Real-World Impact of Quitline Interventions for Provider-Referred Smokers

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Background: The healthcare provider–referral quitline model has potential to help identify and connect more smokers to effective cessation services as compared to the self-referral model alone. However, research is limited as to whether provider-referred smokers, who may have more barriers to quitting, can have similar rates of quit success using traditional quitline interventions as self-referred smokers.

Purpose: To (1) determine how provider-referred smokers may differ from self-referred smokers in their demographics, service utilization, and quit rates and (2) quantify the impact of traditional quitline services on provider-referred smokers' ability to quit.

Methods: Data were collected for 2,737 provider-referred and 530 self-referred Massachusetts quitline clients between November 2007 and February 2012. Analysis was performed in 2012. Wald chi-square tests and two-sample *t*-tests were used to identify differences between the two referral populations. A multivariable logistic regression model was used for each referral population, and smoker quit status at follow-up was the primary outcome. Tests and models were weighted using inverse probability of treatment weights propensity score weighting method.

Results: Compared with self-referred smokers, provider-referred smokers were more likely to be non-white, less educated, and have public insurance. They were less ready to quit and had lower service utilization and quit rates. In both referral populations, clients who used services had greater odds of quitting than those who did not.

Conclusions: Expanding the provider-referral model may require quitlines to address the various risk factors associated with this population. Providers serve critical roles in preparing patients for quitline participation prior to referral.

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Introduction

The clinical and real-world effectiveness of telephone-based tobacco quitlines is well established.[1–4] Smokers who use quitlines are significantly more likely to make quit attempts and quit than smokers who do not use quitlines.[5] However, much of the previous research examined traditional quitline service models, in which the smoker initiates the first call to a quitline. Recently, interest has increased nationally in the expansion of a healthcare provider–referral model for quitlines, in which patient smokers are referred by their provider, either via electronic health record or fax, to a public quitline. It is proposed that this second quitline model, operating in complementary fashion alongside the first, could help identify and connect many more smokers to quitline services, thereby making a greater impact on the reduction of smoking prevalence compared to the self-referred model alone.[6]

Despite the appeal of the provider-referral system as a complementary, farther-reaching service model than the traditional self-referral model,[7–9] research on the real-world impact of traditional quitline interventions (telephone counseling, nicotine replacement therapy [NRT], and self-help materials) on provider-referred smokers' ability to quit is limited. Prior studies have found that patients referred to quitline services do quit at greater rates than those who received only standard in-practice care.[10,11] However, few studies have attempted to

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quantify the impact of individual quitline interventions on provider-referred smokers. It also remains an empirical question whether quitlines can expect provider-referred smokers to have similar rates of participation and quit success as traditional (self-referred) callers. Studies have found that actively recruited smokers, such as those referred by healthcare providers, differ significantly from smokers who enroll on their own on several sociodemographic and smoking-related characteristics.[12,13] Specifically, compared with non-referred smokers, healthcare provider–referred patients were found to have more comorbidities, less motivation to quit, less education, and less health insurance coverage.[14] Separately, other studies have found that healthcare providers' implementation of tobacco treatment models varies significantly and that patient enrollment rates and quit outcomes for a quitline can be affected by the degree of intervention and preparation received by the patient prior to referral.[15] These potential differences highlight the importance of determining the extent to which quitlines can improve the cessation outcomes of provider-referred smokers.

This paper contributes to the growing body of literature on provider referrals to quitlines by examining differences in demographics, service utilization, and quit outcomes between provider-referred and self-referred clients, and by measuring the real-world impact of cessation services for provider-referred clients. The Massachusetts Smokers' Helpline, with more than 90% of its annual client volume derived from provider referrals (both electronic and fax), offers a unique opportunity to examine the potential benefits and limitations of this referral model.

Methods

Helpline Protocol Overview

The Massachusetts Smokers' Helpline offers evidence-based proactive counseling, NRT, and self-help materials. Self-referred clients enroll in services via calling the national phone number, 1-800-QUITNOW, and provider-referred clients are referred to the quitline by their provider electronically or via fax. Both groups are eligible to receive proactive counseling and self-help materials. Provider-referred clients are eligible to be screened for a 2-week supply of nicotine replacement patches. Proactive counseling consists of five individualized telephone sessions with a Helpline quit coach, although clients may receive additional sessions if they experience relapse during the course of the program.

Data Collection and Sampling

A retrospective analysis was performed in 2012 of Massachusetts provider-referred and self-referred clients who entered the quitline between November 2007 and June 2011. For this analysis, individuals who called the quitline as part of any free patch promotions were excluded (n=30,276), as these individuals largely did not participate in counseling and are not representative of the average quitline caller. Figure 1 shows the exclusion criteria used to select the final client cohort for analysis. The final complete case cohort used for analysis consisted of 2,737 provider-referred clients and 530 self-referred clients.

Client data for demographic, smoking behavior, source of referral, services requested, and details of counseling sessions were collected during the course of service delivery. Client data for services used, quit outcomes, and use of additional quit aids were collected via telephone-based evaluation administered 6–8 months following the time of enrollment (May 2008 to February 2012), conducted on a rolling basis over each year. For this follow-up evaluation, 84% of provider-referred clients were attempted for contact (16% either had incomplete contact information or opted out) and, owing to budget constraints, only 32% of self-referred clients were randomly sampled for attempted contact. The response rate among those sampled for follow-up was 50% for provider-referred clients and 47% for self-referred clients.

Measures

The main service use variables were number of counseling sessions used (zero to five or more); use of self-help materials (yes or no); and for the provider-referred population only, use of any of the 2-week supply of NRT offered through the quitline (yes or no). Additionally, a four-tiered level of service variable was created to measure the effect of combination service use (counseling with NRT, NRT only, counseling only, or neither).

The primary outcome was quit status (quit or not quit) measured by client self-report to having been "currently quit" at the time of the 6–8-month follow-up. Clients were asked, *Do you currently use tobacco every day, some days, or not at all?* Those who responded *not at all* were considered "currently quit."

Demographic variables (gender, age group, race, education, and insurance status) and smoking behavior variables (when client plans to quit smoking, time to first cigarette, and number of cigarettes used per day) were included for analysis. Additionally, the self-reported use of additional medications, including NRT (patch, gum, lozenge, inhaler, or nasal spray), varenicline (Chantix) or Buproprion SR, and Zyban or Wellbutrin SR (WZB), was included for analysis. Finally, for provider-referred clients, a variable that categorized the type of institution clients were referred from (hospital, provider practice, community health center, outpatient clinic, and human services/others) was included to examine its impact on client quit outcome.

Data Analysis

Pearson chi-square tests for categorical variables and t tests for continuous variables were used to identify significant differences between clients with and without follow-up in each referral population (Table 1).

Wald chi-square tests for categorical variables and t-tests for continuous variables were used to identify significant differences between provider-referred and self-referred clients across demographic, smoking behavior, service utilization rates, and quit outcomes (Table 2). Only those with complete follow-up data were included for analysis (n=3,267).