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Nicotine replacement therapy sampling via primary care: Methods from a pragmatic cluster randomized clinical trial☆

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ABSTRACT

Background: Primary care is the most important point of healthcare contact for smokers. Brief physician advice to quit, based on the 5As/AAR model, offers some efficacy but is inconsistently administered and has limited population impact. Nicotine replacement therapy (NRT) sampling, defined as provision of a brief NRT starter kit, when added to the 5As/AAR, is well-suited to primary care because it is simple, brief, and can be provided to all smokers. This article describes the design and methods of an ongoing comparative effectiveness trial testing standard care vs. standard care + NRT sampling within primary care.

Methods: Smokers were recruited directly from primary care practices between July 2014 and December 2017 within an established network of South Carolina clinics. Interventions were delivered randomly by clinic personnel, and phone-based follow-ups were centrally coordinated by research staff to track outcomes through six months post-intervention. Primary study aims are to examine the impact of NRT sampling on smoking, inclusive of cessation, quit attempts, and uptake of evidence-based treatment.

Results: Twenty-two clinics were recruited. Across clinics, patient census ranged from 985 to 10,957 and number of providers ranged from 1 to 63. Average patient age across clinics was 52.9 years and smoking prevalence across ranged from 10.6% to 28.5%.

Conclusion: Improving the effectiveness and reach of brief interventions within primary care could have a considerable impact on population quit rates. We consider the advantages and disadvantages of key methodological decisions relevant to the design of future primary care-based cessation trials.

1. Introduction

Despite recent advances in the treatment of tobacco dependence, smoking and tobacco use continue to be the leading cause of preventable mortality [1]. The primary care setting is a powerful venue through which to identify large numbers of smokers and engage them in quitting as at least 70% of smokers visit a primary care physician (PCP) annually [2]. US Public Health Service (USPHS) clinical practice guidelines advise the 5As model (Ask, Advise, Assess, Assist, Arrange) or its revised alternative (Ask, Advise, Refer) for primary care cessation treatment [3]. However, compliance with this model is modest [4–11]. Typical obstacles at the provider level include lack of familiarity with guidelines, lack of confidence to counsel cessation, inadequate knowledge or skills, and lack of time [12–15]. Thus, PCPs need more and better tools to treat smokers. Any such strategies, if they are to be truly adopted, need to be brief, easy to implement, and noninvasive of either clinic procedures or doctor/patient dialogue of other medical issues.

Despite the evidence base in support of cessation medications, only

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29%–38% of smokers who make a quit attempt use them [16, 17]. The most widely used cessation medication is nicotine replacement therapy (NRT), with over the counter NRT formulations (nicotine patch, gum, lozenge) offering the greatest potential for widespread population dissemination. Meta-analytic evidence from 100+ trials shows a doubling of long-term abstinence [3, 18] associated with NRT and significant reductions in withdrawal and craving [19, 20]. NRT sampling refers to providing short starter packs of NRT and is distinct from a full course of treatment in that the intent is to engage smokers in the process of quitting without any requirement or expectation to quit immediately/abruptly. As NRT sampling is a pragmatic, low intensity, low cost intervention that takes less than one minute to implement, it could easily be added to existing AAR protocols within primary care.

Our team has conducted one prior randomized clinical trial (N = 849), not within primary care, testing the concept of NRT sampling to induce cessation behavior among smokers unmotivated to quit [21, 22]. Smokers were recruited nationally and randomized to either 1) NRT sampling, within the context of a practice quit attempt (PQA), or 2) PQA alone. Uptake of NRT during the sampling period was high, with 73% of smokers using the product, for an average of nine days. Cessation outcomes were also promising. NRT sampling compared to PQA alone was associated with a significantly higher incidence of any quit attempt (49% vs 40%; relative risk [RR], 1.2; 95% CI, 1.1–1.4) and any 24-h quit attempt (43% vs 34%; RR, 1.3; 95% CI, 1.1–1.5) and was marginally more likely to promote "floating abstinence" (i.e., seven days without smoking at any point during the study; 19% vs 15%; RR, 1.3; 95% CI, 1.0–1.7) [22].

We now extend NRT sampling to primary care, in addition to standard care (AAR models), believing it to be uniquely advantageous in this setting because it 1) takes 1–2 min to implement, 2) can be utilized with all smokers regardless of motivation to quit, 3) requires no substantive training of clinicians, and 4) is a concrete behavioral exercise that smokers and providers can "hang their hat on." We herein describe the design and methodology of Tobacco Intervention in Primary Care Treatment Opportunities for Providers (TIP TOP), a large, ongoing comparative effectiveness trial (Clinical Trials Registration Number NCT02096029) to further test NRT sampling, with a primary focus on abstinence.

2. Methods

2.1. Overview of design and study hypotheses

Within a multi-site, cluster randomized clinical trial, smokers were randomized to 1) standard care (Ask, Advise, Refer) or 2) standard care + NRT sampling. Site and participant enrollment occurred from July 2014 through December 2017, and follow-up assessments were completed in June 2018. Twenty-two primary care clinics across South Carolina were enrolled in the trial. Randomization was at the clinic level, but the unit of analysis is the individual smoker. Following consent, baseline assessment, and provider intervention (all done within clinic during routine visits), follow-up phone assessments occurred at one, three, and six months intervals. The primary study outcome will be seven-day point prevalence abstinence (PPA) at the six-month follow-up assessment. Secondary outcomes include incidence/duration of quit attempts, smoking reduction, and utilization of cessation treatment resources. We hypothesize that, as compared to standard care, standard care + NRT sampling within the primary care setting will result in: 1) higher incidence of PPA at six months, 2) a longer period of abstinence across the entire study duration, 3) higher rates of quit attempts, and 4) higher uptake of evidence-based cessation treatment. We further hypothesize that these effects will be mediated by increases in: 1) abstinence self-efficacy, 2) motivation to quit, 3) positive attitudes toward NRT use, and 4) autonomy in quitting.

2.2. General recruitment method, clinic eligibility, and participant eligibility

2.2.1. Recruitment method

Participants were recruited directly within their usual primary care settings during routine visits (i.e., not dedicated for this study). We partnered with Care Coordination Institute, LLC (CCI; https://www.ccihealth.org) which offers a network of ~120 clinic sites across South Carolina, inclusive of > 7500 providers and 1.3 million patients. Each clinic was asked to enroll participants proportional to the demographics of their clinic (e.g., if a clinic's census consisted of 65% White patients, we asked that they recruit a similar proportion of White participants into the study).

2.2.2. Clinic eligibility

Clinics considered for study inclusion were located within the state of South Carolina and had a census of approximately 1000 patients or more. Veterans Administration Health Care System clinics and major teaching hospitals were excluded. From these criteria, a list of 70 potential sites was generated, and 20 clinics were chosen based on clinician interest and recommendations from CCI staff. Five clinics declined participation upon invitation and alternate clinics were selected from the list of potential sites. Target participant enrollment for each clinic was 58 participants within a three-month enrollment period, though clinics were invited to enroll up to 68 participants (see sample size estimations below). Participating clinics were compensated for their time and effort based on enrollment into the study and number of participants enrolled.

2.2.3. Participant eligibility

Participant-level inclusion criteria were kept broad to maximize a population-based focus. These included: 1) age 18+, 2) smoker of at least five cigarettes per day on ≥25 days out of the last 30 days, 3) English speaking, and 4) recruited through a primary care site actively enrolled in the study. Exclusion criteria included FDA contraindications for NRT use, specifically: 1) current pregnancy, breastfeeding, or planning to become pregnant and/or 2) cardiovascular trauma within the last three months. Motivation to quit smoking was not required.

All in-clinic study procedures were conducted with study participants by IRB-approved clinic staff (e.g., nurses, physicians' assistants) and took place during routine clinic visits. Clinic staff identified smokers using the clinic's Electronic Medical Record (EMR), elicited interest from potential participants, and screened those most likely to be eligible/interested. If interested, a study recruiter completed an eligibility assessment, with all data entered into REDCap [23], a HIPAA-compliant online database. Eligible participants completed informed consent with this same clinic recruiter, and all consent forms were mailed to the research study team. After completing informed consent, participants completed a baseline questionnaire packet in clinic (also entered into REDCap). The baseline questionnaire was intentionally kept brief to minimize burden on clinical staff during patient visits and included information on basic demographics, nicotine dependence, prior quit attempts, and quit methods used.

2.3. Interventions

2.3.1. Standard care

A key decision point for this trial was the amount of intervention that should be provided to the control group. Our priorities here were to maximize external validity and minimize the amount of additional training provided to clinicians across both standard care and NRT sampling interventions. To maximize external validity, the standard care treatment should mimic as closely as possible the usual practice for smoking cessation within primary care. As such, we based our standard care intervention on the AAR model and provided clinicians in both the standard care and NRT sampling conditions with a brief AAR training prior to study initiation. Bachelors level study staff with Tobacco