



THE ONTARIO TOBACCO RESEARCH UNIT
UNITÉ DE RECHERCHE SUR LE TABAC DE L'ONTARIO

Generating knowledge for public health

Cessation Pathways

Exploring Opportunities for Developing a Coordinated
Smoking Cessation System in Ontario

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Key Messages

The Ontario Tobacco Research Unit (OTRU) conducted an exploratory study to learn about smokers' experiences with existing smoking cessation services/resources and to identify opportunities for strengthening service linkages in the province. Specifically, the study explored: smokers' experiences with cessation services/resources in Ontario; the extent to which the needs of smokers' are being met by the current cessation system; and recommendations for improvements to the cessation system.

Study findings confirm that smoking cessation is a highly complex, nonlinear process that requires adequate support from a coordinated cessation service system. The study has highlighted that:

- Many smokers are working hard to achieve cessation, and have used a range of services and resources, in differing sequences, in the cessation process. Case study examples highlight the number, diversity, and varied sequencing of services/resources used by participants over time in their pathways to cessation. In particular, many have found cessation services/resources such as nicotine replacement therapy (NRT), prescription medication, and the Driven to Quit Contest helpful in the process of quitting.
- However, several participants have experienced various challenges with smoking cessation services/resources in Ontario. Many participants discussed services or resources that they have found unhelpful and that have not met their needs, and many have experienced financial barriers to quitting with NRT. A number of participants seemed to have a general lack of awareness or misconceptions of how certain services can be helpful during the cessation process.
- Many participants are trying different services/resources in each quit attempt, whereas others discussed revisiting the same services repeatedly without much success. Our analyses have also shown high levels of cessation service/resource use over time among participants who have quit. This level of service/resource use could be part of a lengthy trial and error process of finding the right service combination in the pathway to cessation over time.

Participants made a number of suggestions that have the potential to improve the cessation service system and better meet the needs of Ontario smokers attempting to quit. These suggestions include:

- Increased subsidization of NRT to reduce financial barriers to quitting.
- Assistance in developing individualized, tailored quit plans to support each smoker's personal cessation needs.
- Centralization of cessation services and resources to facilitate easier access to a wide range of service options, and the development of tailored quit plans to improve the efficiency of the cessation process and system.

Executive Summary

Sustained smoking cessation can reduce the risk of mortality from smoking-related disease considerably. The earlier smoking cessation occurs, the greater the health benefits, but cessation at any point can be beneficial to health. However, despite declining prevalence rates of smoking in Ontario across age groups in the last few decades, rates of smoking cessation have not been significantly increasing in the last few years. Quitting smoking is a complex, challenging process that may span many months to years, and research has found that 79% of Ontario smokers who have quit for 30 days report experiencing a relapse. The process of quitting smoking can take varied paths (e.g., abrupt quitting, gradual reduction, relapse, quit attempts with and without professional help and pharmaceutical aid). Previous research on the process of smoking cessation has commonly examined predictors of cessation, barriers to cessation, and awareness of services. Few studies have explored desired cessation services and resources, and recommendations for service improvements, from the perspective of the smoker.

The Ontario Tobacco Research Unit (OTRU) conducted an exploratory study to learn about smokers' experiences with existing smoking cessation services/resources and to identify opportunities for strengthening service linkages in the province. Specifically, the study explored: smokers' experiences with existing cessation services/resources in Ontario; the extent to which the needs of smokers' are being met by the current cessation system; and recommendations for improvement to the system. It should be noted that the overall purpose of the study was to learn about patterns and experiences with cessation services in Ontario, and the study did not intend to reflect a representative analysis of the proportion of cessation services used. Data on the proportion of smokers using different types of Smoke Free Ontario cessation services are available in OTRU's *Smoke Free Ontario Strategy Evaluation Report*.

This study incorporated a 15-minute online survey and in-depth interviews with smoking cessation system users. In order to be eligible to participate in the study, participants had to be over the age of 18, residents of Ontario, and in contact with the smoking cessation system in Ontario in the last two years. A convenience sampling approach was used to recruit study participants. Participants were recruited through Smoke-Free Ontario service partners (Smokers' Helpline, Ontario Lung Association, Smoking Treatment for Ontario Patients (STOP) program, and public health units) and community advertisements in Craigslist and Kijiji in cities and towns across Ontario. The survey collected data on motivations to quit, cessation experiences, cessation service/resource use in the last two quit attempts, and socio-demographics. A total of

130 current and former smokers completed the online survey. From this sample, we selected a subsample of 30 participants to participate in in-depth qualitative interviews that further explored their service use and referral experiences, barriers to cessation, and suggestions to improve the Ontario cessation service system. Data collection occurred from November 2012 to February 2013.

Study findings confirm that smoking cessation is a highly complex, nonlinear process that requires adequate support from a coordinated cessation service system. Analyses of patterns of cessation service/resource use have revealed that many smokers are working hard to achieve cessation, and have used a range of services and resources, in differing sequences, in the cessation process. Case study examples highlight the number, diversity, and varied sequencing of services/resources used by participants over time in their pathways to cessation. In particular, many have found cessation services/resources such as NRT, prescription medication, and the Driven to Quit Contest helpful in the process of quit attempts. Participants reported hearing about these types of services primarily through family and friends, advertising, healthcare providers and personal searches. Not surprisingly, referral to more clinical interventions like prescription medication and counseling was received through healthcare providers.

Nevertheless, despite active engagement with the cessation system and relatively high motivation to quit, the majority of study participants (62%) continue to struggle with quitting and experience relapse. The study has also highlighted that many participants have experienced various challenges with smoking cessation services/resources in Ontario. A number of participants discussed unhelpful services in the Ontario context; financial cost remains a significant barrier to making quit attempts with NRT, and many participants seem to have a lack of awareness or misconceptions of how certain services can be helpful during the cessation process.

Our analyses have shown high levels of cessation service/resource use over time among participants who have quit. This level of service/resource use could be part of a lengthy trial and error process of finding the right service combination in the pathway to cessation. Based on their experiences, participants have expressed a need for a more efficient, individualized approach in the service system to help guide them through the process, and to assist with identifying personalized approaches to cut down on the use of ineffective resources resulting in unsuccessful quit attempts. Such an approach has the potential to reduce the burden on the

system and increase successful quits by isolating service combinations and plans that suit the needs of the individual smoker.

Furthermore, several study participants discussed being overwhelmed by the range of cessation service options, lacking insight as to options that would work best for them, or having a lack of knowledge of available options. As a result, they highlighted the need for a centralized hub of services that smokers could access for information on options and to receive assistance with cessation planning.

Such a centralized hub for tailored cessation support could serve as a key referral point for smokers by healthcare providers. Finally, as in other research, this study has underscored the need for increased financial support for cessation resources such as NRT.

Overall, the study has yielded a number of important findings and suggestions for an improved cessation service system in Ontario. These findings can inform the increased coordination and efficiency of the cessation system, through increased engagement of smokers in the system and successful quit attempts to reduce the burden of smoking related disease.

Introduction

The health risks associated with smoking are well-documented, including risk of cardiovascular disease, various cancers, chronic respiratory disease, vision problems, diabetes and infertility.¹ Sustained smoking cessation can reduce the risk of mortality from smoking-related disease considerably. The earlier cessation occurs, the greater the health benefits, but cessation at any point can be beneficial to health.¹ However, despite declining prevalence rates of smoking in Ontario across age groups in the last few decades, rates of smoking cessation have not been significantly increasing in the last few years.² Quitting smoking is a complex, challenging process that may span from many months to years,^{3,4,5,6} and research has shown that 79% of Ontario smokers who have quit for 30 days experience a relapse.² The process of quitting smoking can take varied paths (e.g., abrupt quitting, gradual reduction, relapse, etc., quit attempts with and without professional help and pharmaceutical aid). Previous research on the process of smoking cessation has commonly examined predictors of cessation, barriers to cessation, and awareness of services. This research has identified that predictors of smoking cessation include: severity of nicotine dependence, mental health and substance use problems, social support and the social environment, frequency of smoking, motivations to quit, and socio-economic status.^{7,8} Many studies have also found that awareness of cessation services and resources is generally low among smokers.^{7,9,10} Other common barriers to cessation include: physiological addiction, lack of motivation, financial cost, fear of failure, and concerns over weight gain.^{10,11,12} Few studies have explored desired cessation services and resources, and recommendations for service improvements, from the perspective of the smoker.^{12,13,14}

The Tobacco Strategy Advisory Group has called for the development of a coordinated system in Ontario that would attract and support smokers throughout the entire cessation process.¹⁵ Currently, there is limited coordination across services/programs in the smoking cessation system in Ontario. In order to improve cessation rates in the province and adequately support smokers in attempts to quit, innovative services and new considerations for system coordination and linkage are needed.

The Ontario Tobacco Research Unit (OTRU) conducted an exploratory study to learn about smokers' experiences with existing smoking cessation services/resources and to identify opportunities for strengthening service linkages in the province. The purpose of this study was to explore patterns and experiences of cessation service use in-depth, and as a result, the study did not intend to reflect a representative analysis of the proportion of cessation services used. Data on the proportion of smokers using different types of Smoke Free Ontario cessation services are available in OTRU's *Smoke Free Ontario Strategy Evaluation Report*.²

Study Methods

Research Questions

The study explored these questions:

- What are smokers' experiences with existing cessation services/resources in Ontario?
- To what extent are their cessation needs being met as they move through the cessation system?
- What recommendations do smokers have for improving linkages and coordination of cessation services?

Data Collection

The study incorporated an online survey and in-depth interviews with cessation system users. In order to be eligible to participate in the study, participants had to be over the age of 18, residents of Ontario, and in contact with the smoking cessation system in Ontario in the last two years. A convenience sampling approach was used to recruit study participants. Participants were recruited through Smoke-Free Ontario service partners (Smokers' Helpline, Ontario Lung Association, Smoking Treatment for Ontario Patients (STOP) Program, public health units) and community advertisements in Craigslist and Kijiji in cities and towns across Ontario. The 15-minute online survey asked about socio-demographics, standard questions on smoking behaviour from the Ontario Tobacco Survey,¹⁶ experiences with smoking cessation, barriers to smoking cessation, and types of cessation services and resources used in the last two quit attempts. The online survey was active from November 2012 to February 2013. A total of 130 current and former smokers completed the online survey. From this sample, we selected a subsample of 30 participants to take part in in-depth qualitative interviews that explored their service utilization and referral experiences, barriers to cessation, and suggestions to improve the Ontario cessation service system. In-depth interviews were conducted over November 2012 to February 2013, and they lasted from 45 minutes to 2 hours in length. All survey participants were provided with a \$5 coffee shop gift card as a thank-you for completing the survey. In-depth interview participants received a \$45 gift card from a movie theatre, grocery store or drug store for their participation in the interview. The study was approved by the University of Toronto Research Ethics Board.

Data Analysis

Descriptive frequencies were calculated for the online survey. Categorical variables with more than one category (e.g., age, education, employment, marital status, and smoking status) were dichotomized. The categorical income variable had a number of missing values. In order to retain participants with missing income data in the analyses, a third category for those who did not report income was created. The continuous variable of number of quit attempts in the last five years had a number of missing values, and was imputed, and then dichotomized into two categories: one to three quit attempts; and four or more quit attempts in the last five years. To create a measure of the number of services (e.g., Smokers' Helpline, quit contest, nicotine replacement therapy, individual counseling, self-help materials) used in the last five years, a series of separate service variables were summed, and then recoded into three dichotomous variables to reflect use of one to two services, use of three to five services and use of six or more services. Differences between current smokers and former smokers by types of cessation service/resource use were assessed through chi-square tests. Participants were considered to be current smokers if they had reported smoking daily or occasionally in the last 30 days. Participants were considered to be former smokers if they reported no smoking in the last 30 days, and by virtue of study eligibility criteria, all participants had been in contact with the Ontario cessation system in the last two years. Bivariate analyses were conducted to assess the impact of cessation service/resource use and other predictors on former smoker status (see appendix). In these analyses, being a former smoker is treated as a proxy for a successful quit attempt. Due to the small sample size, a multivariable model was not run. All survey data analyses were conducted using SPSS version 21 software.

All in-depth interviews were audio-recorded and transcribed verbatim. Transcripts were analyzed using thematic analysis techniques, involving reading, coding and comparing transcripts for theme development¹⁷ based on the topics explored in the interview guide. The coding and analysis process was conducted by two researchers in consultation with the project lead, and was facilitated by the use of QSR NVivo version 9 software.

Results

Sample Characteristics

Table 1 describes participant socio-demographics and smoking cessation experiences among the online survey participants.

Table 1: Survey Participant Characteristics (N=130)

Participant Characteristics	# (%)
<i>Socio-Demographics</i>	
Age	
18-39	76 (58%)
40-69	54 (42%)
Gender	
Male	48 (37%)
Female	82 (63%)
Education	
High school or less	24 (18%)
Post-secondary	106 (82%)
Employment	
Employed full or part-time	81 (62%)
Not currently working	49 (38%)
Household income (n=108)	
\$60,000 or less	69 (64%)
More than \$60,000	39 (36%)
Current Smoking Status	
Current smoker	80 (62%)
Former smoker	50 (38%)
<i>Smoking Cessation Experiences</i>	
Made serious quit attempt in last five years	122 (94%)
Number of quit attempts in last five years (N=129)	
One to three in last five years	74 (57%)
Four or more in last five years	55 (43%)
Number of cessation services/resources used in last five years	
One or two services/resources	29 (22%)
Three to five services/resources	50 (39%)
Six or more services/resources	51 (39%)
Confidence in quitting/staying smoke free (scale 1 (lowest) - 10 (highest)) – Mean (SD)	7.3 (2.4)
Importance of quitting/staying smoke free (scale 1 (lowest) - 10 (highest)) – Mean (SD)	9.4 (1.4)

The majority of survey participants were female (63%), 58% were between the ages of 18 and 39, and 42% were between the ages of 40 and 69. The majority of participants had received some post-secondary education, (82%), were employed full or part-time (62%), and had an annual household income (before taxes) of \$60,000 or less (64%). Thirty-eight percent of survey participants were former smokers, and 62% were current smokers.

Sixty-three percent of all participants (including both current and former smokers) had made one to three quit attempts in the last five years. Twenty-two percent of participants had used one or two smoking cessation services/programs, pharmacotherapy and/or resources such as self-help materials during this timeframe. Ninety-four percent of the participants had made a serious quit attempt in the last five years, and the majority (57%) had made one to three quit attempts during this time period. Thirty-nine percent had used three to five smoking cessation services and/or resources, and 39% had used six or more services and/or resources in the last five years. The mean score on the confidence in quitting/staying smoke free scale was 7.3 among the sample. Many participants found quitting smoking to be important, with a mean score on the importance of quitting scale of 9.4 among the sample.

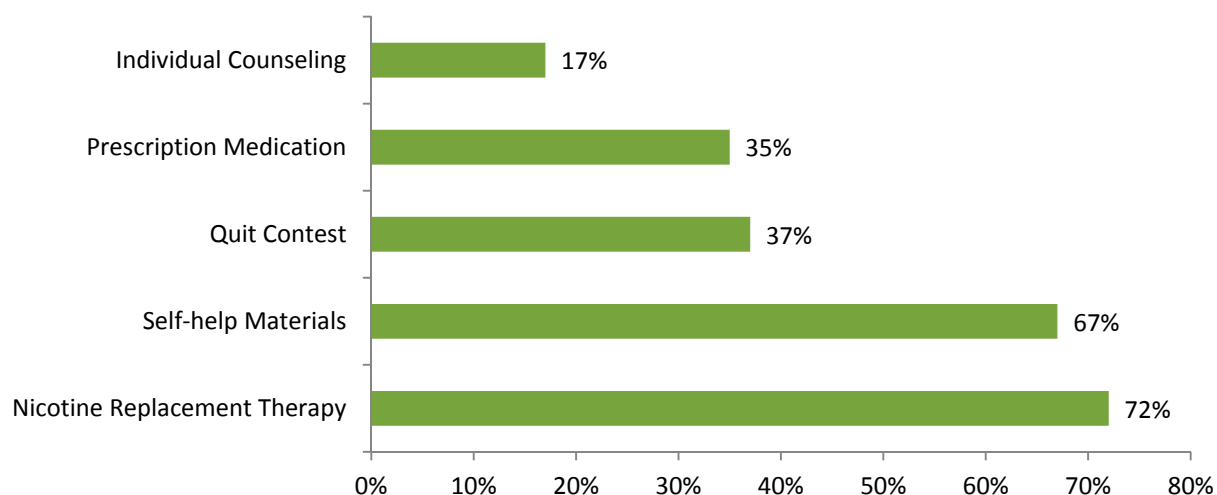
Types of Cessation Services/Resources Used in the Last Five Years

The top five specific services and/or resources that were used by study participants in the last five years included (Figure 1):

- nicotine replacement therapy (72%)
- self-help materials (67%)
- quit contest (37%)
- prescription cessation medication (35%)
- individual counseling (17%)

Of those participants who used NRT in the last five years, 64% paid full cost, 9% paid reduced cost, and 27% paid no cost for the NRT.

Figure 1: Top Five Cessation Services/Resources Used in the Last Five Years



In the in-depth interviews, participants primarily discussed aspects of four cessation services/resources in Ontario that were part of their previous and/or current quit attempts: NRT, prescription medication, the Driven to Quit Contest, and the Quit and Get Fit Program.

Nicotine Replacement Therapy (NRT)

A number of interview participants indicated that NRT is appealing because it offers different options to choose from, which can enable them to tailor use to individual preferences:

“...it showed me that there was options...that if you want to quit smoking you have options. You can use...the patch, you can use mints. They have the inhaler now that you can use too...”

Of the different types of NRT, the patch was most often used by interview participants in their quit attempts. Many smokers also opted to use NRT in situations where it was being provided free of charge:

“It was free...which I understand the ridiculousness of paying for cigarettes but not quitting until you get free NRT, but it works for me.”

Aside from cost issues, some participants said that they used NRT during quit attempts because of availability. They felt that NRT allows smokers to have a degree of control over their quit attempts and ensures that they can make the decision to quit at any time, given its wide

availability. This participant felt that previous success with NRT increased confidence for future quits:

“...it gave me confidence for the next time...because I knew I could quit with NRT so although it wasn’t totally successful lifelong at that time, it gave me confidence for the next time that I quit.”

Though NRT offered these various advantages, there also existed ambivalence towards its use. Many viewed the use of NRT in cessation attempts as a temporary fix or not helpful in making a serious quit attempt – this will be discussed further in the section on challenges with cessation services:

“...the fact that I hadn’t reduced the amount that I was thinking about smoking at all...it [smoking] was still top of my mind every five minutes...I realized that...it wasn’t helping me, that cutting back or that gradually cutting back wasn’t helping to minimize the amount that it was in my brain.”

Prescription Medication

Among the interview participants, many smokers had tried using prescription medication to facilitate their quit efforts, but most did not choose to do so initially, and many only did so as a last resort. The vast majority who had used prescription medication had most often turned to Champix™ (varenicline). Despite the fact that prescription medication was used by several participants, there existed ambivalence, if not a clear dislike for the use of prescription medication during cessation attempts by many. The primary reason why smokers avoided or discontinued their use of prescription medications was because of the associated side effects:

“I am aware of prescription medications and extremely leery of them...I’ve seen very negative side effects on the people that I’ve known that have tried them.”

“I did quit smoking but I did not like the side effects from the Champix™...I did have the suicidal thoughts...depression and...mood swings...”

The Driven to Quit Contest

One of the programs that many interview participants discussed being aware of and/or using was the Driven to Quit Contest. Driven to Quit is a health promotion contest during which

smokers make a quit attempt in order to be entered into a draw to win one of several of prizes, the most valuable of which is a car. The most frequently cited reason that participants chose this particular program was its offer of a highly valuable incentive:

“It was encouraging...it was something at the end of the rainbow, something I had to look forward to.”

Quit and Get Fit Program

As was the case with the Driven to Quit Contest, the Quit and Get Fit Program offered incentives to smokers, and many of the interview participants had used this program. The Quit and Get Fit Program is a health promotion program that targets the challenges associated with smoking cessation through exercise. The program offers each participant the services of a personal trainer at a gym free of charge for a predetermined number of sessions. Many participants indicated that the financial incentive of a free gym membership and personal training sessions was their reason for using this program:

“...I kind of made a mess of my finances so the motivating factor [for enrolling in the Quit and Get Fit program] was how I was going to get some help and it wasn’t going to cost me a whole lot of money.”

Above and beyond the financial incentives associated with the Quit and Get Fit Program, many said that this program addressed one of the most challenging barriers that often prevent smokers from making quit attempts - weight gain:

“...I think everybody worries that if they quit smoking they’re going to gain weight...the whole world knows that...especially as a female...you don’t want to put on ten, fifteen pounds while you quit smoking.”

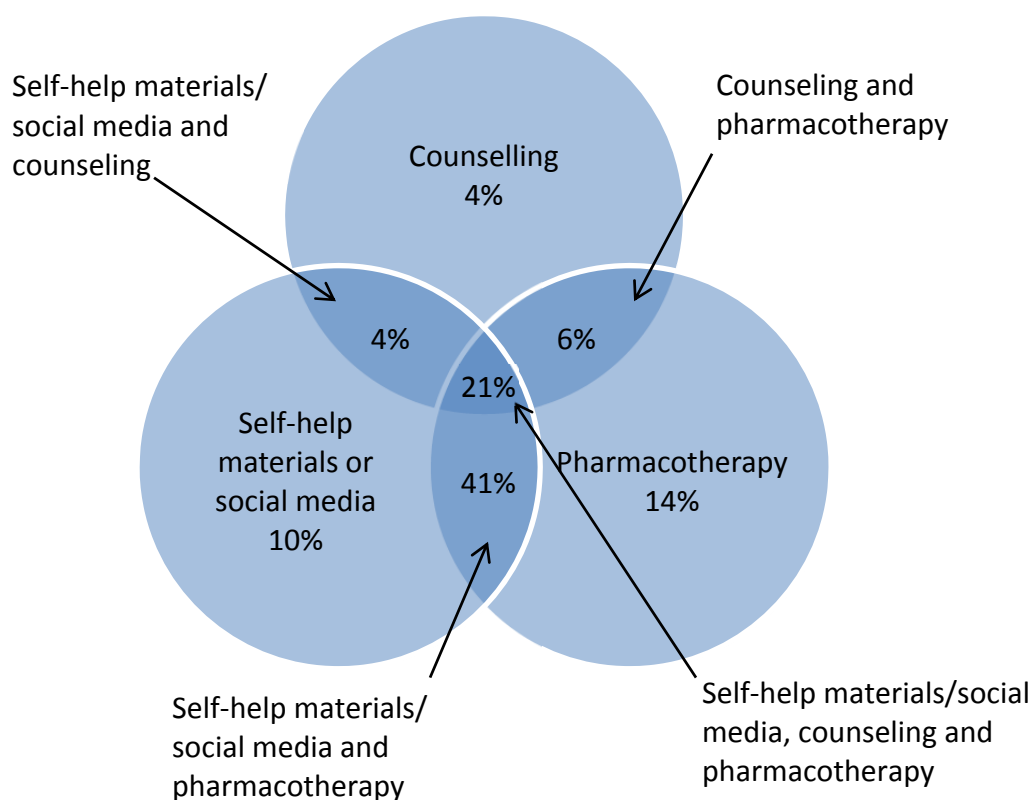
Use of Unique and Multiple Cessation Services/Resources in Last Five Years

Given the variety of types of services used among the sample, we grouped common types of cessation services/resources into broader thematic categories to simplify analysis and interpretation of findings. We then assessed unique use and multiple use of services. For example, the category of pharmacotherapy encompasses use of NRT (i.e., the patch, gum, lozenge or inhaler) or prescription medication such as Zyban™ (bupropion) or Champix™

(varenicline) – 14% had used some type of pharmacotherapy only in the last five years. Use of self-help materials refers to the use of any self-help literature or social media resources for smoking cessation (including Smokers’ Helpline online service, text messaging, informational websites) – 10% of participants had used these resources only. Counseling refers to the use of any individual counseling, group counseling, Smokers’ Helpline phone service, and/or a cessation clinic – 4% had used this type of service only.

Survey participants had also used multiple service/resource types during quit attempts over the last five years. Multiple use reflects types of services/resources used simultaneously or sequentially in quitting over time. Forty-one percent of participants had used self-help materials and pharmacotherapy, six percent had used some type of counseling intervention and pharmacotherapy, four percent had used self-help materials and counseling, and 21% had used all services/resources from all three categories to help them quit within the last five years. Figure 2 depicts unique and multiple service/resource use in the last five years.

Figure 2: Unique and Multiple Cessation Services/Resources Used in Last Five Years



In order to examine patterns in cessation service/resource use and successful quit attempts, we compared the types of cessation services/resources used by participants by their smoking status. Not many differences in service/resource use were found between current and former smokers (data not shown in tabular form). More former smokers used a quit contest in the last five years than current smokers (54% vs. 26%; $p < 0.001$). When we examined differences in broader service categories, there was a moderately significant difference in the use of counseling only (8% among former smokers vs. 1% among current smokers; $p < 0.1$), and use of both self-help resources and pharmacotherapy with more former smokers using these services than current smokers (50% among former smokers vs. 35% among current smokers; $p < 0.1$). More current smokers had used pharmacotherapy only in the last five years than former smokers (21% vs. 4%; $p < 0.05$).

Number of Services/Resources Used in the Last Five Years

To examine more experienced cessation service users vs. those who were less experienced with the service system, we examined the demographic profile of participants by the number of cessation services/resources used in the last five years (see Table 3). Users of one to two cessation services/resources were more likely to be 18 to 39 years of age, to be current smokers, to have made one to three quit attempts in the last five years, to have lower confidence to quit/stay smoke free scores, and to score lower on perceived importance of quitting/staying smoke free than those who have used more services. No significant differences between users of three to five cessation services/resources and other users were detected. Users of six or more services/resources were more likely to be former smokers, 40 years of age or older, to have made four or more quit attempts in the last five years, to have higher confidence to quit/stay smoke free, and higher perceived importance of quitting/staying smoke free than other users. These findings suggest that those who had used six or more cessation services are older, farther along in their cessation journey, and through a process of trying various services, have experienced success, are more confident in their ability to quit or stay smoke free and find cessation highly important.

Table 2: Characteristics of Survey Participants, by Total Number of Services/Resources Used in Last Five Years (N=130)

	Used One to two services/resources # (%) N=29	Used Three to five services/resources # (%) N=50	Used Six or more services/resources # (%) N=51
40 or older (ref: 18 to 39 yrs Old)	7 (24%) ^a	19 (38%)	28 (55%) ^b
Female (ref: male)	15 (52%)	30 (60%)	37 (73%)
Post-secondary Education (ref: high school or less)	22 (76%)	40 (80%)	44 (86%)
Full or Part-time Employment (ref: unemployed)	18 (62%)	31 (63%)	32 (63%)
Married (ref: unmarried)	13 (45%)	22 (44%)	26 (51%)
Less than \$60,000 (ref: \$60,000 or more) ^d	18 (78%)	29 (66%)	22 (54%)
Former smoker (ref: current smoker)	6 (21%) ^a	15 (30%)	29 (57%) ^c
Four or more quit attempts in last five years (ref: one to three quit attempts) ^d	4 (17%) ^a	16 (36%)	23 (48%) ^a
Confidence in Quitting/Staying Smoke Free (scale 1 (lowest) - 10 (highest)) – Mean (SD)	6.4 (2.8) ^b	7.5 (2.3)	7.6 (2.1) ^b
Importance of Quitting/Staying Smoke Free (scale 1 (lowest) - 10 (highest)) – Mean (SD)	8.5 (2.2) ^c	9.3 (1.3)	9.9 (0.4) ^c

Note: Comparisons between users of each category of service user vs. all other categories

^a p<0.5;

^b p<0.01;

^c p<0.001

^d Missing data

Case Studies: Example Cessation Pathways

We now present a series of six case studies as illustrative examples of use of cessation services/resources by smokers on the pathway towards cessation. These cases reflect a diversity of experiences with the cessation system in varying sequences, by age, gender, and geographic location. The cases also highlight a significant level of effort, perseverance and self-directedness in navigating the system as well as considerable commitment to becoming smoke-free. Figures outline their service use pathways towards cessation in the last five years.

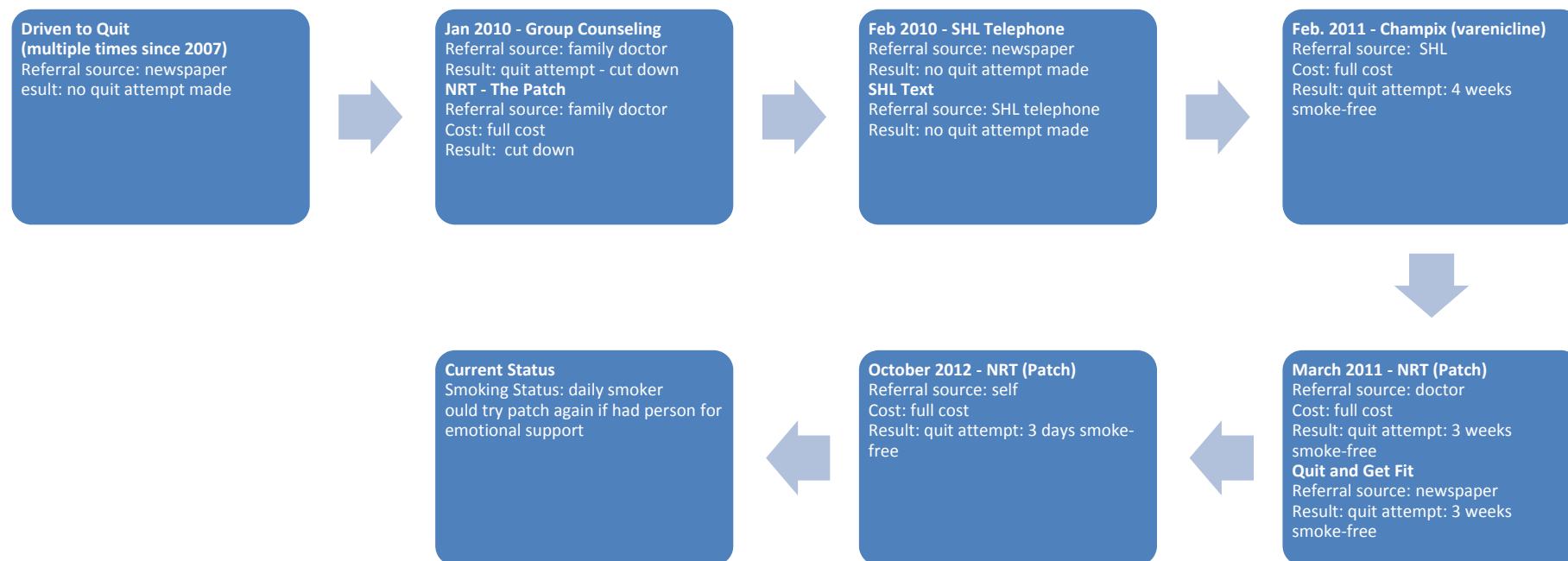
Mildred*: 50-59 years, rural, current smoker

*(*name has been changed)*

Mildred has been smoking since the age of 18 and has made between 40-50 quit attempts in her lifetime. Her longest successful quit attempt was four weeks. During that time she was using Champix™ (varenicline), however, she discontinued use when her doctor advised her to stop as it could affect her other medical conditions. Mildred's journey has involved a number of cessation programs and services that she has used both separately (Driven to Quit, Smokers' Helpline, pharmacotherapy, NRT) and simultaneously (group counseling with NRT; NRT and Quit and Get Fit). Some of the cessation challenges that she has encountered include disorganization of offered services (e.g., group counseling), distance and lack of transportation to cessation services, and lack of specific advice and tips from cessation service providers. For example, Mildred would find it helpful if service providers would provide information about the different health benefits that smokers experience for each day or week that they are quit. Other challenges that Mildred faces are a weak social support network, living with a partner who smokes, struggles with stress and anxiety, and feeling isolated as a result of being a new member of a rural community. Mildred identified many factors that could help her be more successful: a strong social network of non-smokers, and a more personalized approach from cessation programs that provide tailored advice for making a quit attempt, and counseling.

"I think if I were to use the patch and I had somebody encouraging me emotionally that that would be an advantage to quitting. I can't seem to get those two things going."

Figure 3: Mildred's Cessation Pathway



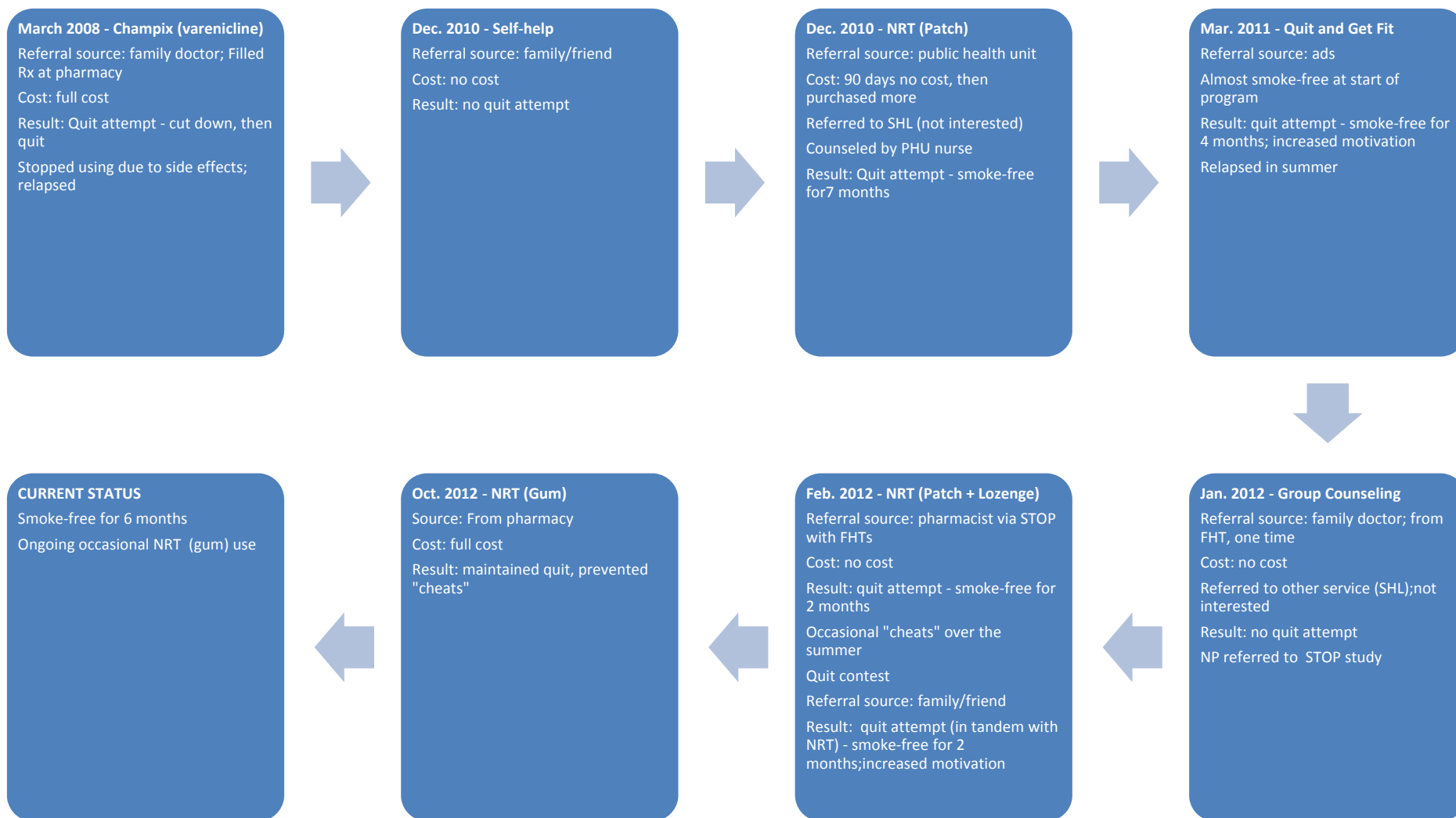
Claire*: 30-39 years, urban, currently smoke-free

*(*name has been changed)*

Claire had been smoking since she was a teenager and had made several quit attempts in her thirties, but without success. She cited financial costs, stress, withdrawal symptoms, weight gain and social factors as barriers to her quit success. Her cessation journey involved the use of seven services/resources over a period of four years, and she has now been smoke-free for six months. Claire initially tried prescription medication, Champix™ (varenicline), but experienced debilitating side effects, such as horrible stomach pains, mood swings and irritability, and had to turn to other cessation approaches. Her next major quit attempt arose as a result of seeing ads in the paper for free NRT through her Public Health Unit. After some time she eventually relapsed, but she remembered her positive experiences with NRT as a cessation tool, and returned to use it in her quit attempts when she could acquire it at no cost. She attributes her success to no cost programs for NRT and fitness training. Claire particularly described appreciation for the providers of no cost NRT, and emphasized, the t greater subsidization or coverage of NRT as an important improvement in improving Ontario's current smoking cessation system.

“[Cost] is the main motivation, like the free NRT was one of my main motivators for the times at which I quit”

Figure 4: Claire’s Cessation Pathway



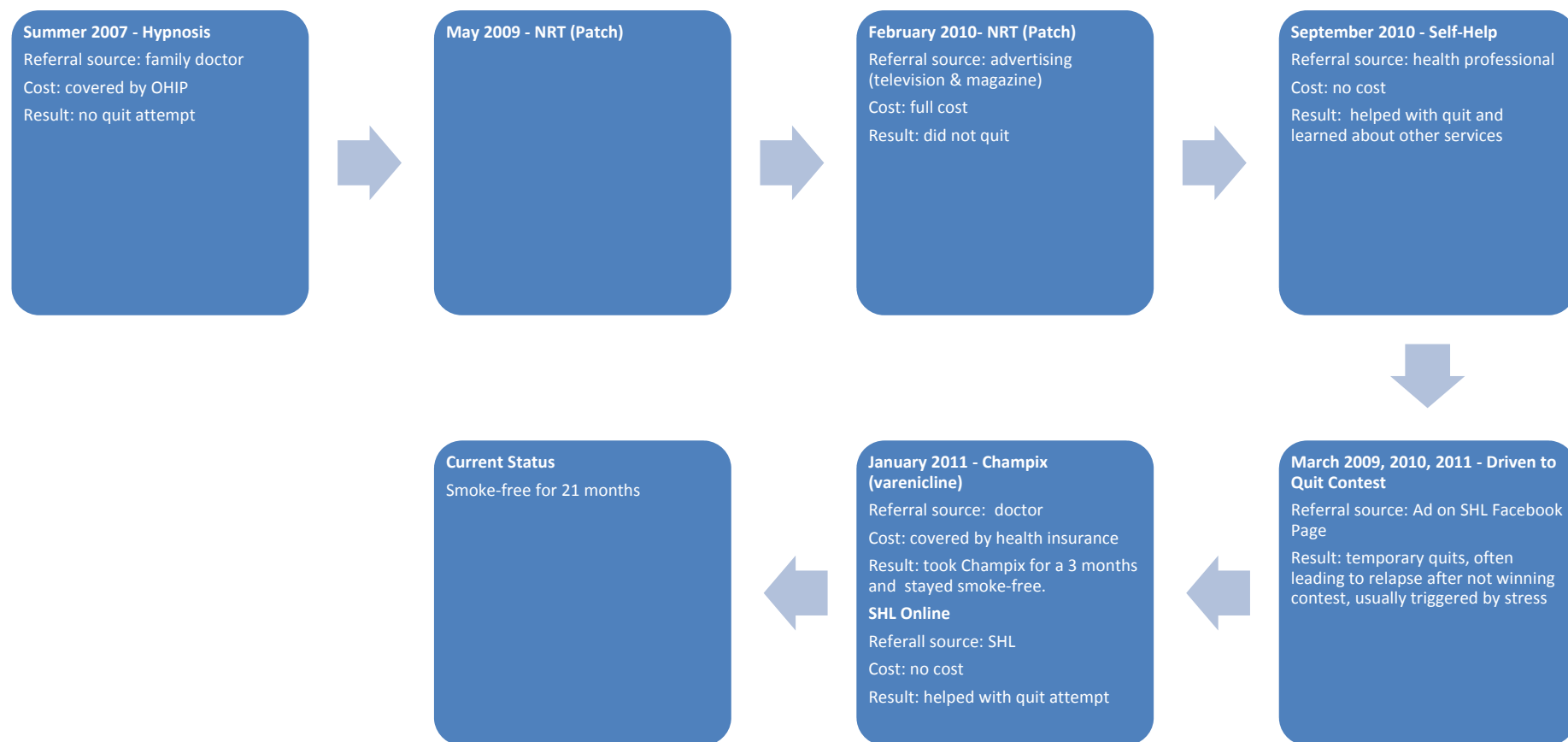
Jonathan*: 50-59 years, rural, currently smoke-free

*(*name has been changed)*

Jonathan had been a smoker for over thirty years and, like most long-term smokers, has made numerous quit attempts; approximately once a year throughout those thirty years. His reasons for wanting to quit ranged from health to economic reasons; however his reliance on smoking as a coping mechanism, particularly for stress, was a challenge that he encountered during his quit attempts, often leading to relapse. In his quit attempts, he found the cost of over-the-counter NRT products to be prohibitive and various aspects of the different forms of NRT to be undesirable in his everyday life – for example, he did not like the constant stream of nicotine while wearing the patch. He also tried cessation programs like the Driven to Quit Contest and alternative therapies like hypnosis. When visiting his doctor for other health reasons, Jonathan learned about the prescription medication, Champix™ (varenicline). He appreciated having the medication's cost covered by his health insurance, and felt lucky that he did not experience any side effects from the medication. Jonathan credits Champix™ for his cessation success, and has now been smoke free for over 21 months.

“I can't say enough good about it...I was lucky not to have any side effects...and the way Champix™ works...I had no withdrawal symptoms.”

Figure 5: Jonathan's Cessation Pathway



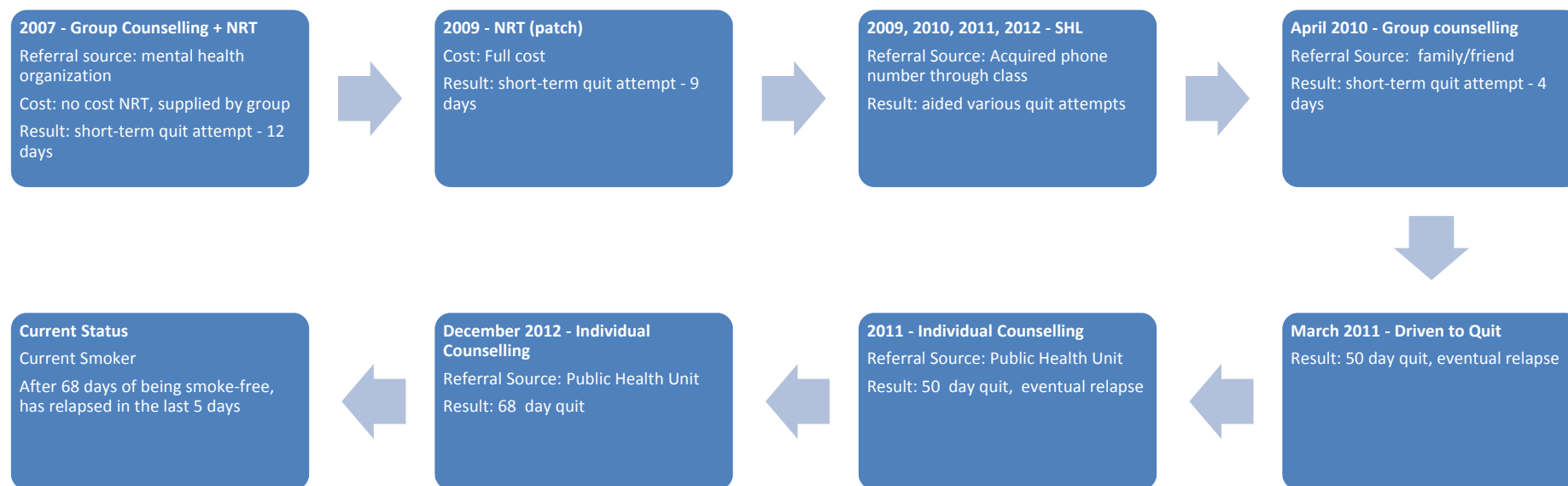
Michael*: 50-59 years, urban, current smoker

*(*name has been changed)*

Michael has been a smoker for forty years, and estimated that he has made at least ten to fifteen quit attempts during this time. He considers himself a heavy smoker, and smokes two packs a day. He has tried a number of different services/resources through his quit attempts, and in many cases has re-tried the same services during these attempts. For example, he has used NRT, particularly the gum, several times and finds it especially helpful in curbing withdrawal symptoms during a quit attempt. However, while he finds NRT helpful in dealing with the physical cravings, he finds it does not address the psychological, habitual, and emotional relationship he has to smoking. He has also tried various forms of counseling, from individual to group, and has had some positive quit attempts with both, the longest of which was his most recent quit attempt of 68 days. Michael indicated that the financial cost of cessation resources like NRT, and more consistent support from healthcare providers should be improved in Ontario's smoking cessation system.

“After forty years of smoking I know what I’ve done to myself and I can’t imagine smoking fifty cigarettes a day for another ten years. If I do I won’t be walking I don’t think. I’ll be hooked up to oxygen.”

Figure 6: Michael's Cessation Pathway



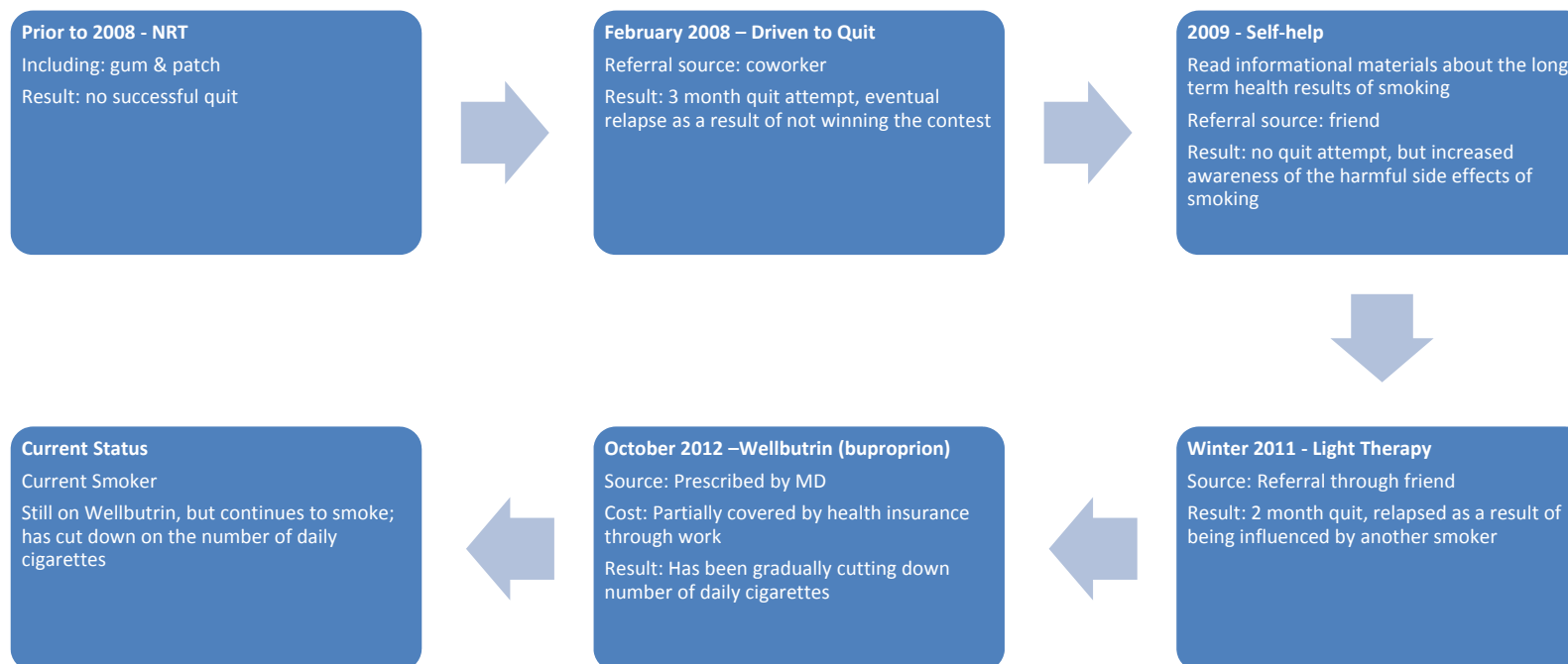
Christopher, 40-49, urban, current smoker

*(*name has been changed)*

Christopher has tried many cessation services and programs, though he has not overlapped services at any one time. Several years ago, he tried NRT including the gum and the patch; however, he found that they were unhelpful during his quit attempts. More recently he entered the Driven to Quit Contest where he used the potential reward of winning a car as an extrinsic motivator during his quit attempt. Since then, Christopher has educated himself on the long-term health risks of prolonged smoking and he feels that the medical information has had a powerful impact on his perception of his smoking. He has also tried alternative therapies like light therapy, which he found to be extremely successful, but he eventually relapsed. Christopher's most recent cessation attempt has been helped by the use of the prescription medication Wellbutrin™ (bupropion). Although he seems to find the prescription medication helpful in curbing his desire to smoke, he has yet to actually quit. He is focused on gradually cutting down the number of cigarettes he smokes per day, even though smoking while on the medication makes him feel sick. A major challenge in smoking cessation for Christopher is encountering stress on a regular basis, and he has identified that financial subsidization of NRT under the cessation system would be helpful for smokers trying to quit.

"It's pretty commonly understood that smoking is unhealthy but what type of information is more helpful...is the medical information as you read it and...synthesize it you understand it and apply it to your own body and you think, if this is what's happening to when I smoke...I don't really want this to happen to me."

Figure 7: Christopher’s Cessation Pathway



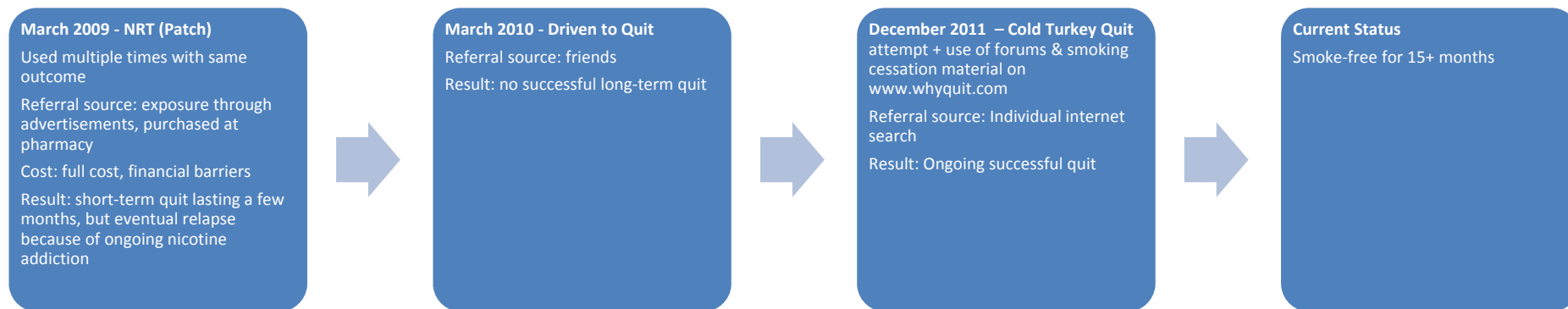
Julie, 40-49, urban, currently smoke-free

*(*name has been changed)*

Julie has been a smoker since she was a teenager, and has made several quit attempts throughout her life. She has used NRT, specifically the patch, multiple times during her quit attempts. She found the patch ineffective as she felt it only allowed her nicotine addiction to persist. Throughout her quit attempts, she has made use of a website she found through an internet search, and has found the forums and smoking cessation articles very helpful. More recently, she participated in the Driven to Quit Contest, but does not consider that one of her more successful quit attempts. She has been smoke free for 15 months after quitting cold turkey and making continuous use of the forums and articles on www.whyquit.com. For Julie, her greatest barriers to a successful quit attempt have been smoking cues like drinking coffee or alcohol, and the psychological and physical attachment to her smoking habit. Julie identified financial constraints as another significant barrier to quitting, however, emphasizes that internal readiness to quit is the most important factor in successful quitting. Despite all of the various cessation programs and services she has tried, she now advocates for a cold turkey approach to quitting and believes that the current Ontario smoking cessation system could be greatly improved by providing workshops and counseling to provide smokers constant support in their quit attempts.

“I tried it [quitting] a few times on the patch simply because I thought it would be easier and you know and once like I lasted a couple months and the thing is for me is it’s still nicotine replacement so you’re never free, you’re not free of the nicotine so...you don’t realize it until you actually do another real quit.”

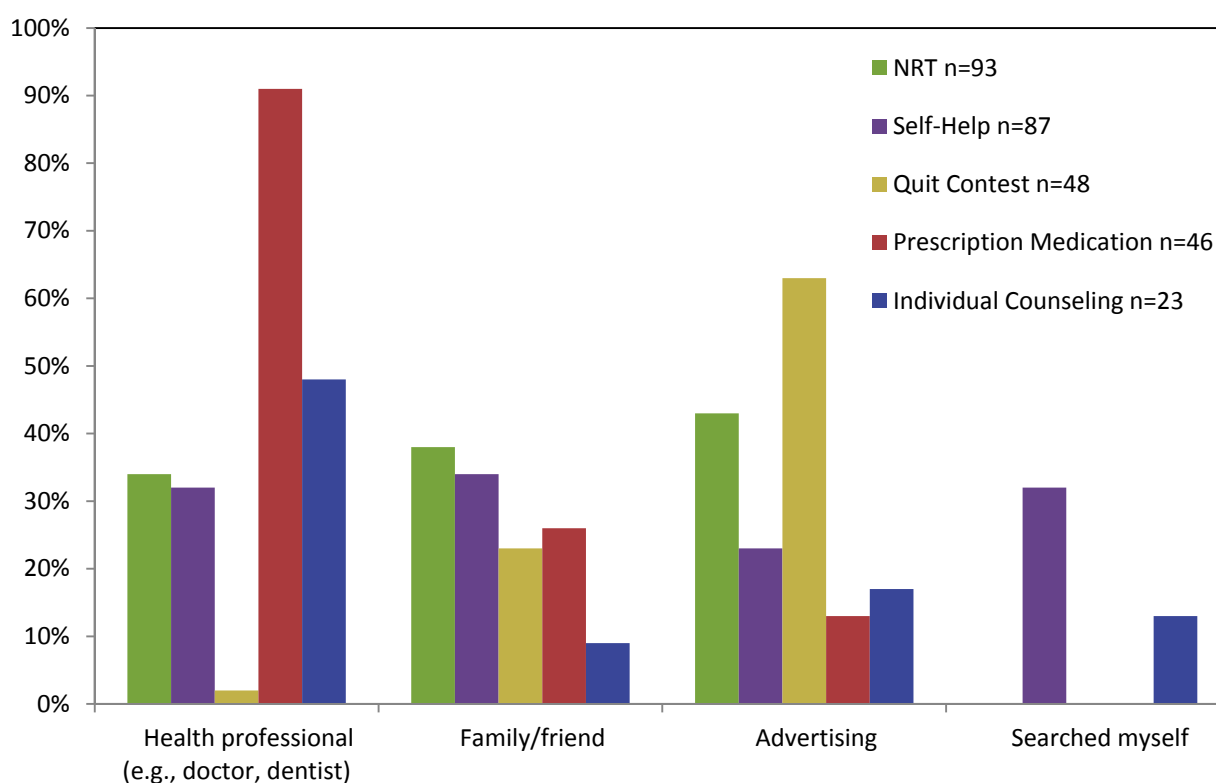
Figure 8: Julie’s Cessation Pathway



Service/Resource Referral Experiences

To further explore linkages within the Ontario cessation service system, the online survey included a series of questions about referrals to services/resources. Forty-three percent of participants indicated that they heard about NRT through advertising, 38% heard through family and/or friends, and 34% heard through a health professional. Thirty-four percent of participants heard about self-help materials through family members or friends, 32% heard through a health professional, and 32% searched for these materials themselves. Sixty-three percent of participants using a quit contest heard about it through advertising. Not surprisingly, those participants using prescription medication and individual counseling heard about these services predominantly from health professionals.

Figure 9: Referral Source of Cessation Service/Resource (N=130)



Note: Check all that apply response - percentages do not add up to 100%

Interview participants were asked to discuss their experiences with navigating the cessation system. Similar to the quantitative survey findings, there were three particular entry points that

participants most frequently cited as referral sources to cessation services/resources. The most often discussed referral source was through friends and/or family:

“...someone that I knew had heard about the program and talked to me about it and I thought yeah I think I’m ready and it’s a good idea...”

Above and beyond personal referrals, social media and advertisements also seemed to play a significant role in how smokers became aware of cessation services and resources:

“The commercial was playing...and I kept seeing it and I kept thinking I really want to do this, I really want to do this and then on the 28th of February I saw the commercial again and it said you have to be smoke free the entire month of March and I thought, the whole time...I have to quit during the month of March”

Finally, some participants also indicated that their doctors were their first point of contact for services, particularly for prescription medication.

Challenges with Cessation Services/Resources

Unhelpful Cessation Services/Resources

As interview participants discussed their past and current experiences with various cessation services/resources, many discussed aspects of services/resources that they found to be unhelpful in the quitting process. A number of participants felt psychological or physical discomfort while using NRT:

“...NRTs gave me the illusion I was quitting...I thought it would make quitting easier and it didn’t...I never got to any point that would have been comfortable...”

“...the patch, my feelings were that ‘what did it do to me’? Sometimes it would irritate my skin. The dosage; I didn’t appreciate having the constant stream of nicotine and...wearing it at night was detrimental to sleep patterns for sure...”

Some did not feel that services like texting services or quit contests provided the support that they needed throughout their quit attempts:

“...I also did the...texting service which I have to say was absolutely useless...there were certain times of the day that were really tough like driving was really tough because I’m in my vehicle so often, so I asked for certain times for things to be sent to me and then they’d be sent to me...an hour and a half later...”

While quitlines are proven to be effective components of comprehensive tobacco control approaches, some smokers do not find them appealing. Several participants said that they avoid using quitlines due to the belief that they are impersonal. Participants who had not used the service indicated skepticism in the idea that another person who they had never physically met, and with whom they had no existing relationship, would be helpful to them in a quit attempt. Some also seemed to be confused about whom the service was intended. This may in part be due to a lack of knowledge of the purpose and benefits of using a quitline.

“...It wasn’t for me to call up a stranger and talk about my issues...I think it’s because it’s just a 1-800 number to call...I don’t know, maybe if you knew somebody on the other end, and not just be calling up some strange person. I don’t know that just didn’t seem to appeal to me.”

“I just feel like these twenty-four hour helplines are for crisis and I’ve never...felt like I was in a crisis.”

Lack of Financial Resources

Although prolonged purchase and use of cigarettes is costly, many interviewees discussed, at length, the short-term financial burden that comes with making a quit attempt with NRT. In many cases, respondents did not feel as though they could absorb the financial cost of making a quit attempt, and as a result many advocated for more cessation services/programs to be subsidized:

“...everybody knows...nicotine replacement therapy is expensive and...I think if it was not so expensive more people might try it...that’s a lot what held me back...thirty bucks for a box of...patches for...a week...I can’t do that cause...you might have to use the patch for seven or eight weeks and that’s costly and...I couldn’t afford it.”

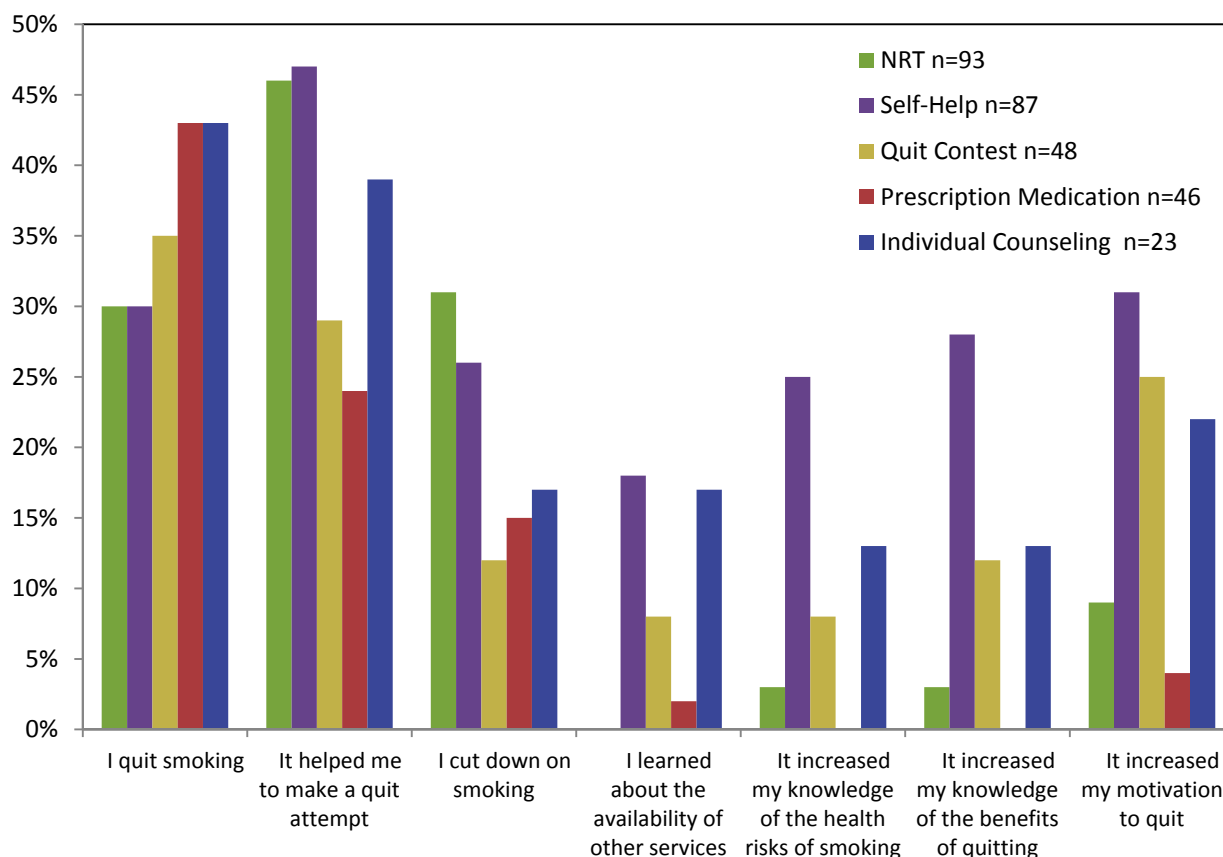
The impact of financial factors on decisions and choices related to smoking cessation has remained a relevant and powerful motivator for most smokers. As a result, the lack of financial

resources was repeatedly cited as a central barrier to either attempting and/or following through with a quit attempt with NRT.

Outcomes of Service/Resource Use

In the survey, participants were asked about results of using each cessation service/resource: “Thinking about the last time you used the cessation service/resource, what was the result?” We report the responses to these questions for the top five cessation services/resources used by study participants in Figure 4. With respect to NRT, 46% indicated that it helped them to make a quit attempt, 31% said that they had cut down on smoking, and 30% said that they quit smoking as a result of its use. Forty-seven percent of those using self-help materials indicated that the materials helped them to make a quit attempt, 31% reported that use of the materials increased their motivation to quit, and 30% reported that they quit smoking using these materials. Thirty-five percent of users of a quit contest reported that they quit smoking as a result, 29% indicated that it helped them make a quit attempt, and 25% reported that it increased their motivation to quit. Forty-three percent of those who used prescription medication reported that they quit, 24% indicated that it helped them to make a quit attempt and 15% reported that it helped them cut down. For those who used individual counseling, 43% quit smoking, 39% said the medication helped them make a quit attempt, and 22% indicated that it increased their motivation to quit. Overall, it appears that NRT, self-help materials, prescription medication and individual counseling are helpful for making quit attempts as well as achieving a quit, and self-help materials are helpful for increasing knowledge and motivation to quit.

Figure 10: Outcome of Service/Resource Use (N=130)



Note: Check all that apply response percentages do not add up to 100%

Factors Contributing to a Successful Quit

Interviewees discussed a number of approaches that they perceived had contributed or would contribute to long-term successful quits. These approaches reflect four subthemes: attending to individual needs, overlapping service use, having social support, and applying effective quit strategies.

Attending to Individual Needs

Multiple interviewees expressed the view that smoking cessation, and the pathway to a successful quit is unique and distinct for each and every individual smoker. Several participants emphasized that there were two general needs to be addressed for each individual smoker in order for a quit attempt to be successful.

The first general need that must be addressed relates to readiness to quit. A distinguishing feature that participants repeatedly cited as separating a “serious” versus a “non-serious” quit was whether they felt emotionally and psychologically prepared:

“...you’ve got to really want to do it. I don’t think if you just go in half-hearted...I don’t think you’re going to quit. I really don’t. You have to go in there whole heartedly that okay this is my last cigarette and after this cigarette I’m going to be smoke-free.”

In addition to readiness to quit, another element that was identified as being highly influential in the process of quitting was having sufficient motivation. The responses from interview participants reflected two broad types of motivation to quit: intrinsic motivations versus extrinsic motivations. Intrinsic motivations refer to guiding factors within a smoker that make them want to quit for their own personal benefit, and for inner gains. Conversely, extrinsic motivations refer to guiding factors outside of a smoker that make them want to quit for external gains, often material or for the sake of others (Table 8). Once again there was considerable variability across interviewees as to which types of motivation, intrinsic or extrinsic, work for them in the context of a quit attempt.

Table 3: Perceived Intrinsic and Extrinsic Motivations for a Successful Quit

Type of Motivation	Interviewee Responses
Intrinsic	<ul style="list-style-type: none"> “...it comes down to me, to my decision. It’s my body and...I don’t really care what other people think...if I want to smoke, I’ll smoke, but if I decide that I’m going to quit it has to be me to make that decision.” “...especially for smoking...I’ve never gone to the doctor to say I want to quit or anything because I think that it’s something more within my own mind that I have that willpower and I’m the only one who can do it.”
Extrinsic	<ul style="list-style-type: none"> “...if I’m going to go through all the trouble of quitting smoking I want something for it...I want to be rewarded.” “I had a daughter, she was...about nine months old...I guess I was on the phone or something and she went into my purse and got into my pack of cigarettes and I caught her with a cigarette in her mouth...it was the most awful feeling of my entire life...I cried my eyes out and I thought what the hell am I doing to my kids...at that point I’m like I need to find a solution.”

Overlapping Service/Program Use

Some interview participants also discussed the simultaneous use of multiple services/resources as a contributing factor in their pathway towards a successful quit. The service combinations used simultaneously varied among participants, and there was also a great deal of variation in

the forms and extent to which each smoker used the services/resources. Although different participants discussed the individual benefits that arose from their unique and personalized service combinations, the consensus among participants seemed to be that overlapping several services/resources could only provide benefits, and really could do no harm:

“I guess at this point I understand that the more...angles or help you have, the more chances of success you have...the more resources you have and the use of those resources, the more successful you’ll be.”

Social Support

The presence of social support was identified as another important factor in the process of a successful quit. Forms of social support also varied from participant to participant. Some interviewees emphasized the need for support from close family and friends:

“...there a couple of friends at work that say...I’m so proud of you that you’ve gone this far now...I’ve been at this workplace now for years so they’ve seen me try a few times and then they’ve seen me go back to smoke again...”

Other interviewees stressed a need for social support from others who could relate to their cessation experiences, usually that of peers who have quit or are in the process of quitting:

“Well all the people who have smoked or that I’ve even smoked with who have quit, it’s like a new little encouragement club.”

Quit Strategies

A number of participants also noted the importance of specific strategies and approaches that worked for them during quit attempts. For example, some maintained that a cold turkey approach was what worked best for them in achieving a long-term, successful quit:

“...I’ve become a pro cold turkey person...very much pro cold turkey rather than using the patch or whatever else because I don’t think that that works.”

In other cases, in applying their own unique quit strategies, some interviewees approached a quit attempt by applying strategies they had learned from other addictions:

“Alcoholics Anonymous...the use of support groups in and of itself and just relate-ability and...the key thing is other people going through what you’re going through...it’s been over two years for me in the program...and that’s what makes this one... thing stick a little more...”

For others, taking a more holistic approach was what worked best for them as a quit strategy:

“...It’s all connected...what you eat...has a lot to do with how you feel and how you function. Your body needs exercise, your spirit needs exercise, there’s a meditation involved and a concentration and the discipline...I can’t just say okay well I’m going to stop and then let my health go and be isolating and dysfunctional...My understanding of this stuff is it’s a circular... life change so...I know through my experience with people that...an abstinence based program, they’re not happy and there are lots of other struggles that they’re having because they look at it sort of a linear way.”

The pathway leading to a successful quit appears to indicate the need for individualization, and personalization of approaches. Interestingly, when examining the qualitative responses using demographic features like age and sex as data filters, the variation in service use and approaches to quit attempts remained across participants. These outcomes suggest the use of and need for individualized approaches.

Respondent Suggested Improvements to the Ontario Smoking Cessation System

In summary, as smokers are navigating their way through Ontario’s current smoking cessation system, there is a high degree of variability in their service use as well as their perspectives on what services/programs they are willing to try, and on what aspects of each service/program they find helpful. As part of the in-depth interviews, participants were asked about ways to improve the smoking cessation system in Ontario in order to better meet their needs.

Centralized Access to Cessation Services/Resources

One of the most prominent recommendations for improving the existing Ontario smoking cessation system was the need for a centralized point of access for smokers who are considering

a quit attempt. Part of this notion of having a centralized service for smoking cessation is to provide an easy access point for smokers to receive information on cessation services/resources and gain assistance in constructing an individualized cessation pathway or plan, i.e., designing a combination and/or sequence of services/resources that would work best for them. It was also suggested that in addition to the physical centralization of information, that there also be available an ‘expert’ to consult on the various available services/resources. Having a consistent point of contact with whom a smoker can interact, ask questions, and who can get to know them in order to better guide them was viewed as important, and would address participant criticisms of the impersonal nature of some existing cessation services/resources.

“...create a hub...there could be one central place for you to go to find out more about any option in which you’re interested...but possibly with a person you could talk to.”

Centralizing services in one physical space was also viewed by some as facilitating the integration and overlapping of multiple service/resource use in a seamless and efficient way:

“...I could go straight from the gym to counseling or straight from the gym to whatever...within the same space...so that you’re not making multiple appointments with multiple people in different places and different times...maybe there’s some kind of coordinated you know here is my quitting smoking time of the day and I’m dedicating two hours a day to focusing on quitting smoking and dealing with my emotions and dealing with my fitness and it’s all in the same place.”

Developing Tailored Quit Plans

In addition to the desire for a centralized hub for cessation services/resources, participants also expressed a need for the development of tailored quit plans to guide smokers through their quit attempts. Throughout the study findings, one of the most predominant overarching themes is the varying cessation support and service needs of smokers. Regardless of age, gender, length of time smoking, it appears that each individual person has unique needs, distinct preferences, and would prefer a quit plan that is tailored to these particular needs.

“I would like to see things...so that you’re talking with one person...you have your one advocate that you go in to speak with and that advocate gets you lined up with everything that you need...so there is an opportunity...to tailor it to the person...so go in and talk to your counselor or advocate or whoever has all the information about everything that’s available and has a conversation...and says okay from your experiences it sounds like to me you need this slate of things in place and I have all the connections to all of those things and will make that happen”.

Improving the Role of Healthcare Providers

Many participants indicated that, for many smokers, their current initial point of access to information and to cessation services/resources was through their health care providers. Despite this, many believed that a major area for potential improvement in Ontario’s smoking cessation system is to increase the role that these healthcare providers play in promoting and supporting quit attempts. There was the belief among many participants that physicians varied in terms of their willingness to promote and/or encourage smokers to make a quit attempt. Some interviewees reported that they learned about new medications, services, and/or programs through their physicians’ encouragement to quit. Other interviewees discussed the lack of enthusiasm their physicians had in urging them to quit. Overall, regardless of what their experience had been with their healthcare providers, several participants emphasized that having more standardization and an increased onus on providers to encourage cessation services/programs would be an important step towards improving Ontario’s current smoking cessation system.

“I know physicians don’t want to nag all the time, but I do hear time and time again from family and friends and from patients even the effect of having their doctor tell them that they “need to quit smoking or else” is very effective. It sticks with people so I think the biggest improvement would be to have physicals really do a bit more counseling when they have smokers in their office.”

Increasing the Role of the Government

In addition to wanting an improved role of healthcare providers, interview participants also made the recommendation that the government also play an increased role in the provision of cessation services/resources. Some participants recommended increased subsidization of cessation resources like NRT. This recommendation for financial support from the government

also speaks to earlier themes indicating that a lack of financial resources can be a major barrier for many smokers to quit.

“...I think that the government should subsidize the medicine and things like the patch...I don’t see why that should cost money because healthcare and everything due to smokers costs the government so much more money.”

There were a few interviewees who believed in a more extreme approach involving the banning of the sale and use of tobacco:

“...when you pay good money for a pack of smokes you’re inundated with advertising on it from the Government of Canada that says that you’re going to die if you don’t quit, so...why the hell are you selling it then if it’s that poisonous...”

Discussion and Conclusion

Study findings confirm that smoking cessation is a highly complex, nonlinear process that requires adequate support from a coordinated cessation service system. Study participants have clearly engaged with a variety of services and resources over the course of their cessation journey, most often NRT, self-help materials and prescription medication. In addition, quit contests appear to play an important role in cessation for Ontario smokers, with many participants reporting general use of the Driven to Quit Contest in quit attempts and finding it beneficial for motivation to quit. In addition, significantly more former smokers had used this program than current smokers. Participants reported hearing about these types of services primarily through family and friends, advertising, healthcare providers and personal searches. Not surprisingly, referral to more clinical interventions like prescription medication and counseling was received through healthcare providers. Nevertheless, despite active engagement with the cessation system and relatively high motivation to quit, the majority (62%) of participants continue to struggle with quitting and experience relapse.

Analyses of patterns of cessation service/resource use have revealed that many smokers are working hard to achieve cessation, and have used a range of services and resources, and in differing sequences, in the cessation process. Case study examples highlight the number, diversity, and varied sequencing of services/resources used by participants over time in their pathways to cessation. However, the study has highlighted that participants have experienced various challenges with smoking cessation services/resources in Ontario. A number of participants discussed unhelpful services in the Ontario context; financial cost remains a significant barrier to making quit attempts with NRT, and many participants seem to have a lack of awareness or misconceptions of how certain services can be helpful during the cessation process.

Many are trying different services/resources in each quit attempt, whereas others discussed revisiting the same services repeatedly without much success. Our analyses have shown high levels of cessation service/resource use, in varying sequences, over time among participants who have quit. This level of service/resource use could be part of a lengthy trial and error process of finding the right service combination in the pathway to cessation. Participants have expressed a need for a more efficient, individualized approach in the service system to help guide them through the process, and assist with identifying personalized approaches to cut down on the use of ineffective resources. The volume and variety in cessation service/resource

use observed among the survey sample and participant testimonials speak to the need for access to tailored, patient-centred plans and approaches to cessation in the Ontario context. Such an approach has been suggested in other research,^{12,13,14} and has the potential to reduce the burden on the system and increase successful quits by isolating service combinations and plans that suit the needs of the individual smoker. Furthermore, several study participants discussed being overwhelmed by the range of cessation service options, lacking insight as to options that would work best for them, or having a lack of knowledge of available options. As a result, they highlighted the need for a centralized hub of services that smokers could access for information on options and assistance with cessation planning.

While various participants appreciated intervention and encouragement for cessation by their healthcare providers, many felt that this type of intervention was inconsistent and uncoordinated, and as a result, many did not feel that healthcare providers were currently able to provide adequate support. Evidence has shown that smoking cessation advice by healthcare providers (e.g., 5As guideline) in clinical settings is important and effective for promoting cessation, but a number of barriers to uptake and adherence to this approach have been noted.^{18,19,20} A centralized hub for tailored cessation support could serve as a key referral point for smokers by healthcare providers and relieve the need for such providers to engage in more intensive counseling.. Finally, as with other research findings,^{10,12,21} this study has underscored the need for increased financial support for cessation resources such as NRT.

The study has a number of limitations that should be considered when interpreting results. A convenience sampling approach was used to recruit study participants, and thus the sample is not representative of all current and former smokers in Ontario; this limits generalizability of findings. Furthermore, study recruitment was facilitated by Smoke Free Ontario service partners, and over-representation of certain service experiences in the sample may have occurred. Due to recruitment challenges, a small sample size of 130 survey participants was achieved, and thus findings from the statistical analyses should be interpreted with caution. Finally, the survey and interview relied on self-reported cessation service/resource use over a period of five years, and may be subject to recall bias.

Overall, the study has yielded a number of important findings and suggestions for an improved cessation service system in Ontario. These findings can inform the increased coordination and efficiency of the cessation system, through increased engagement of smokers in the system and successful quit attempts to reduce the burden of disease related to smoking.

Appendix

To confirm findings from the chi-square tests examining differences between current smokers and former smokers (reported on page 8), we conducted logistic regression analyses to assess the impact of service use, as well as other factors, on making a successful quit attempt and becoming a former smoker. In the unadjusted, bivariate analyses, income, the number of quit attempts in the last five years, perceived confidence in quitting/staying smoke free, perceived importance of quitting/staying smoke free, having used a quit contest, having used one to two cessation services/resources in the last five years and having used six or more cessation services/resources in the last five years were all significantly associated with being a former smoker. Given the small sample size, these results should be interpreted with caution, and due to these power issues, an adjusted multivariable model was not run.

Table 4: Predictors of Former Smoking Status (N=130)

Predictors	Unadjusted – OR (95% CI)
40 or older	1.18 (0.58, 2.41)
Female	1.22 (0.59, 2.57)
Post-secondary education	1.31 (0.52, 3.34)
Full or Part-time employment	1.49 (0.71, 3.12)
Married	1.39 (0.68, 2.83)
More than \$60,000 (ref. Less than \$60,000)	4.2 (1.79, 9.83) ^a
Did not report income (ref. Less than \$60,000)	6.3 (2.22, 17.82) ^a
Four or more quit attempts in last five years	2.18 (1.01, 4.72) ^b
Self-help materials	0.93 (0.44, 1.98)
NRT	0.88 (0.41, 1.93)
Quit contest	3.30 (1.56, 6.96) ^c
Prescription medication	1.8 (0.88, 3.82)
Individual counseling	1.03 (0.41, 2.61)
Used three to five cessation services/resources in last five years (ref. used one or two cessation services in last five years)	1.6 (0.56, 4.85)
Used six or more cessation services/resources in last five years (ref. used one or two cessation services in last five years)	5.05 (1.76, 14.52) ^c

^a p<0.001

^b p<0.05

^c p<0.01

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