

## Tobacco Cessation through Participation in a Comprehensive Multi-Media Program

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### ABSTRACT

To ameliorate the healthcare costs and disease burden that result from smoking, employers are increasingly seeking smoking cessation programs to reduce risk among the employee population. This study of QuitNet Comprehensive, a multi-media smoking cessation program, found that 27.2% of all enrollees over a 3-month timeframe had successfully quit smoking after 7-months, which is much higher than the quit rate achieved by a web-only offering. When those who did not respond to the follow-up survey were excluded from the analysis, the quit rate was 44.7%. Within the comprehensive program, both web-support and phone-support proved highly effective and the combination of both modalities resulted in the highest quit rate. Greater engagement with the program was associated with higher quit rates; both the number of phone calls and the number of website logins were positively correlated with success in quitting. Also, use of the social networking features and interactive tools on the QuitNet website were significantly associated with higher quit rates. Incentivized participation and the use of nicotine replacement therapy were additional program features that were associated with successful cessation. These results clearly demonstrate the effectiveness of a smoking cessation program that offers customized experience through multiple modalities for engaging the member and supporting the cessation process.

### INTRODUCTION

Tobacco use compromises the current and future health of millions of Americans, taking a large toll on productivity, healthcare costs and life expectancy<sup>1</sup>. Telephone counseling has proven effective in helping tobacco users to quit<sup>2-4</sup>; more recently, web-based interventions have also shown to be effective in helping people quit tobacco<sup>5-6</sup>, and are increasingly popular since the percentage of American adults using the web has grown to 73%<sup>7</sup>. A tobacco cessation program that offers both telephone- and web-based interventions thus has the potential to effectively help the greatest number of tobacco users.

QuitNet® Comprehensive is a tobacco cessation program that combines a personalized, interactive website with readily-accessible information, tools, both professional and community support, phone counseling, and medication ordering. Having both a robust web and phone intervention provides enrollees with a wide variety of resources and the type and level of support best suited to their needs. Additionally, most program sponsors use incentives or penalties to encourage participation and cessation. The purpose of this study was to determine the tobacco quit rates achieved by enrollees of the QuitNet Comprehensive program. Secondly, quit rates were assessed with respect to a number of treatment-related parameters to identify specific program attributes and participation levels that are associated with successful tobacco cessation.

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### KEY QUESTIONS

- *What quit rates are achieved by QuitNet Comprehensive participants?*
- *How do outcomes from the comprehensive program compare to a web-only offering?*
- *Do quit rates differ between enrollees who choose web support, those who choose phone support and those who choose both modalities?*
- *Does greater engagement with the website or phone coaching correlate with higher quit rates?*
- *Is online participation in social networking or the use of interactive tools positively associated with quit rates?*
- *Are financial incentives or penalties associated with higher quit rates?*
- *Is the use of nicotine replacement therapy positively associated with quit rates?*

### STUDY DESIGN

Study participants included all individuals (n = 5,486) who enrolled in QuitNet Comprehensive from July 2007 through September 2007 and consented to a follow-up evaluation. Participants were asked to complete an evaluation survey 7 months after their enrollment date to collect self-report data on quit rates. The survey was initially emailed 5 times over 10 days or until a survey response was submitted. After 10 days, telephone calls were made to those who did not respond by email. Telephone survey attempts ceased if

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an email survey was submitted. Population demographics were collected at program intake (Table 1) and utilization data were collected between program intake and the 7-month evaluation using a computerized web and phone tracking system. The survey completion rate for the study was 60.8%.

Statistical significance was determined using Chi-square analysis for all comparisons, the Cochran-Armitage Trend test for correlating the number of online and phone sessions with quit status (quit or not quit) and a logistic regression model for predicting smoking cessation by web usage and number of telephone calls.

**TABLE 1: SUMMARY OF STUDY PARTICIPANTS**

Characteristic	Total Population	Survey Responders
n	5486	3336
Female gender	46.9%	45.4%
Age (average)	37.1	38.2
Age group (mode)	25 - 34 (n = 2217)	25-34 (n = 1203)
<b>RACE</b>		
White	64.6%	65.4%
Black	10.9%	10.0%
Hispanic	4.7%	4.5%
Asian	2.8%	2.9%
Native American	0.7%	0.7%
Other	2.2%	1.9%
Not reported	14.2%	14.7%
<b>EDUCATION</b>		
8th Grade or less	0.0%	0.0%
Some High School	1.4%	1.2%
High School Graduate or GED	19.7%	19.9%
Some College	45.7%	44.7%
College Graduate	16.6%	16.8%
Post-College	2.7%	3.0%
Not reported	13.8%	14.4%

### METHODOLOGY DEFINITIONS

**Responder quit rate** – percentage of those responding to the survey who report tobacco abstinence for the previous 30-days.

$$= \frac{\# \text{ of responders who reported 30-day abstinence}}{\text{Total number of survey responders}}$$

**Intention-to-treat quit rate (ITT)** – percentage of the total study population who report tobacco abstinence for the previous 30-days.

$$= \frac{\# \text{ of responders who reported 30-day abstinence}}{\text{Total number in enrolled study population}^*}$$

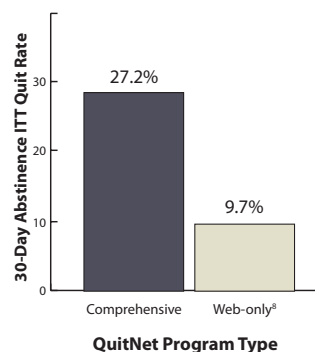
\* This denominator includes all members who enrolled and consented to the follow-up during the defined timeframe with the assumption that all survey non-responders are still using tobacco, making the ITT quit rate a highly conservative measure.

### RESEARCH FINDINGS

#### Overall Quit Rates for QuitNet Comprehensive

Survey results showed that 7-months after enrollment in QuitNet Comprehensive, nearly half of survey responders (44.7 ± 1.7%) reported having not used tobacco for the 30 days prior to survey administration. The more conservative 30-day ITT quit rate was 27.2 ± 1.2% (Table 2). This level of abstinence was substantially higher than the quit rate recently reported from a study of enrollees in a QuitNet program for Minnesota residents that provided only web-support. The participants in this web-only program were not incentivized for enrollment and did not have the option for telephone counseling or nicotine replacement therapy (NRT). The study found that the 30-day ITT quit rate for the 607 study participants was 9.7 ± 2.4%, with a survey response rate of 77.6% (Figure 1)<sup>8</sup>, indicating that the added features of the comprehensive program dramatically improve cessation outcomes.

**FIGURE 1: QUITNET COMPREHENSIVE OUTCOMES SURPASS THE WEB-ONLY OFFERING**



#### Quit Rates by Modality of Support

QuitNet Comprehensive has two primary modalities of service – web-support and phone-support – within the context of the comprehensive program features. Members may opt to use solely the web or the phone as their primary form of support, or may choose to use both modalities. In a comparison of the quit rates for members choosing different modalities of support within the comprehensive program, it was found that those participants who used solely the web modality (web users) or solely the phone modality (phone users) have very similar quit rates (no statistically significant differences). Members who used both the web and the phone trended toward higher quit rates than those participants who used only one of these types of support (Table 2). It is noteworthy that all types of support within the comprehensive offering are highly effective, and that members who chose not to use the phone modality (web users) have superior quit rates to enrollees in a web-only offering (25.9% vs. 9.7% ITT rates, respectively)<sup>8</sup>. These results demonstrate that, in combination, the comprehensive program features and providing enrollees with the option to choose the

**TABLE 2: QUITNET COMPREHENSIVE QUIT RATES ARE HIGH FOR ALL MODALITIES OF SUPPORT**

Methodology	Total Population		Web Users		Phone Users		Web and Phone Users	
	n	Quit Rate	n	Quit Rate	n	Quit Rate	n	Quit Rate
Responder	3,336	44.7 ± 1.7%	2,561	44.2 ± 1.9%	206	45.6 ± 6.7%	523	47.0 ± 4.3%
ITT	5,486	27.2 ± 1.2%	4,373	25.9 ± 1.3%	307	30.6 ± 5.1%	721	34.1 ± 3.5%

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type of support that best suits their individual needs serves to improve outcomes across the board, regardless of which modality is utilized.

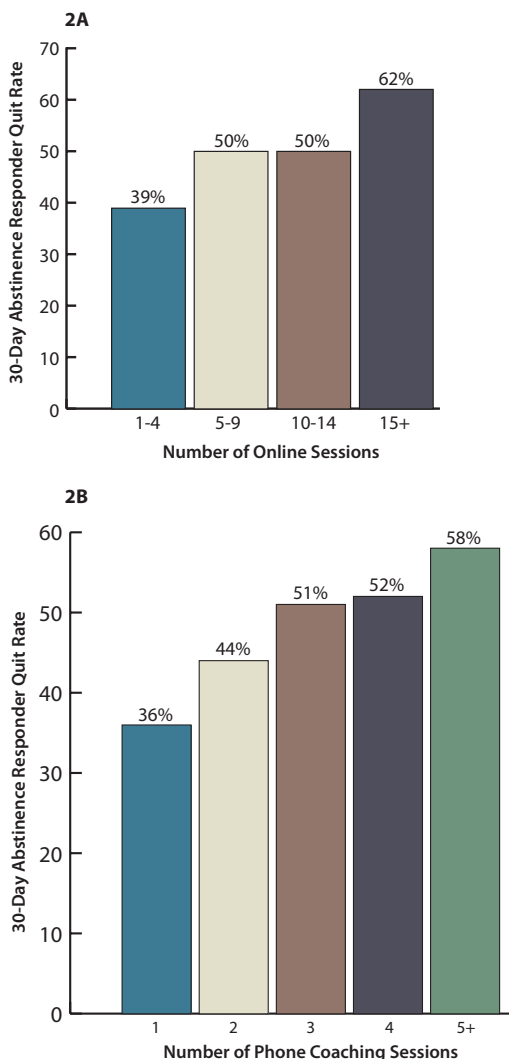
**High Engagement in Web and Telephone Modalities is Associated with Higher Quit Rates**

To determine whether greater utilization of the QuitNet website correlates to higher quit rates, the number of online sessions from the time of enrollment was determined for survey responders who registered for web service. The number of responders categorized by their number of online sessions was: 1 to 4, n = 1,806; 5 to 9, n = 797; 10 to 14, n = 230; and 15 or more, n = 251. Responder quit rates showed a significant positive correlation with greater website utilization ( $r = 0.12, p < 0.0001$ ) (Figure 2a).

To determine whether a greater number of telephone coaching sessions correlates to higher quit rates, the number of phone coaching sessions from the time of enrollment was determined for survey responders who registered for phone support. The number of survey responders categorized by their number of phone coaching sessions was: 1, n = 249;

**FIGURE 2: HIGHER ENGAGEMENT WITH WEB OR PHONE SUPPORT INCREASES THE LIKELIHOOD OF CESSATION**

Quit rates are shown (a) by the number of online sessions for web users and phone + web users and (b) by the number of phone sessions for phone users and phone + web users.



**DEFINITIONS OF QUITNET WEBSITE FEATURE USAGE**

**Active social networking –**

Active contribution to the online social network in the form of an email sent through the QuitNet internal email system, a forum posting, membership or message posting in an online club, the addition of an online “buddy,” and/or participation in one-on-one online counseling.

**Passive social networking –**

The viewing of social network features without contributing information; includes receiving or reading an email through the QuitNet internal email system and/or viewing an online club or forum message thread.

**Online interactive tools –**

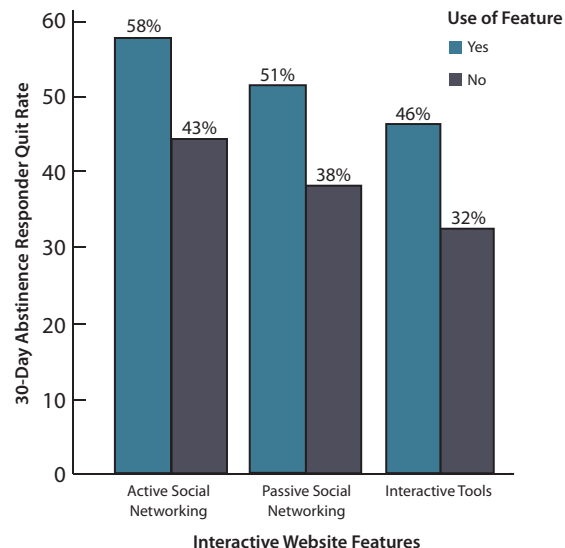
The use of available website applications to aid in the quitting process; includes setting a quit date, use of the quit date tool, the medication tool, and/or the medication plan tool.

2, n = 112; 3, n = 90; 4, n=94; and 5 or more, n = 184. Responder quit rates showed a significant positive correlation with greater phone utilization ( $r = 0.18, p < 0.0001$ ) (Figure 2b).

**Quit Rates are Elevated through Web-Based Social Networking and Interactive Tool Use**

The prevalence of use of specific QuitNet website features was determined by tracking online activity for all study participants. Of the 5,094 participants who logged on to the QuitNet website, 10.6% were active social networkers, 46.2% were passive social networkers, and 87.2% used online interactive tools. Among the 3,336 survey responders, 395 (11.8%) were active social networkers, 1,574 (47.2%) were passive social networkers, and 2,747 (82.3%) used online interactive tools. Both active ( $p < 0.0001$ ) and passive ( $p < 0.0001$ ) social networking and the use of online interactive tools ( $p = 0.0002$ ) were significantly associated with higher quit rates (Figure 3).

**FIGURE 3: QUIT RATES ARE HIGHER FOR MEMBERS WHO USE INTERACTIVE WEBSITE FEATURES**

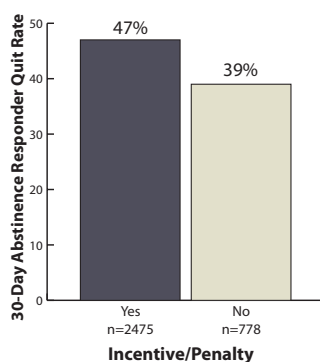


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**Financial Incentives or Penalties are Associated with Higher Quit Rates**

The use of incentives and penalties as part of tobacco cessation programs has been shown to increase participation, leading to an increase in the number of individuals who successfully quit<sup>9</sup>. Such incentives and penalties are often used by employers to increase QuitNet Comprehensive program enrollment. Among survey responders, 2,475 (74.2%) were provided incentives or penalties, 778 (23.3%) were not provided incentives or penalties, and for 83 (2.5%) this information was not available. Survey data indicated that participants in QuitNet Comprehensive programs that were tied to an incentive or disincentive had 7.7% higher quit rates than participants who were not rewarded or penalized (Figure 4), representing a statistically significant difference ( $p = 0.0002$ ).

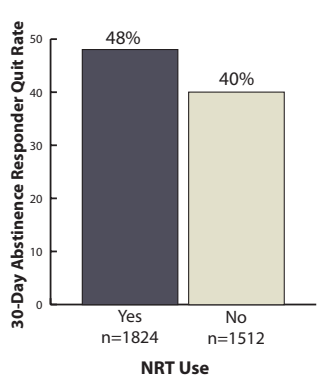
**FIGURE 4: QUIT RATES BY THE PROVISION OF FINANCIAL INCENTIVES OR PENALTIES**



**The Use of Nicotine Replacement Therapy is Associated with Higher Quit Rates**

There is considerable evidence that nicotine replacement therapy (NRT) is efficacious at promoting smoking abstinence<sup>10</sup>. To determine whether the use of NRT is of added benefit for QuitNet Comprehensive enrollees, study participants were

**FIGURE 5: THE USE OF NICOTINE REPLACEMENT THERAPY (NRT) IS ASSOCIATED WITH HIGHER QUIT RATES**



asked to report the use of any type of NRT (i.e. gum, patches, or lozenges) during the quitting process. As shown in Figure 5, those survey responders who reported NRT use ( $n = 1,824$ ) had a significantly higher quit rate than those who did not use NRT ( $n = 1,512$ ) ( $p < 0.0001$ ).

**CONCLUSIONS**

- Nearly half of QuitNet Comprehensive enrollees surveyed seven-months after starting the program reported that they had not used tobacco products in the previous 30 days.
- The quit rates for QuitNet Comprehensive are superior to reported outcomes of the web-only offering.
- All modalities of support within the comprehensive program are highly effective.
- Greater utilization of the website and phone coaching leads to significantly higher quit rates.
- Online social networking and the use of interactive tools available through the QuitNet Comprehensive website were linked to greater success in quitting.
- Enrollees who were provided incentives or penalties had higher quit rates than their counterparts.
- Quit rates were higher for enrollees who reported using nicotine replacement therapy (NRT).

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