Incentives and their Impact on Participation Levels and Quit Rates

in Workplace Smoking Cessation Programs

The Program Training and Consultation Centre conducts applied research in partnership with the Propel Centre for Population Health Impact at the University of Waterloo.
Suggested citation

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Program Training and Consultation Centre
The Program Training and Consultation Centre (PTCC), founded in 1993, is a resource centre of the Government of Ontario's Smoke-Free Ontario Strategy (SFO). PTCC acts as a knowledge broker between local public health departments, the research community, and government. Its strategic priorities are to:
• Build the capacity of Ontario’s 36 public health departments to plan and implement evidence-based tobacco control programs
• Support moving evidence into action
• Strengthen program development and applied research efforts
• Build system capacity to support the Smoke-free Ontario Strategy renewal

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Propel is a collaborative enterprise that conducts research, evaluation and knowledge exchange to move evidence into action, accelerating improvements in the health of populations in Canada and around the world.
Introduction

According to the Canadian Tobacco Use Monitoring Survey, in 2011, 17% of Canadians were daily or occasional smokers\(^1\). In 2011, 77% of smokers had worked at one point in the previous 12 months\(^1\) and 19% of the working population were smokers\(^2\). Each employee who smokes costs employers $3,396 annually due to decreased employee productivity, increased absenteeism and costs of cleaning up smoking areas\(^2\). Since employee populations who smoke spend the majority of their day in a workplace, these environments serve as important venues to implement smoking cessation interventions, reach and help smokers to quit, and in the process reverse the negative impacts smokers incur to employers’ bottom-line\(^3,4\). Implementing smoking cessation programs at worksites also enables opportunities to influence the personal, social, and work environment of the smoker\(^5,6\).

While numerous workplace smoking cessation interventions have been examined (e.g., workplace smoke-free policies, social and environmental support, individual and group counseling, provision of pharmacotherapies, self-help, combined approaches), their impact on curbing smoking prevalence has yielded modest results\(^7\). Difficulties in recruiting large numbers of smokers to participate in workplace smoking cessation interventions has been identified as a key barrier\(^5,8\). Despite smokers being aware of the health risks associated with tobacco use and most reporting a desire to quit\(^9\), only 20% of smokers use formal cessation programs such as behavioural counseling or medication treatments that have been proven to increase the chances of success\(^10\). Incentive-based programs are one strategy used to motivate smokers to participate in cessation programs and help them to quit.

This paper provides an overview of the impact of incentives on workplace cessation program participation levels and quit rates, including their impact on different subpopulations of smokers. It describes a range of strategies for the application of incentives in smoking cessation, including incentivizing social support. Last, implications of the review are discussed. In reading the review, it is important to note that most of the studies reviewed were conducted in large companies (such as General Electric) which may employ both “white collar” and “blue collar” employees. However, the research tends not to differentiate between these types of employees and limited research was found in blue collar workplace settings.
Overview of Incentives Impact on Participation and Quit Rates

Common incentives described in the literature included, but were not limited to, direct cash payment, lottery draws for cash or other prizes, vouchers for goods or services, discounted benefits premiums, catered meals, and social recognition (such as praise from organizational leaders). Free Smartphone apps were also discussed as incentives to help people quit smoking. While there is limited use of smartphone apps among smokers, particularly smokers of low socioeconomic status, providing low SES smokers with smartphones containing a smoking cessation app could serve as an incentive to quit smoking. Incentives are most often offered in conjunction with other cessation interventions such as group counseling, telephone support, self-help literature, or social support networks to encourage participation and enhance quit rates.

Overall, the evidence suggests that providing incentives increases smoking employees’ participation in workplace smoking cessation programs as well as quit attempts, but this does not necessarily result in higher quit rates than programs without incentives. Among 14 incentive-based worksite cessation programs the average participation rate among smokers was 28%. A study of 24 worksites with 300 to 1,000 employees found that participation in a smoking cessation program was higher in the incentivized conditions (22%) than in the non-incentivized conditions (12%) in this study, participants were offered $10 for joining the cessation program, $20 for completing three quarters of the program, and $20 plus entry into a lottery for maintaining abstinence. Lottery prizes ranged between $125 and $500. However, there were no differences in quit rates between the incentivized and non-incentivized conditions.

In contrast, a large Finnish public sector study found that smokers who received financial incentives were more likely to be nonsmokers at follow-up compared with smokers not offered incentives. These associations were stronger among employees who were moderate to heavy smokers (≥ 10 cigarettes / day) than light smokers (≤ 10 cigarettes / day).

The small number of participants examined in these studies may account for differences in these findings. Studies of larger sample sizes that test different incentive types (e.g., lottery rewards versus cash payment), incentive amount (e.g., monetary value) and delivery strategies (e.g., one-time incentives or successive) are needed to provide clearer understanding of the effectiveness of incentives, particularly in relation to short-term as well as sustained smoking cessation rates.

Incentives and Target Populations

Incentives may work better for some people than others. According to Musich et al. (2009), smokers who are self-motivated to quit and have stronger levels of nicotine dependence are more likely to participate in smoking cessation programs. Incentivized cessation programs (monetary or contest/competition-based) serve as external motivators that seem to encourage participation among those who are motivated to quit and tend to be less effective for engaging those who smoke and are not motivated to quit. Engaging the 20% to 30% of smokers who are self-motivated to quit is recommended as a strategy to maximize participation and quit rates associated with participation in cessation programs.
The value of the incentive offered may also appeal differently to different populations\textsuperscript{20}. One of the few workplace studies (General Electric) that found monetary incentives improved quit rates offered $750 for completing a cessation program and remaining abstinent for a year-- $100 was offered for completing the cessation program, $250 for being abstinent 6 months after the program completed and $400 for being abstinent after 1 year. Cessation was confirmed using a biochemical test\textsuperscript{21}. Just over 10\% of smokers participated in the program\textsuperscript{22} and most quitters were already motivated to quit and reported they would have quit for less money (an average of $20). Non-quitters stated that even $1,500 would not have been enough motivation to make them quit\textsuperscript{21}. Participants of this study had relatively high levels of education and income and as such may not be generalizable to employees with lower socioeconomic status\textsuperscript{23}, who may respond differently to incentives.

Some evidence suggests that socially disadvantaged smokers are highly receptive to financial incentives for smoking cessation, believing they would do more good than harm and would motivate smokers to quit\textsuperscript{24}. The preferred value of the financial incentive has also been found to be higher among this population group than those found in studies based on general population samples (37\% of socially disadvantaged participants selected an incentive of at least $1000 compared to up to 11\% in general population studies)\textsuperscript{24}.

Some studies have also found that incentivized cessation programs may encourage participation and short-term quit rates among socially disadvantaged populations compared to non-incentivized programs. For instance, Volpp (2006)\textsuperscript{25} found that heavy smokers (≥ 10 cigarettes / day) of low socioeconomic status who were offered an incentivized cessation program ($20 to attend each of five smoking cessation classes, $100 if they were abstinent 30 days after program completion with free NRT) had significantly higher participation rates (43\%) than comparable smokers in the control group (20\%, free NRT but no financial incentives). Quit rates at 3 months follow-up were also significantly higher for the incentivized group (16.3\%) compared to the control group (4.6\%), but were no different at the 6 month follow-up.

Overall, modest financial rewards may be effective with smokers who are motivated to quit\textsuperscript{22}. Incentives of lesser value tend not to result in sustained smoking cessation\textsuperscript{6}. A study by Volpp et al. (2009)\textsuperscript{23} offered evidence that using large incentives ($750 for completing the program and sustained abstinence at 9 or 12 months post program) significantly improved quit rates (9.4\%) compared to the control group (3.6\%). A key goal of incentive programs is to maximize participation while limiting the number of participants who are motivated more by rewards than the desire to quit smoking\textsuperscript{6}. Offering incentives in amounts that are high enough to compensate the participant for experiencing withdrawal symptoms and losing the perceived rewards of smoking\textsuperscript{26} coupled with the use of biochemical testing to discourage dishonest participants may help to achieve this goal\textsuperscript{27}.
Strategies for Delivering Incentives

When designing an incentivized cessation program it is important to consider how the incentive will be administered. Delivery strategies discussed in the literature included guaranteed incentives, contingency-based approaches, lotteries, competitions, use of deposit contracts, and discounted benefit co-pay. The evidence on these approaches is described below.

Guaranteed Incentives and Contingency-Based Incentives

A critical question to ask when designing an incentivized program is what to incentivize as this can inform the strategy used to deliver the incentive. Should particular simple behaviours or the more complex behaviour of long term cessation be incentivized? If the former is the case, guaranteed incentives may be the best incentive-delivery strategy. Guaranteed incentives reward behaviours (e.g., attendance) regardless of the participant’s subsequent performance. Incentives have been found to be most effective when used to encourage simple, time limited behaviours.

More complex behaviours, such as smoking cessation, require a managed schedule of incentives to both initiate and maintain behaviour change (e.g., to set a quit date and maintain smoking abstinence). This approach is known as contingency management and evidence of its effectiveness has been accumulated in the area of illicit drug abstinence. Most incentivized smoking cessation programs are contingency-based in that they offer rewards for maintaining quit status throughout the cessation program and sometimes rewards are also provided at follow-up periods months or years after the intervention. Often the incentives escalate with sustained cessation. Incentive schedules that include escalating incentives with frequent biochemical monitoring are most effective at producing desired outcomes. Escalating incentives may have a “reset feature” which returns the incentive to its initial value when a participant relapses.

Contingency-based incentives may help to encourage ongoing participation in a workplace cessation program. One contingency-based incentives program paid participants for attending the program sessions ($10) regardless of smoking status. After the initial three-week quit program, participants could earn a single dollar for each day of abstinence plus a $30 bonus for each 30 days of continuous abstinence. Participants were also eligible to enter a lottery where the prize amount was based on the number of participants registered in the program. The combination of incentives resulted in 80% of smokers participating in the program.

In terms of quit rates, contingency-based approaches to delivering incentives may increase short-term quit rates but relapse among participants is common when the incentives stop being offered. More research is needed to better discern the effectiveness of contingency-based incentives in encouraging participation and smoking cessation.

Group Competitions

Group competitions serve as another incentive-delivery strategy. Group competitions may increase participation in workplace smoking cessation programs and promote cooperation among individuals as they compete with another group(s) or worksite to win an incentive. Prizes can be given to groups or worksites with the highest attendance at cessation meetings as well as for the highest cessation rate.
Competitions appear to help increase participation rates. A smoking cessation study in human services agencies had two worksites in each region competing for a turkey buffet for the entire worksite based on the highest proportion of employees signing up for the Great American Smoke-Out. Employee participation was 70% (including supportive non-smokers) at the competition worksites compared with 17% at the control worksites (non-competition sites).

An Australian cardiovascular risk study based in ambulance stations offered lottery incentives for individual participants as well as a grand prize ($1,000) for the station with the largest percentage of participants meeting their 6-month lifestyle change goals (including smoking cessation). Initial participation was 88% with only a 10% drop-out rate at six-month follow-up.

**Lotteries and Direct Incentives**
Lotteries and direct payments represent additional strategies for delivering incentives. Lotteries involve providing a prize (cash or other) while direct payments involve the provision of incentives to each eligible recipient. The most common reward in the cessation studies analyzed in a review by Leeks et al., (2010) was entry in a lottery with individual prizes ranging between $40 and $500, and a team prize of up to $2500.

Although more research is needed, competition-based lotteries may be more effective in promoting one-time behaviours than providing individuals with a direct payment. Haisley et al. (2012) compared the effectiveness of promoting the completion of an individual health risk assessment by offering a lottery ($100) for teams (i.e. four to eight people), or providing each individual with a gift certificate ($25). The size of the lottery prize was increased if at least 80% of the team completed the assessment. The lottery was more effective than providing incentives to each individual and resulted in 64% of team members completing the assessment. The lottery was particularly effective with lower-income employees. Social pressure to qualify one’s group for the bonus lottery prize and the fear of missing out on a chance to be a winner were the behavioral mechanisms that may have accounted for the success of the lottery.

**Deposit Contracts**
Another strategy to deliver incentives is by rewarding desired behaviours (positive deposit contract) or penalizing undesired behaviours (negative deposit contract). In a deposit contract, workers agree to have a predetermined amount of money deducted from their account each pay period. If after a set period participants are smoke-free, the money is returned to them. If the participant is not smoke-free, the money is donated to charity. In a deposit contract study conducted by Gine et al., (2010), 11% of smokers participated in the program. At 12 month follow-up, members of the intervention group had higher quit rates (11.5%) compared to those in the control group (8.5%).

Deposit contracts can also be used to allow participants to double their money if they are smoke-free or lose their money if they are not smoke-free. One study compared deducting money for smoking (loss condition) with accumulating money for abstinence (gain condition). Ninety percent of participants in the gain condition remained abstinent for at least 48 hours compared with 44% of those in the loss condition. Participants in the gain condition also had better program attendance.
In the General Electric incentivized cessation program\textsuperscript{23}, nonsmoking employees did not agree that smokers should have the opportunity to be rewarded for quitting because nonsmokers were not being rewarded for their smoke-free status. This feedback led to the replacement of the $750 reward for quitters with a $625 penalty for smokers\textsuperscript{40}. For practical reasons the penalty was tied into health insurance premiums administered through payroll deductions. One consideration to keep in mind is that providing incentives outside the health premium system may cause the reward to become taxable.

Overall, positive programs are more likely to foster a spirit of cooperation between employee and employer--working toward a mutual beneficial goal of employee health\textsuperscript{40}. Introducing threats or sanctions will not alleviate the loss of a pleasurable activity and may create additional stress\textsuperscript{39}.

**Discounted Benefit Premiums**

Integrating rewards into workplace benefit plans is another strategy through which incentives can be offered and offers an alternative approach for many companies who do not offer smoking cessation programs as part of their benefit package\textsuperscript{19}.

Varying results have been found with respect to this strategy on participation rates in smoking cessation programs. Smokers at IBM who agreed to sign up for a cessation program received a health benefit premium of $11 per month for a total of $132 for the year. The smoker participation rate was 71.8%\textsuperscript{5}.

In Stein's (2000)\textsuperscript{8} study, hospital workers could have their benefit plan costs adjusted by plus or minus $1200 based on results of a health screening. The same benefit was made available to spouses. Employer-sponsored health promotion activities were offered to help employees address health risks. On site physical activity programs were popular, but few employees enrolled in smoking cessation activities\textsuperscript{8}. No reasons were given for the lack of interest in smoking cessation programs. However, health promotion participants did improve their health risks compared with non-participants.

Goetzel et al., (2007)\textsuperscript{41} contend that the most effective incentives are those that affect employee health care costs, such as discounted health insurance premiums for those who engage in smoking cessation. However, evidence that differential health insurance premiums for smokers result in cessation is scant\textsuperscript{40}. Direct monetary incentives may motivate behaviour change more effectively than premium adjustments. Part of the reason is that people put more weight on the present than the future and are more attracted by immediate than delayed benefits\textsuperscript{40, 40}.

Much of the evidence regarding the incentive size required to effect change comes from studies conducted in the United States where incentives are often used to defray health insurance costs\textsuperscript{20}. Evidence from countries with alternative forms of health insurance is needed to get a better understanding of the effectiveness of workplace incentives in promoting cessation.
Incentivizing Social Support
Workplace smoking cessation programs typically involve smokers; however, in some programs additional stakeholders were engaged and incentivized to help create a supportive environment to assist smokers to quit.

In a study of low income pregnant women, smokers received a $50 department store voucher for the first quit month, $25 for each additional quit month, and $50 for the final quit month, confirmed through biochemical testing. Based on this success the smoker’s designated support person received the same amount. At end of pregnancy, participants had a quit rate of 32% compared to 9% for the control group which did not receive the incentives.

Providing incentives to both smokers and nonsmokers may improve smoker participation rates in a program. One workplace cessation study incorporated a “Good Buddy” lottery where participating smokers nominated supportive coworkers and achieved a 23% smoker participation rate, but did not increase quit attempts. Another study included supportive family members as well as coworkers in the secondary lottery and had a smoker participation rate of 61%. A web-based cessation program at IBM which achieved a smoker participation rate of 71.8% gave non-smokers the same incentives that were given to smokers who signed up for the cessation program.

Implications
More rigorous research is needed to understand the effectiveness of incentives on encouraging employee participation in workplace smoking cessation programs and quit rates. Specifically, more research is needed to determine what types of incentives, value of incentives, and strategies for delivering incentives work, for whom, and under what conditions. Despite the need for more research, this evidence summary found that incentivized programs can increase levels of participation compared to control groups, but exert less pronounced effects on quit rates. Incentives also appeared to be effective at facilitating simple, time-limited behaviours. While incentives that reward participants at key milestones during and potentially after a smoking cessation program may be useful to promote complex behaviour change like quitting and staying quit, relapse may occur once incentives disappear. Incentives may also be useful to encourage and reinforce participation in workplace cessation programs among the 20% to 30% of employees in workplaces who smoke and are motivated to quit as they appear to benefit most from such initiatives.

When designing an incentivized workplace cessation program, several of the more sophisticated studies have worked with employees and asked them what incentives are meaningful to motivate participation and quit rates. Moreover, employees may experience several barriers to participation in workplace smoking cessation programs. For instance, employees from 87 General Electric worksites identified time constraints, competing priorities, and work stress as barriers. Thus, professionals tasked with delivering incentivized workplace smoking cessation programs should ask questions to better understand which incentives, and ways of delivering incentives might best overcome identified challenges to participation. To the extent that those delivering incentivized workplace smoking cessation
programs have the resources and workplaces are amenable, use of voluntary biochemical testing can help to identify smokers and prevent dishonest manipulation of incentive programs\textsuperscript{27}.

Incentives can also be used to encourage the involvement of non-smokers (coworkers or others) who can support smokers in their quit efforts by serving as smoke-free role models and support systems. Greater involvement of smokers and non-smokers from the workplace can also increase broader awareness and shift the worksite’s social norms around smoking.

Those tasked with making decisions about the use of incentives, types of incentives and strategies of delivering the incentives for a workplace cessation program might consider the following:

- Assess which smokers are motivated to quit and which are not and provide incentives that best fit their particular preferences.
- Implement one-time incentives to motivate simple, time limited behaviours.
- Use contingency-based incentives to reward the achievement of complex changes in behaviours like quitting for a long period of time.
- Offer larger incentives as they may be more effective than smaller incentives. Lotteries are one means of offering some large incentives while keeping the budget in check.
- Reward employees for quitting rather than relinquishing rewards when they fail to achieve desired behaviour change.
- Design competitions between work sites to provide all employees the opportunity to take part--especially when everyone at the winning site is rewarded.
- Engage non-smoking coworkers, family members and other stakeholders to participate in a program to help build social support that helps smokers to quit.
- Design evaluations to better understand which incentives and strategies of deployment work for various populations and in various work environments.

In summary this paper highlighted the impact incentives have on participation levels and quit rates in workplace cessation programs, including what strategies for delivering incentives might work and how incentives appeal to different smoking populations. Overall, incentives show promise in their ability to increase participation rates and encourage simple behaviours, but produce variable results on quitting and staying quit. More research is needed to explicate what types of incentives, value of incentives, and incentive delivery strategies work best for different populations of smokers and in blue collar workplace settings.
References


