Tracking Dental Patient Tobacco Use and Intervention in the Academic Clinical Setting

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Abstract: The purpose of this study was to illustrate one method of tracking patients’ tobacco use and monitoring cessation interventions with electronic dental records in an academic dental setting. Records from 465 tobacco users were analyzed to assess patients’ tobacco use and providers’ intervention techniques. The results indicate that 75 percent of the patients whose records were analyzed had used tobacco for more than ten years and the cold turkey approach was the most common cessation method. Ninety-seven percent of the patients whose records were analyzed used cigarettes. The most common pharmacotherapy recommended in combination with counseling for smoking cessation was the nicotine patch, followed by nicotine gum, varenicline (Chantix), the nicotine lozenge, bupropion SR (Zyban), and the nicotine oral inhaler. Incorporating tobacco use questions into the electronic dental record can ensure that tobacco use and intervention techniques are addressed and documented in dental records. Electronic dental records provide an opportunity to collect data related to tobacco use and intervention techniques for purposes of further evaluation and research.

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A 2002 pilot study conducted at the West Virginia University (WVU) School of Dentistry clinic found that the majority of tobacco users (70.9 percent) were interested in quitting and approximately half of these users would prefer assistance during the quitting process. The 2008 clinical practice guideline published by the U.S. Department of Health and Human Resources for treating tobacco use and dependence encourages all health care clinicians to inquire about tobacco use every time a provider sees a patient. To this end, in 2009, an electronic tobacco history initial questionnaire and tobacco counseling/intervention questionnaire were developed and implemented using information from the Division of Periodontology at the University of Minnesota and the 5 As format for treating tobacco use and dependence: Ask about smoking, Advise the patient to stop, Assess willingness to quit, Assist the patient in stopping, and Arrange follow-up. The 2008 guideline states, “Numerous effective medications are available for tobacco dependence, and clinicians should encourage their use by all patients attempting to quit smoking—except when medically contraindicated or with specific populations for which there is insufficient evidence of effectiveness (i.e., pregnant women, smokeless tobacco users, light smokers [one who smokes fewer than ten cigarettes per day], and adolescents).”

Tobacco use has been linked to many deleterious effects on both oral and overall health, ranging from increased risk of oral cancer, periodontal disease, and chronic obstructive pulmonary disease, to cardiovascular disease. However, 20.9 percent of people in the United States and 26.9 percent of West Virginia residents currently smoke despite these and other risks. The 2008 clinical practice guideline recommends that clinicians encourage every patient willing to make a quit attempt to use the counseling treatments and medications recommended in the guideline. The guideline recommends practical counseling along with seven first-line medications for smokers: 1) bupropion SR, 2) nicotine gum, 3) nicotine inhaler, 4) nicotine lozenge, 5) nicotine nasal spray, 6) nicotine patch, and 7) varenicline. The dental office is an ideal setting in which to encourage tobacco cessation due to the increased amount of time spent with the patient compared to a physician visit, the increased frequency and regularity of such visits, and the patient’s ability to see the negative effects of tobacco use in the oral cavity.

The 2002 pilot study conducted in this dental academic setting over a five-month period found that
while 70 percent of patients were slightly, moderately, or very interested in having assistance in quitting tobacco use, only 35 percent were asked by a faculty member or student about their tobacco use. These findings are consistent with those of a previous study that found that 58.5 percent of patients believed that dentists should offer tobacco cessation as part of their services, although 61.8 percent of dentists reported believing patients did not expect such services. The same study also found that most (90.4 percent) dental professionals did not feel confident providing tobacco cessation services.

Due to patient interest and in an effort to decrease tobacco use, the periodontal faculty at WVU initiated a tobacco cessation program in the student clinic after the 2002 pilot study. The goal was to assist patients treated at the dental school who were interested in tobacco cessation and to train future dental practitioners to feel comfortable with providing tobacco cessation services and prescribing pharmacotherapy for smokers when appropriate. In the early years of the program, both students and faculty members anecdotally indicated positive experiences with tobacco counseling and interventions. However, there was not a formal system to collect these data, monitor tobacco use rates, or assess tobacco cessation intervention strategies. Therefore, in 2009, a tobacco use initial questionnaire and a tobacco counseling/intervention questionnaire were incorporated into tobacco-using patients’ electronic dental records.

Tobacco questionnaires that are incorporated into the medical history can create a routine means to document patients’ tobacco use and also monitor methods of cessation interventions offered to these patients. The use of an electronic dental record provides the means to obtain specific information, to follow patterns in populations and patients over time, and to eliminate the labor-intensive efforts of drawing data from a paper record.

Since health care providers are called upon to document tobacco use status in health care settings, this documentation has served as a means to assess the quality of care provided by providers and organizations. Balkstra et al. reported that “leading authorities, such as the Joint Commission of Accreditation of Health Care Organizations and the Centers for Medicare and Medicaid Services, now include tobacco-cessation counseling as quality performance measures.” The incorporation of tobacco use and interventions into patients’ records serves as a tool to document their tobacco use status, to monitor the prevalence of tobacco use, to document methods of intervention recommended, and to assess the potential impact of the tobacco cessation effort. There appears to be a paucity of information in the dental literature regarding the use of electronic charts utilized in this manner. We believe that tobacco cessation is an important health issue and hope that one day there will be a standardized electronic tobacco questionnaire put into use across all dental schools, thereby creating a national tobacco use and cessation intervention database to assist in the conduct of tobacco use and cessation intervention research. This study is an attempt to draw attention to the potential uses of electronic dental records that document tobacco use and cessation interventions.

### Methods

Patients in this academic setting are informed of the tobacco cessation intervention strategies available at their initial screening appointment. Once a patient is assigned to a student provider for treatment, the assigned provider is advised to complete an electronic tobacco history initial questionnaire and an electronic tobacco counseling/intervention questionnaire if the patient states that he or she uses tobacco. These forms were completed for 465 tobacco users at WVU between September 21, 2009, and March 7, 2011. This tobacco-using subset of patients was identified by running a query on our patient management software (axiUm) based on the entry code “tobacco counseling for the control and prevention of oral disease.” It is incumbent upon the student and faculty to follow through with this protocol.

After the two tobacco use history questionnaires were constructed by adapting questions used by the Division of Periodontology at the University of Minnesota and from the 5 As, the questionnaires were further tailored for use at WVU. These adaptations primarily resulted from input from faculty members at WVU based upon their interactions with patients concerning tobacco-related issues.

Questionnaire I is comprised of eleven questions regarding a patient’s tobacco use history. Questions 1 and 2 address the amount and length of time nicotine has been used by the patient, which is an important consideration when prescribing/recommending pharmacotherapy. Question 3 asks about the age range when patients began using tobacco to provide a means for comparison with the starting age range found by other researchers. Questions 4 and
5 indicate a patient’s past efforts at cessation, which may be helpful in determining the willingness of the patient to quit. Question 6 asks if supplemental aids were used previously to assist with the cessation effort. This information is extremely important to determine an appropriate cessation strategy going forward. Question 7 identifies the primary reason a patient wants to quit tobacco use. This information allows the provider to utilize the patient’s primary motivating force for quitting when counseling him or her about potential cessation strategies. Question 8 inquires about a patient’s awareness of the side effects of tobacco. For example, many patients are unaware that some sinus problems can be related to smoking, and students are trained to discuss these side effects with patients. Question 9 asks if the patient will allow us to assist with his or her cessation effort. If the patient responds “no,” the student/faculty member is to advise the patient that “we will be glad to assist you in the future should you change your mind.” If the patient responds “yes,” the student/faculty member proceeds with our protocol. Questions 10 and 11 address potential issues that may preclude the prescribing of pharmacotherapy. These two questions alert the student/faculty member to identify medical issues that would require a physician consultation before deciding upon a cessation strategy.

The tobacco intervention/counseling questionnaire is comprised of five questions regarding the tobacco cessation methods recommended by students (under faculty supervision) along with follow-up evaluations of tobacco utilization. Question 1 was designed to document interventions/recommendations made to the patient, including referrals to the quit line, referrals to FAX-TO-QUIT that are completed by the student and faxed to the state tobacco quit line, the provision of educational pamphlets, the use of an intraoral camera to show the patient the effects of tobacco on his or her mouth, and the need for a physician referral and is finally used as a means to check that the student has, at a minimum, asked and advised the patient about tobacco usage. Questions 2 and 3 identify tobacco cessation strategies, including pharmacological options recommended/prescribed to the patient. Questions 4 and 5 are intended as additional questions for follow-up appointments. At each patient recall and during any appointment in which the patient indicates a change in his or her tobacco habit, information is recorded. This information is reviewed and approved by a periodontal faculty member prior to its entry into the patient’s electronic medical history.

The data for this study were retrieved from tobacco users’ electronic dental records by running a query in our patient management software (axiUm). These data were then deidentified to protect the identity of individual patients and exported to an Excel spreadsheet to perform the necessary sorting and various other numeric calculations. These data collections represent a starting point for information that can be drawn from this system. The next steps would be to use a statistical package to run statistical tests such as chi-square or t-tests to determine the statistical significance of variables that may be involved with successful cessation strategies. In addition, longitudinal studies may be conducted. This study was approved by the West Virginia University Institutional Review Board (IRB # H-23028; 2010).

Results

From September 21, 2009, to March 7, 2011, students recorded patients’ tobacco use and students’ intervention techniques (under faculty supervision) in axiUm (Exan Group, Las Vegas, NV), the school’s electronic health record software. Data from the 465 tobacco users included in this study indicated that 75 percent had used tobacco for more than ten years (Figure 1). Most of the patients (62.5 percent) began utilizing tobacco between the ages of thirteen and nineteen (Figure 2). Three-quarters of the patients had stopped tobacco use for at least one week in the past, with 21 percent quitting for more than one year before starting again (Figure 3).

Most of the patients had made multiple attempts to quit tobacco in the past, primarily using a cold turkey approach (Figure 4). The majority (97 percent) were cigarette users, with the average patient smoking 15.46 cigarettes per day. Males averaged 17.83 cigarettes per day and females averaged 12.29 cigarettes per day. Of those who used pharmacotherapy as a cessation strategy, the nicotine patch was the most popular method, followed by nicotine gum, varenicline (Chantix), bupropion SR (Zyban), and the nicotine lozenge (Figure 5). A physician consultation was required prior to tobacco cessation for 17.4 percent of the patients, based on information contained in the patient’s health history. Health concerns were cited as the primary reason for wanting to quit tobacco (235 responses), followed by tobacco product cost (sixty-four responses) and the effects of tobacco on teeth (fifty-nine responses) (Figure 6).
Those students (under supervision) who recommended pharmacotherapy for smokers primarily selected, in consultation with the patient, the nicotine patch, followed by nicotine gum, varenicline (Chantix), the nicotine lozenge, bupropion SR, and the nicotine oral inhaler. Many students (under faculty supervision) identified the cut-back approach as a utilized strategy. The cut-back approach is implemented when the tobacco user decreases his or her use steadily over a period of time (Figure 7). On return visits, data were collected using the tobacco counseling/intervention questionnaire, and self-

Figure 1. Number of years patients in study had used tobacco

Figure 2. Age at which patients in study began using tobacco
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reported responses indicated one of the following: patient has stopped tobacco use, there is no change in tobacco use, patient has decreased tobacco use, patient has increased tobacco use, or patient has stopped and started again (Figure 8).

Discussion

A review of the data suggests several important findings. The electronic dental record can serve as a very useful tool for gathering and analyzing data.
regarding tobacco use and cessation strategy interventions. In addition, and perhaps the most important finding from this study, while pharmacotherapy in conjunction with counseling is recommended to patients, the cut-back approach, in which a patient reduces his or her tobacco use over time, is the most often cited approach recommended by students under faculty supervision. It should be noted, however, that the cut-back approach is not a cessation strategy in and of itself. The cut-back approach should be uti-
lized in combination with picking a quit date and the use of pharmacotherapy unless contraindicated. This finding may indicate that the patients did not want to use pharmacotherapy, that the patients’ medical conditions contraindicated pharmacotherapy, that the patients were “light” smokers, or that the students (under faculty supervision) did not emphasize the value of considering pharmacotherapy to aid with cessation. This result is consistent with a similar finding that “among current smokers who attempted
to stop for at least one day in the past year, only 21.7 percent used cessation medication.”14 Our finding requires further investigation to determine what the precise reasons were for the patient not using pharmacotherapy when evidence-based guidelines support its use in combination with counseling.

It is important to note that, prior to prescribing pharmacotherapy, a health care provider must thoroughly review the patient’s medical history and determine the need for a physician consult. Certain medical conditions may contraindicate the use of certain tobacco pharmacotherapy strategies, and medications that a patient takes may require dosage adjustment. Patients who are prescribed pharmacotherapy should be advised about how to take the medication, its potential side effects, and any FDA alert regarding it.

In this patient population, the most frequent age range cited for beginning tobacco use (thirteen to nineteen) closely coincides with the results of other studies that have evaluated this risky behavior.15,16 This age range should be targeted by outreach programs to prevent the onset of tobacco use. The pediatric program at WVU is emphasizing the hazards of tobacco use in an effort to prevent a myriad of health concerns and costs to future generations. Educating dental patients at an early age about the oral effects of tobacco, discussing the relationship of oral health to systemic health, and personalizing this information could do much to increase the public’s knowledge about the devastating effect this chronic disease has on both oral and systemic health.

This study found health concerns to be the most cited reason why patients want to quit tobacco use, while product cost and effects on teeth were cited much less frequently. These findings are somewhat consistent with a previous study that found health concerns, expense, advice from a health professional, and TV advertisements prompted quit attempts.17 Many patients may not understand that tobacco affects their oral health or understand that the health of their teeth relates to their overall health. Given the finding that 75 percent of patients have attempted tobacco cessation previously, utilizing the dental setting to discuss the effect of tobacco on teeth and overall health may serve as a motivational tool in encouraging patients to give up this habit.

The limitations of this study include the fact that there is always potential for human error in such tasks as data entry. For example, it is incumbent on the student provider under faculty supervision to complete the questionnaires when a patient reports tobacco use. In addition, the study relied on patients to provide honest answers to the questions. A third potential issue is that the students/faculty members may complete the questionnaires but fail to enter the appropriate code into the patient management software. Therefore, it is possible for there to be unidentified tobacco users who were omitted from this study’s data. Finally, time and expertise are required of the information technology administrators to work in concert with the clinical faculty to ensure that a datum drawn from the electronic dental record is appropriate for the issue under investigation.

The intended goal of the electronic tobacco questionnaires was to institute an intervention that would train future providers to document tobacco use, properly use tobacco cessation pharmacotherapy, routinely counsel patients about this chronic disease, and ultimately carry this protocol into their future practices. This research provides important information for faculty members as they continue to supervise students using tobacco cessation intervention strategies at WVU and may provide important information for future research efforts. As more data are collected, we expect to conduct additional research in an effort to determine which methods or combination of methods are most successful in helping patients quit tobacco use. Additional research is needed to evaluate why pharmacotherapy continues to be underutilized, statistical tests need to be conducted to determine the significance of variables that may be involved with successful cessation strategies, and longitudinal studies need to be conducted to evaluate the success and failure of our tobacco cessation program over time.

Finally, we believe that tobacco cessation is an important health issue and hope that one day a standardized electronic tobacco questionnaire will be put into use in all dental schools, thereby creating a national tobacco use and cessation intervention base to assist in the conduct of tobacco use and cessation intervention research. Our study is an attempt to draw attention to the potential uses of an electronic dental record that documents tobacco use and cessation interventions.

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REFERENCES


