervention tutorial and 30-minute session with SPIs who gave feedback using URRFIS</td>
<td>Qualitative postintervention assessment by students of usefulness of activity and confidence in tobacco intervention skills</td>
<td>Students expressed overall enthusiasm for SPI activity and an increase in their confidence in tobacco intervention skills</td>
</tr>
<tr>
<td>Usatine et al, 1996</td>
<td>All second-year medical students during the longitudinal generalist “doctoring curriculum” at the University of California, Los Angeles</td>
<td>All students (n = 127) work through a problem-based learning curriculum module on smoking cessation that includes videotape review of faculty counseling patients to quit, identification of learning issues, and interaction with a real patient who smokes</td>
<td>Retrospective self-assessment of students in understanding of smoking-related issues before and after module; qualitative assessment of usefulness of activity</td>
<td>Retrospectively, statistically significant increases in self-reported understanding of smoking-related issues; students found real patient interaction very powerful learning experience, but logistically these were difficult to arrange</td>
</tr>
<tr>
<td>Waidian et al, 2000</td>
<td>Third-year family medicine students at Michigan State University</td>
<td>Ten hours of tobacco content integrated into years 1-3 of school’s curriculum; all students (n = 93) interact with SPI during third-year family medicine rotation</td>
<td>Videotaped interaction with SPI evaluated by 2 independent reviewers on 10-point checklist based on US Public Health Service guidelines</td>
<td>Students’ scores ranged from 6.5-10, with 90% of students scoring 8 or better</td>
</tr>
</tbody>
</table>

*OSCE indicates Objective Structured Clinical Examination; SPI, standardized patient instructor; and URRFIS, University of Rochester Risk Factor Interview Scale.

©2002 American Medical Association. All rights reserved.
assessed through a 51-item questionnaire administered before and after the intervention. At the end of the intervention, students demonstrated increased knowledge and more favorable attitudes regarding tobacco intervention among patients.

Wadland and colleagues at Michigan State University (East Lansing) incorporated 10 hours of tobacco instruction into the existing medical school curriculum, including all 12 content areas advocated by Ferry et al. Next, during the third year, all medical students rotating through family medicine (n=93) were evaluated by a videotaped encounter with a standardized patient. This videotape was scored by the investigators using a scale based on the US Public Health Service guidelines. Of a possible 10 points, students’ scores ranged from 6.5 to 10, with 90% of students scoring 8 or better.

Boehlecke et al at the University of North Carolina (Chapel Hill) compared the effect of lecture, a 1-page smoking history and counseling guide, and prompts to faculty preceptors on the smoking intervention skills of 2 consecutive classes of second-year medical students. The first class was assigned to the control condition (n=155), which consisted of a lecture on tobacco history taking and provision of the 1-page tobacco counseling guide to faculty preceptors. The second class (n=158) received the lecture and the 1-page guide; in addition, about half of their faculty preceptors received a telephone reminder about the 1-page guide. Compared with control students, intervention students performed better on an Objective Structured Clinical Examination station that assessed smoking intervention skills at the end of their second year.

While these traditional educational efforts seemed to be effective, none compared use of lectures or reading materials to patient-centered counseling, critiqued interaction with standardized or real patients, or role playing. Other research, however, has shown that such enhanced instructional methods for tobacco intervention are more effective than traditional approaches alone.

**Patient-Centered Methods.** Much of the smoking intervention education research for physicians, residents, and medical students has been based on the work of Ockene and colleagues. These investigators have developed a brief, patient-centered treatment paradigm that uses information sharing, open- and closed-ended questions, and identification of patient motivation for and past experiences with smoking cessation. These factors are utilized by the clinician to increase the patient’s self-efficacy by recognizing his or her own skills and resources to quit. This information leads to individualized treatment and follow-up plans. Kristeller and Ockene incorporated these materials into the curriculum at the University of Massachusetts School of Medicine to train medical students in patient-centered tobacco intervention. Ockene et al have also used their patient-centered methods to train residents in the internal medicine and family practice residency programs at the University of Massachusetts (Worcester). On completion of the training program, residents showed significant increases in knowledge about and attitudes toward smoking and smoking intervention, patient-centered counseling skills, and ability to affect their patients’ smoking behavior.

Using the patient-centered approach of Ockene et al, Allen et al studied second-year medical students rotating through the family medicine segment of an introductory clinical medicine course at the University of Minnesota (Minneapolis). Students were randomly assigned by rotation block to either a formal-training group (n=37) or a brief-training group that served as the control (n=33). The formal-training group received lectures and reviewed videotapes on patient-centered counseling, reviewed a smoking cessation algorithm, and role-played among themselves. The brief training group received only a 5-minute overview of patient-centered counseling techniques and the smoking cessation algorithm. Based on review of audiotaped interactions with standardized patients, students in the formal training group scored higher on 3 of 6 smoking intervention content areas (exploring past experiences, determining resources for change, and negotiating a plan) and 2 of 3 patient-centered counseling skills (providing information and eliciting or responding to feelings). Enhanced teaching methods improved medical students’ tobacco intervention skills beyond traditional educational approaches.

**Standardized Patient Instructors.** In addition to the patient-centered approach, standardized patient instructors (SPIs) have been used by many investigators in medical school smoking intervention curricula. Standardized patient instructors are trained lay individuals who act as patients, usually following a standardized script and giving students objective feedback. They have been used frequently to teach medical students, residents, and physicians interviewing and counseling tech-
niques. Stillman et al\(^{19,32}\) and Levenkron et al\(^{31,32}\) used SPIs to instruct medical students in a variety of health promotion and interview skills. Most pertinent to tobacco treatment is the University of Rochester Risk Factor Interview Scale (URRFIS) of Levenkron et al.\(^{31-33}\) on which an SPI experience for medical students can be based. This 12-item scale was originally developed to characterize and quantify the skills required of physicians and medical students for coronary artery disease risk factor counseling but is easily adapted to tobacco intervention.\(^{35-40}\) When used by SPIs to evaluate third-year medical students, the URRFIS has demonstrated a high degree of inter-rater reliability (\(R=0.88\)) and internal consistency (\(\alpha=0.76\)).\(^{32}\)

Levenkron and colleagues\(^{55}\) tested the effectiveness of SPI interactions on cardiovascular risk factor counseling prospectively among 2 consecutive classes of second-year medical students at the University of Rochester (Rochester, NY). The first class of students (n=92) learned risk factor counseling (which included advice to quit smoking) through lecture and small-group discussion and the second class (n=91) by interacting with SPIs. Both classes of students were followed up 6 months later with objective testing by SPIs using the URRFIS. Students from the class that interacted with the SPIs had greater improvement from baseline on all subscales of the URRFIS between their first and second SPI interactions. The authors concluded that cardiovascular risk factor counseling for medical students may be taught effectively by SPIs and that the learning appears durable for at least 6 months after instruction. In this study, students did not receive specific instruction or feedback regarding tobacco treatment skills.

A further study by Eyler et al\(^{35}\) found that SPI interactions using URRFIS-based feedback can be used to teach medical students smoking intervention skills. In this nonrandomized study, all third-year medical students (n=159) rotating through general internal medicine at the University of Michigan (Ann Arbor) were assigned required reading on smoking intervention and spent 1 hour interacting with SPIs. Students assessed themselves using the URRFIS and were also evaluated by the SPIs on the same instrument. Overall, students scored acceptably on the URRFIS. However, compared with SPI assessment, students tended to underemphasize the benefits of quitting smoking and overestimate their competence on a number of smoking intervention skills. Because of the discrepancy between student self-assessment and SPI assessment, this study highlights the additional educational value of SPI feedback.

At the University of Ottawa (Ottawa, Ontario), Bland and colleagues\(^{31}\) incorporated lectures and interaction with SPIs into a required 5-week curriculum on human reproduction for all second-year medical students (n=84). Although the emphasis of this program focused on interventions for all substance use disorders in pregnancy, tobacco intervention was a prominent component. At the end of the program, students achieved a statistically significant increase in their comfort level for tobacco counseling and reported less acceptance of use by pregnant women of even small amounts of tobacco.

**Role Playing.** Although SPI-student interactions are effective, they can be expensive. A much less expensive teaching method is role playing, in which one medical student acts as a smoker and another acts as the physician. Research examining the outcomes of this technique has produced mixed results. Using a block randomization design, Roche et al\(^{38}\) studied the effect of various tobacco education methods among fifth-year Australian medical students (n=210), allocating them into 1 of 4 groups: a control group receiving a 3-hour lecture (n=52); a group receiving a 1-hour lecture and audiotape review of a physician counseling a patient to quit smoking (n=53); a group receiving a 1-hour lecture and 2 hours of faculty-supervised role playing in small groups (n=49); and a group receiving a 1-hour lecture and 2 hours of role playing that was videotaped and reviewed with faculty (n=56). All students were tested before and after the intervention on smoking intervention skills by interacting for 10 minutes with an SPI. This study found that role playing was better than lecture alone but no different from audiotape or videotape review in improving smoking intervention skills. Moreover, role playing is cheaper and often easier to arrange for medical students than SPI interactions.

On the other hand, students appear to enjoy SPI interactions more so than role playing. Papadakis et al\(^{37}\) compared smoking intervention training using SPIs with role playing by randomly assigning first-year medical students at the University of California, San Francisco, to practice smoking intervention skills with SPIs (n=35) or by role playing with each other (n=37). Two weeks later, students were followed up with an SPI activity and were evaluated on cognitive, counseling, and overall skills. Costs for the 2 methods were also calculated. Results from this study suggested that having students practice tobacco intervention techniques with other students was cheaper than an SPI interaction ($500 vs $2500 for a typical class of 100 medical students), yet was equally effective. Nonetheless, students enjoyed the SPI experience much more than role playing.

Among second-year medical students at the University of California, Los Angeles, School of Medicine (n=127), Usatine et al\(^{39}\) compared role playing to counseling encounters with real patients who smoked. While students rated the role-playing activity to be only moderately useful, they stated that the interaction with real patients was very powerful. The authors noted that coordinating student meetings with patients who smoked proved logistically difficult, and the retrospective design of this study was subject to recall bias.

Finally, Geller et al\(^{36}\) evaluated tobacco intervention role playing as part of a required cancer prevention skills workshop among 2 consecutive classes of second-year medical students (n=226) at Boston University. Students...
TOBACCO INTERVENTION TRAINING IN US MEDICAL SCHOOLS

Box. Tobacco Curriculum Content Area*

Basic Science
- Cancer risk from tobacco
- Health effects: tobacco-related diseases
- Effects of passive smoking
- Cigarette smoke contents (nicotine, tar, carbon monoxide)
- Nicotine withdrawal symptoms
- High-risk groups with most difficulty quitting (eg, teens, pregnancy, psychiatric disorders)

Clinical Science
- Clinical intervention (5 a's anticipate, ask, advise, assist, and arrange)
- Relapse prevention
- Pharmacologic agents: nicotine replacement or antidepressant therapy
- Smoking cessation techniques in artificial setting (no patients)
- Smoking cessation techniques in clinical setting with patients
- Smoking cessation techniques in clinical setting with patients and evaluation of performance

*Wording of the 12 content areas of the survey selected from the Agency for Healthcare Research and Quality and National Cancer Institute panel recommendations. Reprinted from Ferry et al.23

GAPS IN CURRENT TOBACCO INTERVENTION TRAINING METHODS

Unfortunately, gaps exist within these educational efforts. For example, while these methods in some cases have demonstrated near-term retention of smoking intervention skills,34,53 no long-term follow up studies have been performed to evaluate retention of these skills beyond medical school. Additionally, studies have not evaluated whether the intervention skills learned are actually applied during real clinical encounters.

Other gaps also remain in medical student tobacco intervention training. One of these is the absence of research on the best ways of educating medical students in treating smokeless tobacco use. This is despite the highly addictive nature of smokeless tobacco,10 its increasing prevalence and unique epidemiology,17,8 and the frequent presence of an oral pathologic state among smokeless tobacco users, providing ideal “teachable moments” in the clinic with patients.12 Although a number of authors27,54,55 have developed smokeless tobacco treatment approaches, no education research has evaluated these approaches in medical student training or their impact on patient outcomes. The same is also true for cigar smoking intervention.

In addition, a paucity of education research has investigated ways to inte-
TOBACCO INTERVENTION TRAINING IN US MEDICAL SCHOOLS

grate tobacco dependence information throughout all 4 years of medical school curricula and the barriers that might be encountered with such integration. In their survey of US medical schools, Ferry and colleagues used a variety of guidelines to identify 12 tobacco dependence content areas (6 in basic sciences and 6 in clinical sciences) that should be included in any tobacco curriculum (Box). Only 55% of schools reported teaching all 6 basic science topics. Furthermore, only 4% of schools reported teaching all 6 clinical science topics and only 3 schools (2.4%) reported a required course devoted specifically to treatment of tobacco use. With these results, Ferry et al proposed the development of a body of core teaching materials that all schools could integrate throughout the 4 years of undergraduate medical education.

Finally, cultural competency for tobacco intervention training has not been developed to any significant degree in US medical schools, despite the high prevalence of tobacco use among minority populations and the finding that tobacco intervention is best accomplished among these groups through culturally relevant approaches. While the patient-centered approach to tobacco treatment incorporates aspects of cultural competency, specific instruction in culturally appropriate counseling to specific racial and ethnic groups still is necessary. This is because cultural competency is crucial for risk factor intervention, especially tobacco intervention. Moreover, cultural competency is a distinct clinical skill that can be learned by medical students. Studies have repeatedly demonstrated the efficacy of a variety of smoking treatment approaches in minority populations. For treatment approaches to be effective, however, they must be offered in language that is understood by the tobacco user and provide culturally appropriate models or examples of tobacco cessation. Unfortunately, culturally relevant tobacco curriculum materials for undergraduate medical education have not been developed.

Author Contributions: Study concept and design, acquisition and analysis of data, and critical revision of the manuscript for important intellectual content: Spangler, George, Foley, Crandall. Acquisition of data: Spangler, George, Credall. Drafting of the manuscript: Spangler, George. Statistical expertise: Spangler, Foley, Obtained funding: Credall. Administrative, technical, or material support: George, Foley, Credall. Study supervision: Spangler.

Funding/Support: Time for work on this article was supported by grant 1 D12 HP 00007-01 (Academic Administrative Units in Primary Care) from the Health Resources and Services Administration Bureau of Health Professions, Rockville, Md.

REFERENCES


25. Ferry LH, Crissino LM, Runfola PS. Tobacco dependence and treatment in cultural curricula.29,40,42,49 and the barriers that might be encountered with such integration. In their survey of US medical schools, Ferry and colleagues used a variety of guidelines to identify 12 tobacco dependence content areas (6 in basic sciences and 6 in clinical sciences) that should be included in any tobacco curriculum (Box). Only 55% of schools reported teaching all 6 basic science topics. Furthermore, only 4% of schools reported teaching all 6 clinical science topics and only 3 schools (2.4%) reported a required course devoted specifically to treatment of tobacco use. With these results, Ferry et al proposed the development of a body of core teaching materials that all schools could integrate throughout the 4 years of undergraduate medical education.

Finally, cultural competency for tobacco intervention training has not been developed to any significant degree in US medical schools, despite the high prevalence of tobacco use among minority populations and the finding that tobacco intervention is best accomplished among these groups through culturally relevant approaches. While the patient-centered approach to tobacco treatment incorporates aspects of cultural competency, specific instruction in culturally appropriate counseling to specific racial and ethnic groups still is necessary. This is because cultural competency is crucial for risk factor intervention, especially tobacco intervention. Moreover, cultural competency is a distinct clinical skill that can be learned by medical students. Studies have repeatedly demonstrated the efficacy of a variety of smoking treatment approaches in minority populations. For treatment approaches to be effective, however, they must be offered in language that is understood by the tobacco user and provide culturally appropriate models or examples of tobacco cessation. Unfortunately, culturally relevant tobacco curriculum materials for undergraduate medical education have not been developed.

Author Contributions: Study concept and design, analysis and interpretation of data, and critical revision of the manuscript for important intellectual content: Spangler, George, Foley, Credall. Acquisition of data: Spangler, George, Credall. Drafting of the manuscript: Spangler, George. Statistical expertise: Spangler, Foley. Obtained funding: Credall. Administrative, technical, or material support: George, Foley, Credall. Study supervision: Spangler.

Funding/Support: Time for work on this article was supported by grant 1 D12 HP 00007-01 (Academic Administrative Units in Primary Care) from the Health Resources and Services Administration Bureau of Health Professions, Rockville, Md.
40. Spangler JG, Enarson C, Eldridge C. An integrated approach to a tobacco-dependence curricu-

Medicine, to produce health, has to examine disease; and music, to create harmony, must investigate discord.
—Plutarch (46-120 CE)