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Tobacco Treatment in a Student-Run Free Clinic: A Pilot Feasibility Study

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Abstract

Background: While smoking rates have decreased in the United States (US), a high number of low socioeconomic status (SES) patients continue to smoke. Student-run clinics are one setting where reaching low SES patients for tobacco treatment may be feasible. However, these clinics have a unique set of challenges in tobacco treatment including limited resources and provider/patient inconsistency. The goal of this pilot study was to determine the feasibility of delivering a brief tobacco treatment intervention in a student-run medical clinic.
Methods: Patients at a student-run clinic in the southeastern US were screened for tobacco use and interest in participation. A clinic member distributed nicotine replacement therapy (NRT) samples (patches and lozenges) and sent a fax referral to the South Carolina Quitline for patients who agreed to participate. In a subset of patients, follow up phone calls were completed at 1 and 4 weeks to assess smoking status and need for additional NRT supplies. Descriptive statistics for participant demographics and treatment acceptability were calculated.
Results: Of 125 patients screened for tobacco use, 16% (n=20) reported smoking with 75% (n=15) accepting the treatment plan offered through the clinic. Ten patients participated in follow up calls, and 40% (n=4) reported using NRT (either patches, lozenges, or both) across the follow-up period.
Conclusions: Delivery of a brief tobacco treatment intervention involving NRT sampling and Quitline referrals is both feasible and acceptable in the student-run free clinic space. This model may be reproducible in other clinics due to its simple protocol, which can be taught to providers and students regardless of experience level.

Introduction

Although there has been a decrease in tobacco use in the United States over the past several decades, 46 million adults still reported using some type of tobacco product in 2021.[1] Some populations have higher rates of tobacco use, including those who are low-income, living in rural areas, or who are uninsured.[1] Due to geographic and financial barriers for these socioeconomic groups, patients often face challenges seeking care in traditional settings, leading to a reliance on free medical clinics. Up to 65% of uninsured patients report tobacco use, highlighting the need for consistent intervention in the free clinic space where they are more likely to be reached for tobacco treatment.[2]

Clinical practice guidelines outline treatment recommendations for all individuals who use tobacco, including those from underserved populations.[3-6] Tobacco treatment can be challenging in ideal care settings, and delivery in a student-run free clinic presents additional challenges with student volunteer turnover and provider inconsistency.[7] To capitalize on opportunities to treat, opt-out

tobacco treatment approaches (i.e., tobacco treatment is provided to people unless they decline) represent a potentially important modality as this has been shown to increase rates of tobacco treatment and short-term cessation rates.[8,9]

Evidence-based tobacco treatment strategies have proven successful in student run clinics that have a primary mission of tobacco treatment.[10] However, this approach has not been evaluated in clinics that serve a wider set of healthcare needs, where intensive tobacco treatment may not be feasible due to resource constraints. One approach to brief tobacco treatment that has been evaluated in primary care clinics is nicotine replacement therapy (NRT) sampling.[11] NRT sampling involves providing a starter pack of NRT for patients to try without financial investment, regardless of motivation to quit in order to increase the likelihood that individuals may try the product and make a quit attempt. Referral to State Quitline services, where patients can receive phone-based behavioral counseling, additional medications, and additional services like text-messaging support can also increase quit rates among low-resource patients.[12]

The primary aim of this pilot study was to investigate the feasibility and acceptability of a scalable and brief tobacco treatment intervention (NRT sampling plus referral to the Quitline) in a student-run free medical clinic. Evaluating the feasibility of such intervention is warranted due to a paucity of data surrounding student-run free clinic tobacco treatment programs.

Methods

The present study aimed to evaluate the feasibility and acceptability of a pilot tobacco treatment intervention involving NRT sample distribution and SC Quitline referrals at the Medical University of South Carolina (MUSC) Community Aid, Relief, Education & Support Clinic (CARES) between April and October 2023. Study procedures were approved by the MUSC Institutional Review Board and the governing board of the CARES clinic, comprised of medical students and MUSC Family Medicine faculty. Participants were given a statement of participation and were assured their participation was not linked to their care.

Clinical Setting

The CARES Clinic is a student-run free clinic through MUSC College of Medicine and Department of Family Medicine located in the southeastern US. The clinic has been operational since 2005 and serves patients without insurance with a focus on primary care. The population served includes Berkley, Charleston, and Dorchester counties in South Carolina, which include large rural populations. Daily operations are handled by medical students and a supervisory family medicine attending physician. The Electronic Health Record (EHR) at the CARES Clinic is PracticeFusion (Practice Fusion Inc., San Franscisco, CA), a standardized web-based system. PracticeFusion contains a field for tobacco status, but this is not a mandatory field. Customized templates for visits are available, but providers can delete the tobacco prompt.

Procedures

Patients from the CARES Clinic were screened for study eligibility and interest when they presented for scheduled appointments. Because PracticeFusion does not require tobacco status, smoking status was assessed on every patient using a screening form. Study inclusion criteria were: 1) age 18 or older 2) currently smoking (defined as self-report of any current smoking) and 3) English or Spanish speaking. The tobacco status screening form is presented in Figure 1.

A research assistant attended clinic each night to review patients' screening forms. The screening forms assessed smoking history including current use status (currently smoke, never smoked, or formerly smoked). Patients who endorsed current smoking were prompted to answer additional questions regarding their tobacco use, including type of tobacco product, number of cigarettes per day, time to first cigarette, motivation to quit smoking, and confidence to quit smoking in the next 30

days. Motivation and confidence to quit smoking were measured on a Likert scale of 0-10 (0=Not at all, 10=Very).

A clinic member distributed an NRT sample and sent a fax referral to the South Carolina Quitline (SC Quitline) for additional tobacco treatment support for patients who agreed to participate. The screening form that each patient completed at intake guided dosing for the NRT, and dose determination followed the standard package insert. For patients who reported smoking fewer than 10 cigarettes per day, a two-week sample of 14mg patches was provided. For those who reported smoking 10 or more cigarettes per day, a two-week sample of 21mg patches was provided. If patients reported smoking within 30 minutes of waking, they were provided with a two-week supply of 4mg lozenges. If they reported smoking more than 30 minutes after waking, they were provided with a two-week supply of 2mg lozenges. A clinic volunteer dispensed the appropriate dose of NRT (verified by a licensed prescriber) and a medication guide. The medication guide reviewed use instructions for both NRT patches and lozenges as separate products and gave guidance on how to use the long- and short-acting products together (i.e., dual NRT)[9]. Participants were not required to use the medications they received but were encouraged to try to make a quit attempt. The guide also informed participants that someone from the SC Quitline would be following up by phone to offer counseling and, if eligible, an additional supply of NRT.

The second phase of the pilot study aimed to evaluate NRT use following distribution and further inform the acceptability of the intervention. A subset of the participants (n=10) was separately recruited and consented for follow-up calls. Participants received the same take-home products as described above (NRT, medication guide, and a referral to the SC Quitline). Additionally, for these participants, a research assistant called them by phone at 1-week and 4-weeks after their appointment to assess use of the NRT and follow up on the referral to the SC Quitline. At the 1-week follow-up call participants could opt in to receive an additional two-week supply of NRT from the clinic (for a total of 4 weeks of NRT). This NRT could be mailed to the patient or picked up at the CARES Clinic. Participants also completed surveys regarding self-reported use of NRT (type of product and amount), quit attempts, receipt of counseling from the SC Quitline. Participants had the opportunity to be paid $30 for completing these follow-up calls. A study flow diagram is presented in Figure 2.

Figure 1. Tobacco use screening form

Tobacco Use History

1. Do you currently smoke tobacco products?
   ☐ Yes ☐ No – Former Smoker ☐ No – Never Smoker ☐ No – Vape/E-cigarette

If you responded "No" to Question 1, you may stop here

If yes,

2. What type of tobacco products?
   ☐ Cigarettes ☐ Cigars/Cigarillos ☐ other: _____
3. How many cigarettes (or cigars) per day? (1 pack of cigarettes = 20 cigarettes) __
4. How soon after waking do you smoke your first cigarette?
   a. within 5 minutes
   b. 6-30 minutes
   c. 31-60 minutes
   d. after 60 minutes
5. On a scale of 0-10 where 0 is not at all motivated and 10 is very motivated, how motivated are you to quit smoking in the next 30 days? _____
6. On a scale of 0-10 where 0 is not at all confident and 10 is very confident, how confident are you that you can quit smoking in the next 30 days? _____

Results

Screening Results

Out of 125 patients screened for tobacco use, 16% (n=20) reported they were currently smoking. Of these, 75% (n=15/20) accepted the treatment plan offered through the clinic. Of patients who accepted the treatment plan, 100% (n=15) accepted the NRT and 86.7% (n=13) accepted a referral to the SC Quitline. The average age of patients who reported smoking was 43.1. The demographic breakdown of patients who smoke was: 55% White (n=11), 25% Black/African American (n=5), 20% Hispanic (n=4), and 80% male (n=16). Complete patient demographics are listed in Table 1.

Acceptability of Intervention

Ten participants were part of a subset who participated in follow-up calls. All 10 individuals accepted NRT, 90% (n=9) accepted a referral to the Quitline at intake, 70% (n=7) completed at least one follow-up call with research staff, 60% (n=6) completed both follow-up calls, and 30% (n=3) did not complete any follow-up call. Based on self-report from the follow-up calls, 40% of participants (n=4) reported using NRT (either patches, lozenges, or both) at both Week 1 and Week 4 follow-up time points. Figure 3 presents the number of participants who accepted the NRT sample and later confirmed use of the NRT at one of the follow-up points. Those who did not confirm NRT use included 3 patients who reported not using the medication and 3 who were lost to follow up. Three participants requested a refill of NRT at the Week 1 follow-up. Another two-week supply of NRT was mailed to these individuals. A full record of participant NRT use can be found in Table 2.

All participants who reported using NRT (n=7, 100%) said their main motivation for trying the medication was to reduce the number of cigarettes smoked (versus using it to quit completely). Despite this, 2 participants reported engaging in quit attempts (defined as not using tobacco products for 24 consecutive hours). Of the 10 patients enrolled for follow-ups, 30% (n=3) reported high motivation to quit and high confidence to quit at intake; the remainder reported low motivation to quit and low confidence to quit. Of those individuals reporting quit attempts, one reported high motivation and confidence at intake and the other reported low motivation and confidence at intake. Four participants reported that they were contacted by the Quitline, but none had received NRT from the Quitline.

Figure 2. Diagram of clinic flow, patient recruitment, and follow-up

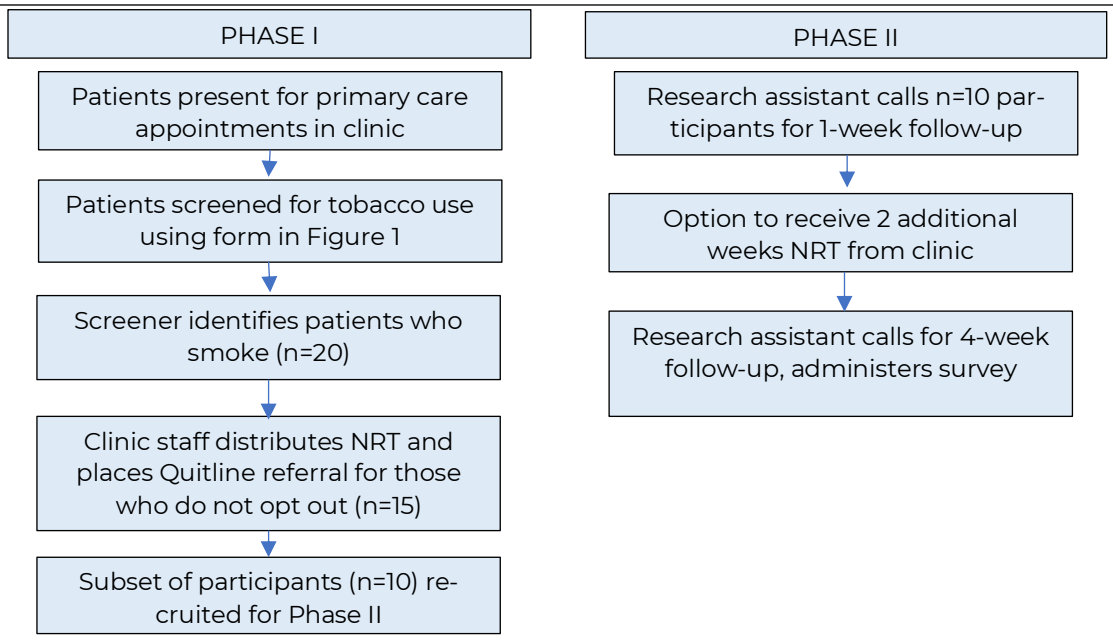

Table 1. Demographics of patients screened for tobacco use

Characteristics	Currently Smoking (n=20)	Not Smoking (n=105)	Total (n=125)
Age, years (mean)	43.1	43.1	43.1
Race			
White	11	61	72
Black	5	12	17
Asian	0	6	6
Hispanic	0	12	12
Other	4	13	17
Ethnicity			
Hispanic	4	16	20
Gender			
Female	4	76	80
Male	16	28	44
Declined	0	1	1

Figure 3. Nicotine replacement therapy (NRT) uptake among patients in a student clinic

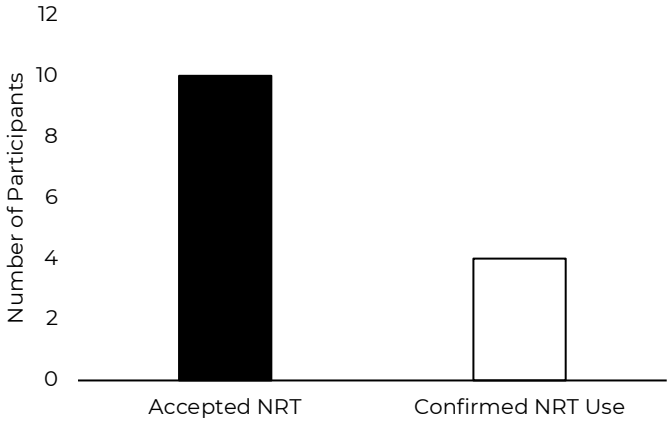

Table 2. Nicotine replacement therapy (NRT) use among patients in a student clinic

	Number of Participants Reporting NRT Product Use		
	Week 1	**Week 4**	**Week 10**
Participants using only lozenges	3	1	4
Participants using only patches	0	1	1
Participants using both	1	2	3
Total	4	4	8

Feasibility

The study was conducted in a student-run clinic with little disruption to workflow. The distribution of NRT samples from the clinic staff was feasible. The staff also placed fax referrals to the SC Quitline which was feasible and did not present a time burden.

Discussion

The pilot data indicates that it is feasible and acceptable to deliver a brief tobacco treatment intervention in a student-run free clinic. The treatment plan acceptance rate of 75% indicated a positive response from patients. Follow-up data from a subset of participants demonstrated that 40% of patients were using the NRT provided and 20% of participants made quit attempts. The rates of NRT use were similar to those found in other studies of tobacco treatment amongst socioeconomically disadvantaged populations and in a study of a student-run clinic dedicated exclusively to tobacco treatment.[10,13] Of note, uptake was similar despite the CARES Clinic not being exclusively dedicated to tobacco treatment and such that the brief tobacco treatment intervention was incorporated into patients' routine health visits.

One major takeaway from this pilot study is the necessity for reliable identification of smoking status in student-run clinics. During the study period, 16% of screened patients were identified as currently smoking but would not otherwise have had their tobacco use status documented. The CARES clinic standard intake procedure did not previously require routine tobacco-use screening at every visit and the EHR does not have a mandatory tobacco field. This finding is not unique to our clinic – lack of procedures for tobacco-use assessment has been documented as a challenge in tobacco treatment at other free clinics.[7] Asking about tobacco use at every visit is especially important in this population due to a high no-show rate; there is no guarantee that patients who smoke will be seen again, so providers must seize opportunities to assess and intervene. Many studies have reported on the effectiveness of brief repeated counseling at routine appointments on increasing quit attempts.[14-16] Furthermore, the free clinic setting bears the unique challenges of student volunteer and precepting provider turnover. With the introduction of a standardized procedure for tobacco-use identification and brief intervention, free clinics could capitalize on every opportunity for tobacco intervention, regardless of volunteer training level or provider specialty. Due to this study's experimental nature, the screening and intervention was done by a research assistant who was consistently present. However, this protocol could be taught during clinic orientation so that every volunteer could participate

Many factors may have led to high acceptance of our intervention. Although 70% of participants reported low motivation to quit, many of those same individuals accepted the tobacco treatment plan. Accepting the intervention despite low motivation highlights the benefit of the "opt-out" model employed. Patients with low motivation to quit are unlikely to pursue tobacco treatment of their own volition, but a model in which every patient who reported smoking was approached and offered treatment appears to be beneficial in increasing reach. Additionally, the treatment plan was rapidly available to patients. The clinic staff made the SC Quitline referral on the patient's behalf with no additional paperwork for the patient, and the NRT was provided on site, free of charge -- preventing a separate pharmacy trip. Utilization of the referral process to the SC Quitline is a low-cost, low-effort method to provide increased access to tobacco treatment resources (counseling and free NRT) and an extension of the treatment support for patients.[17] While the Quitline network has population-level reach of its services, there is still a need to strengthen targeted communication to expand the reach for underserved populations.[17] The "on the spot" nature of NRT sampling within the clinic provides a unique opportunity to both deliver pharmacologic tobacco treatment at the point of care and promote use of the SC Quitline for continuing care. These benefits are of special importance in a population which often experiences transportation scarcity, high out-of-pocket costs for medications, and difficulty taking time off from work to pick up prescriptions. These benefits are of special importance in a population which often experiences transportation scarcity, high out-of-pocket costs for medications, and difficulty taking time off from work to pick up prescriptions.

There were several limitations to this study. First, the sample size was small due to it being a pilot study, the time constraints of the study period, and the fact that the clinic is only open for four hours, three nights a week. Additionally, many patient no-shows often resulted in open appointment windows and a decrease in number of patients screened for participation. This issue is not unique to

this study, and is observed in other initiatives in free clinics given the transient nature of the patient population.[18] While the small sample size precludes definitive conclusions from the data and limits the ability to generalize findings to a larger population or other clinics, we believe that the commonality in the patient population and structure of student-run clinics at various medical schools lends to the likelihood of generalizability.[19]

The design of this study does not allow us to draw any conclusions regarding the effects of our intervention on smoking abstinence rates. Further investigation with long term follow-up of patient outcomes is warranted to further analyze the effectiveness of this intervention. The design of this study precluded us from continuing to provide NRT to returning patients at follow-up appointments. While the SC Quitline does provide limited NRT at no cost to eligible individuals, this is an additional step that patients may be unable to complete (i.e., due to housing instability, unable to schedule time to speak with the quit-line, lack of reliable cell phone services, etc.).

Conclusions

This pilot project demonstrates the practicality of providing brief, opt-out, point-of-care tobacco treatment and highlights opportunities for future improvement. Moving forward, a larger scale study of intervention effectiveness should be conducted to assess long-term quit rates. While beyond the scope of this study, interventions to address no-shows (i.e. text reminders for appointments) and improve response rates to study follow-up calls (i.e. calling outside of work hours so patients are free to answer) would allow for better data collection and analysis. Future studies should also assess the cost effectiveness of distributing free NRT samples, as well as a comparison of NRT sampling in-clinic versus only referring to the Quitline's services, as this will be critical to future scalability and sustainability. The pilot data suggest that tobacco treatment programming is feasible and acceptable in a student-run free clinic. In addition, we saw favorable uptake of NRT amongst those who accepted treatment. The simplicity and brevity of this intervention suggests that this approach could be adopted in the context of other student-run free clinics without burden to students or provider while providing evidence-based treatment to socioeconomically disadvantaged patients.

Disclosures

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