**Implementation of recommended tobacco cessation systems in dental practices: A qualitative exploration in northeastern North Carolina**

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## ABSTRACT

**Purpose/Objectives:** Dentists have an important role in tobacco cessation, and tobacco use often results in poor oral health outcomes. Every year, cigarettes and other tobacco products cause nearly one of every five deaths in the United States. Many smokers report not being advised to quit by their healthcare providers. The aim of this study was to determine the extent general dentists in northeastern North Carolina implement the U.S. Public Health Service Clinical Practice Guideline (CPG) Treating Tobacco Use and Dependence in their practice; the presence of smoke- or tobacco-free policies at dental offices; and, barriers to assessing, advising, and assisting clients in quitting tobacco.

**Methods:** General dentists located in the 252 telephone area code, which covers northeastern NC, were identified for a qualitative study. Participating dentists (n=11) underwent a 15-minute semi-structured interview by phone in January-March 2017. Interviews were thematically coded for adherence to the CPG.

**Results:** We identified 12 themes in the data. Full implementation of the CPG was limited, although asking, advising, and assessing about tobacco use was consistently present in dental practices. Other recommendations, particularly the designation of a staff member as coordinator were not implemented.

**Conclusion(s):** We found meaningful levels of adherence to the evidence-based tobacco cessation systems guideline in a region with persistent health challenges. Our results suggest room for improvement in the training of dental professionals, the curricula of dental schools, and continuing education.

## INTRODUCTION

Smoking cigarettes can harm nearly every organ in the body and can lead to numerous health problems, including oral cancers and periodontal disease.[1] Smokeless-tobacco products also have a clear link to oral diseases and cancers.[1] In the US, each year over 480,000 people die prematurely from smoking.[2] In 2015, the proportion of adults in the US who smoke was 15.1%,[3] and 19.0% of NC adults were current cigarette smokers.[4] A slightly higher smoking prevalence of 21.4%[5] was reported in eastern NC, where rates of morbidity and mortality are consistently higher than in other parts of the state.[6] These rates in NC remain above the state's 2020 goal of 13.0%.[7] Northeastern NC consists of some of the most economically depressed areas in the state.[8] Thus, there is a compelling need to ensure evidence-based interventions are being implemented, to identify barriers, and to use that information to improve interventions.[6]

Dentists and dental hygienists are in a unique position to help tobacco users quit.[9] Healthy People 2020 aims for higher rates of tobacco screenings and tobacco cessation counseling in dental care settings.[10] According to the U.S. Public Health Service (PHS) Clinical Practice Guideline (CPG) *Treating Tobacco Use and Dependence: 2008 Update*, there are straightforward systems-level policies and practices that should be implemented in clinical settings, including dental offices.[11] The CPG recommends (1) implementation of a tobacco user identification system in every clinic to document every tobacco user and assess tobacco use as a vital sign; (2) ensuring that the available resources, education, and feedback on performance are available and utilized by all members of the clinical team; and, (3) designating a clinic staff member to be the tobacco coordinator for the practice.[11] Implementation of these systems-level practices helps increase use of the 5 A's (ask, advise, assess, assist, and arrange) and thus is an evidence-based way to promote tobacco use cessation.[11] These systems-level interventions have

existed as evidence-based best practice for the past seventeen years.[11-13] Yet, 42% of smokers in NC report that no healthcare provider has advised them to quit smoking in the past year,[4] similar to national levels.[14] This is despite the fact that over two-thirds of adult smokers wish to quit[14] and that regret ever starting to smoke is a nearly universal experience among smokers.[15] Older studies have found limited implementation of the CPG recommendations by dentists in other regions of the country.[16,17]

The American Dental Association (ADA) also urges dentists to be engaged in tobacco cessation.[18] Past reviews show that addressing tobacco use can be successfully implemented in dental practices.[19] Efforts to assess implementation of the CPG and barriers to their implementation in dental settings are warranted. The goal of this study was to assess the extent dental practices in Northeastern NC implement the recommended CPG, to understand policies about smoking in dental practice settings, and to identify barriers to implementation of recommended systems.

## MATERIALS AND METHODS

The East Carolina University and Medical Center Institutional Review Board approved this study (#16-001694). We conducted a qualitative, interview-based study. This decision was based on previously reported experience collecting similar data in college health centers where interviews provided a clearer picture of practices than surveys of providers.[20] Unlike surveys in which one can check a box to report implementation, we were able to ask for detailed descriptions of how tobacco use was addressed and were able to interpret these for their implementation.

All participating dentists in this study were licensed, practicing general dentists working in the 252 area code (which covers northeastern NC). The sampling frame was created using the ADA's website to help find general dentists located in the 252 area code. This method resulted in only general dentists who were members of the ADA being contacted to participate in the study. General dentists were purposely selected for geographic, gender, race, and practice size diversity from the sampling frame. A letter with study and contact information was sent to the dental practice of each of the dentists by U.S. mail, asking if they would be interested in participating in the study. If there was no response from the dentist within a week, we called their dental practice to inquire directly if they were interested in participating. After no response to three follow-up calls and an email, the dentist was classified as "no response." The study consisted of interviews with 11 of the 75 dentists we contacted in the 252 area code. No incentives were provided. Interviews were conducted until no new, unique answers were being given.

We developed a semi-structured interview guide (Supplemental File 1) to provide open ended ways of describing each component of the CPG in a discussion format. Thus, each question was mapped to a CPG component or sub-part of a guideline. The interview guide was pilot tested with two Certified Tobacco Treatment Specialists and reviewed for content by an academic public health dentist.

Participating dentists (n=11) underwent semi-structured interviews by phone in January-March 2017. After gaining consent, the interviews were recorded and professionally transcribed with a smooth verbatim transcription protocol. All interviews were conducted by the principal investigator (JPN).

**Analysis**

The qualitative data gathered from the study was thematically coded[21] for adherence to the CPG, 5 A's, and barriers to implementation. First, we created deductive codes to capture each component or sub-part of guideline, policies, 5 A's, and barriers. The principal investigator then coded all transcripts using these codes. Following this, the investigator used an iterative process of thematic coding; in this coding new inductive codes were developed, defined in the codebook, and applied based on common themes across the interviews. One author (JGLL) reviewed, discussed, and came to a consensus with the principal investigator on the coding. We thus did not calculate inter-coder reliability. Coding was conducted in NVivo version 11. Quotes were chosen for their representativeness of the theme.

## RESULTS

Of the seventy-five dentists contacted, five of the dentists could not be reached. This was due to either the dentists no longer working at the dental offices contacted or the number used to call them did not work. Sixteen of the dentists contacted declined to be interviewed and forty-three other dentists did not respond to the contact. Of the eleven participating dentists, seven were male and four were female. The participating dentists practiced in six counties throughout the 252 area code. We present twelve emergent themes in the Table and describe each in further detail below by guideline, policy, and 5 A's.

### Clinical Practice Guideline 1

To ensure the tobacco-use status of every patient is discussed and documented, an office-wide tobacco user identification system is recommended.[11] The system should include tobacco

use as a vital sign[22] and inquire about the patient's tobacco use status every visit. We identified four themes relevant to Guideline 1.

Theme 1: Dental practices have systems to identify tobacco users

Tobacco use is recommended to be used as a vital sign.[11] A clear theme that emerged was that participants and their staff do consistently ask their patients about their tobacco use at every recare appointment, but do not typically implement it as a vital sign. Health history questionnaires were consistently used to identify tobacco users. The questionnaire typically includes questions concerning tobacco use, frequency, and type of tobacco used.

*"I mean, we do ask it, but I don't record it as a vital sign, no."* (Interview 1)

Theme 2: Inconsistent smoke-free workforce

The CPG encourages healthcare professionals to be non-smoking role models for their patients.[11] In our analysis of discussions of staff modeling tobacco-free lives, one theme emerged from the study: There is not a consistently smoke-free workforce across the practices.

*"I have one staff member, one of my dental assistants, who smokes. And she knows, and we've had discussions, and all that, and she quit for a while. She's just at this point in her life where she doesn't want to quit."* (Interview 9)

Theme 3: Considering electronic nicotine delivery systems (ENDS) products

The third theme was that the dentists were consistently interested in the inclusion of ENDS products in their tobacco use identification systems. However, assessment of ENDS was

not consistently reported. Dentists already implementing questions regarding ENDS products in their tobacco use identification systems sometimes did so as an aside to their standard questions.

> *"You know what? There's…we really don't ask about the electronic cigarettes on our health history just because that's, for years we've asked specifically about smokeless tobacco and do you smoke cigarettes, cigars, pipes, anything such as that, but orally we are asking about the e-cigarettes."* (Interview 4)

**Clinical Practice Guideline 2**

In order to promote tobacco dependence treatment, it is essential that clinic staff have adequate training and resources as well as receive feedback on tobacco dependence.[11] Dental offices should provide resources for their staff and patients to help treat tobacco dependence (e.g., Quitline fax referral forms for staff, self-help pamphlets for patients).

Theme 4: Lack of tobacco cessation training opportunities for staff

A clear theme that emerged from the interviews was that there is a lack of tobacco cessation training opportunities for staff. Tobacco cessation training was not consistently offered by the dentists for their staff (or taken by the dentist him/herself). The hygienists do undergo courses related to oral pathology caused by tobacco for CE credits, but nothing was reported for tobacco cessation. Additionally, no dentist reported tobacco cessation training procedures in place for newly hired staff at any of the dental practices. The dentists would either have a conversation with the new staff member about the importance of tobacco dependence treatment, or not address it at all.

*"Specifically with cessation, I cannot say that we've had any continuing education related to cessation. Pathology, we have had at least three or four courses on oral pathology, and that's the whole team, the whole clinical team. But as far as cessation, no."* (Interview 4)

Theme 5: Consistent presence of self-help materials

The presence of pamphlets, brochures, and other self-help materials was a clear theme that emerged from the study. The dentists provide pamphlets and brochures about tobacco cessation and treatments to their patients interested in quitting.

*"I use the ADA brochure, pamphlet on tobacco cessation. That's typically the sort of in-hand take-home that are provided for patients. So it's that and just counseling with me talking about it; what are the risks that they take, systemically and orally from tobacco use."* (Interview 8)

Theme 6: Limited use of QuitlineNC

The limited use of the QuitlineNC was a theme that emerged from the interviews. QuitlineNC referrals were present, but were not consistent across practices. The fax-to-Quitline referral service was not used by any of the participating dentists; one reported:

"*I didn't even know that you could do that. I thought it was strictly the patient's responsibility to call if they were interested.*" (Interview 1)

Theme 7: Smoking cessation is a primary care provider's job

A clear theme that emerged from the interviews was that dentists and their staff consistently refer patients to their primary-care provider if they are seeking assistance quitting. In our data, dentists did not feel comfortable prescribing smoking cessation medications/pharmacotherapy. The dentists consistently reported having learned about tobacco use in oral pathology classes, but received very little training in regard to tobacco cessation while in dental school. When asked if they would change the tobacco cessation training they received in dental school, the dentists consistently reported they would have liked to have received more tobacco cessation training.

> *"Maybe it would be nice to know typical prescriptions and protocols for it, because that's why I refer out. It's not my, I feel, area of expertise. I can diagnose pathologies and tell you other things in regards to that, but in terms of quitting, I don't feel too comfortable."* (Interview 6)

**Clinical Practice Guideline 3**

Dentists should designate a staff member to be the tobacco coordinator.[11] The tobacco coordinator should be formally given responsibilities, e.g., to coordinate tobacco dependence treatment for patients (e.g., Quitline fax referral, follow up), ensure new staff are trained, coordinate quality improvement efforts (e.g., chart audits), and track inventory of resources.

Theme 8: "I guess that's me"

A theme that emerged was that the dentists described themselves as having ultimate responsibility over the tobacco dependence treatment activities for the patients. In other words, the dentists did not have a designated tobacco dependence treatment coordinator. Due to the

consistency of dentists reporting the lack of a designated tobacco dependence treatment coordinator, it is unclear if the responsibilities of this position are carried out. Of the dentists who stated they had the ultimate responsibility of tobacco dependence treatment coordination, the responsibilities they mentioned during the interviews of this position were patient education and communicating with their staff on tobacco dependence treatments.

*"No, there currently is not [a tobacco coordinator]."* (Interview 11)

**Policies**

Theme 9: Consistently smoke-free indoors

A smoke-free policy inside of their dental office was a clear theme that emerged from the interviews. Dentists consistently reported patients and staff are not allowed to smoke cigarettes inside of the office.

A subtheme did emerge from the study when the participants were asked if the policy addresses ENDS. The subtheme was that their policies do not specifically address ENDS, but the dentists consistently still do not permit ENDS inside of the office.

*"There is no smoking in my office. I will say that."* (Interview 1)

Theme 10: Inconsistent smoke-free grounds

There was inconsistency in how the dental practices regulated smoking on the grounds outside of the practices. The participants either reported the grounds outside of their practices was smoke-free, or that patients and staff were allowed to smoke outside.

*"Well, our patients smoke outside. I've actually had patients get up out of the dental chair to go outside to smoke. So we don't have a smoke-free grounds. No one is allowed to smoke inside though for sure."* (Interview 3)

**5 A's**

Theme 11: Consistent Asking, Assessing, and Advising

A clear theme that emerged regarding the 5 A's was that the dental practices consistently asked, assessed, and advised their patients to quit using tobacco products. The dentists reported asking their patients about their tobacco use at every recare appointment (although not always as a vital sign, see Theme 1). The participants also consistently reported they educate their patients on the dangers of continued use of tobacco products and advise them to quit.

> *"Well, they fill out the health questionnaire. On there we say, if you're a tobacco user, we would recommend you stop using it. It's not good for your oral health or your general health. And if you're interested, we have some ways we can help you if you would be interested."* (Interview 5)

Theme 12: Limited Assisting and Arranging

A similar theme that emerged regarding the 5 A's was that limited assistance and arranging was reported by the dentists. The dentists reported providing self-help materials for patients interested in quitting and encouraging them to contact their primary care provider for further assistance. There were limited reports of the dentists arranging follow-up appointments with their patients to check their progress quitting tobacco products. Nor were there consistent reports of connecting patients with resources (e.g., fax referral).

> *"Well for us, it's mostly awareness, and having a conversation with the patient about what the habit is, what the ill effects of that habit are, and general encouragement if we're going to see them for any restorative work, then that conversation carries on. But*

*usually, if the patient expresses interest in stopping the habit, then we will contact their physician and together help them seek that help."* (Interview 4)

## DISCUSSION

All of the dentists in this study considered tobacco use a health concern and wanted to see their patients quit. However, we found full adherence to the evidence-based tobacco cessation systems guideline was limited in a region with high smoking prevalence. Tobacco use was rarely recorded as a vital sign at the participating dental practices. The dental practices asked and advised their patients about tobacco use and assessed their patients' readiness to quit using tobacco products. They often educated their patients of the dangers of tobacco use and consistently provided them brochures with further information pertaining to quitting tobacco use. The lack of tobacco cessation training offered to staff and the lack of a designated tobacco treatment coordinator were both themes that emerged from the interviews. Based on the thematic analysis, these gaps in practice-level systems indicate that the dentists in this region largely adhere to the "Ask", "Advise", and "Assess" steps of the 5 A's, but adherence to the "Assist" and "Arrange" steps is more limited.

Lack of tobacco cessation training was a consistent barrier to providing tobacco cessation treatment reported by the dentists in the study. This finding is consistent with a previous study done on a national scale in regards to dentists and tobacco cessation.[23] This lack of training may be the reason why dentists feel it necessary to refer tobacco cessation to primary care providers. Dental students generally believe tobacco cessation counseling is within the realm of dentists' professional responsibilities.[24] The same is true for dental hygienists in NC.[25] While many dental schools report providing education about tobacco dependence, levels of confidence in teaching

oral pathology from tobacco are reported at much higher levels than confidence in teaching dental students how to help patients quit tobacco.[26]

Due to the limited adherence to some of the CPG, it may be beneficial to offer CE classes to the dentists and dental faculty in order to increase implementation. QuitlineNC outreach to dental practices is warranted. Efforts to assist dental practices in formally adding tobacco cessation coordinator job duties to an existing position are also warranted.

Although not found in this study, past studies have determined a lack of reimbursement for providing these types of interventions to be another barrier for dentists.[9] Having tobacco dependence treatments and interventions covered by health insurance plans has shown to increase the number of tobacco users who use these services and successfully quit.[11] It is hopeful that dentists did not mention this as a barrier; even in the absence of reimbursement, dentists should address tobacco use given its substantial burden to population health and clear link to morbidity and mortality.[1]

The presence of a smoke-free policy inside of their dental office was a consistent theme throughout the interviews. A subtheme that also emerged from the interviews was the lack of policies in place at the dental offices that specifically address the use of ENDS. The dentists in the study are aware of the potential health risks of ENDS and consistently reported that they do not permit these products inside of the office, even without specific policies in place. During the interviews, the dentists were interested in adapting their policies and health history questionnaires to address ENDS. This is a positive sign and could mean more dentists in the region would be interested in including more policies at their dental offices prohibiting these products.

There are important limitations to this study. During the study, participation from practicing dentists in the area was low. Non-participating dentists may be less likely to adhere to CPG. The ADA's website was used to create the sampling frame. Not every dentist who is an ADA member can be located through their website. Aside from gender, we did not collect any other additional information concerning their age, years in practice, or practice size. We did not interview hygienists, who would be responsible for implementing portions of systems-level recommendations. Future work could extend our approach to include the perspectives of hygienists. Our study may not generalize to other regions, but may provide a starting point for developing approaches that can be effective in underserved areas. As a qualitative study, we identified themes about implementation and barriers. Quantitative work would be needed to assess the prevalence of these themes among dental practices.

## Conclusion

Further research can identify ways to better integrate the CPG into the curricula taught at dental schools and promote their use in CE. By finding ways to better train current and future dentists, dental education can help to raise their confidence, and provide the tools needed to effectively implement practice-based systems to intervene against a leading cause of morbidity and mortality.

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## TABLES

**Table 1**. The table defines the key themes

| Guideline/Theme | Definition |
|---|---|
| **Guideline 1: Implement a tobacco user identification system in every clinic.** | |
| 1. Dental practices have systems to identify tobacco users | • Tobacco use is asked at every recare appointment but is not conceptualized or talked about as a vital sign<br>  ○ Subtheme: Patient questionnaires identify tobacco users at each visit |
| 2. Inconsistent smoke-free workforce | • We have staff who smoke<br>• We have no staff who smoke |
| 3. Considering ENDS products | • There is interest (and some implementation) of inclusion of ENDS products in tobacco use identification systems |
| **Guideline 2: Provide education, resources, and feedback to promote provider intervention** | |
| 4. Lack of tobacco cessation training opportunities for staff | • While continuing education included oral pathology relating to tobacco use, there were none reported relating to tobacco cessation. |
| 5. Consistent presence of self-help materials | • Pamphlets and brochures were available |
| 6. Limited use of Quitline | • No dentists reported using the fax-to-quit service of the Quitline, Quitline referrals were present but not consistent across practices |
| 7. Smoking cessation is a primary care provider's job | • Dentists and their staff consistently reported encouraging patients interested in quitting to speak with their primary care provider<br>  ○ Subtheme: Not comfortable prescribing smoking cessation medications/pharmacotherapy |
| **Guideline 3: Dedicate staff to provide tobacco dependence treatment, and assess the delivery of this treatment in staff performance evaluations** | |
| 8. "I guess that's me" | • Dentists described themselves as having ultimate responsibility for these activities, but did not have a designated point person |
| **Policies** | |
| 9. Consistently smoke-free Indoors | • Consistent reporting of no tobacco use inside the practice<br>  ○ Subtheme: Not always addressed in policies, but interest in updating policies |
| 10. Inconsistently smoke-free grounds | • Smoking was inconsistently banned in outdoor areas of the practices. |

| **5 A's** | |
|---|---|
| 11. Consistent Asking, Assessing, and Advising | • Dentists consistently asked, assessed, and advised their patients to quit using tobacco products |
| 12. Limited assisting and arranging | • Limited assistance and arranging was consistently reported by the dentists. |