



Quit and Win Contests: A Rapid Review of the Evidence

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Key Take Home Messages

- There is no evidence of sufficient quality to suggest that Quit and Win contests are effective in producing short- or long-term cessation rates.
- Population-level impact suggests that the effect of contests on community prevalence of smoking is small, with less than one in 500 smokers quitting because of the contest.

Using the number of individuals in Peel who participated in the 2010 Driven to Quit Challenge, this would translate to approximately 3 out of 1,572 smokers quitting because of the contest.
- Studies that have used biochemical measures to validate self-reported quit rates have found over-reporting to be high. It is recognized that in practice, the use of biochemical verification for all participants would be expensive and impractical. However, this finding does suggest that cessation rates are likely to be overestimated in published studies.
- Practitioners should be cognizant of other biases when evaluating quit and win studies particularly issues related to small sample size, high attrition rates, and baseline differences between the intervention and control groups.

Executive Summary

Problem Statement

This review examines the evidence concerning the effectiveness of Quit and Win contests in producing short-term and long-term cessation rates.

Context

Quit and Win contests are programs in which smokers pledge to quit for a brief period (typically 30 days) in exchange for the chance to win a prize. The contest aims to achieve two goals: 1) to motivate a large number of smokers in making a cessation attempt and 2) to provide incentives for smoking cessation at a time when relapse is most likely.

In Ontario, the provincial government encourages all health units in Ontario to support the delivery of Quit and Win contests. In Ontario, the annual quit and win contest (*The Driven to Quit Challenge*) has been implemented provincially since 2005. In 2010, the contest drew 28,882 participants across Ontario with 1,572 residing in the Region of Peel.

Methods

Two main search strategies were undertaken: 1) searching of systematic reviews through OVID MEDLINE and 2) searching for single studies published following the most recent search in the retrieved systematic reviews.

Studies were restricted to research published in the English language only. The study population was adult (19 years and older) who were daily smokers. Types of studies included were: systematic reviews, randomized controlled trials or controlled trials with baseline measures and post-intervention outcomes. The outcome of interest were either short-term cessation rates (cessation rates at one month) and/or long-term cessation rates (cessation rates reported at 6-months and 12-months) post-intervention.

The final search strategy yielded two Cochrane Systematic Reviews and one cohort study that met the inclusion criteria.

Key Findings

Although there is a large body of literature describing Quit and Win contests at the local, national and international level, evaluations have not been implemented using rigorous standards. In a systematic review of Quit and Win contests, only 5 studies compared quit and win contests to a no-contest control group. One of the five studies was a randomized controlled trial, three were controlled trials without random allocation and one study was an observational comparison study. One cohort study was found that was published following the search in the two Cochrane reviews and was critically appraised as weak. This study was therefore excluded from further discussion in this report.

The following key findings drawn from the studies included in this review are summarized below:

- No randomized controlled trials have shown quit and win contests to be effective in producing short-term and long-term cessation rates among program participants. Controlled studies found (at 12-month follow-up) higher quit rates among contest participants compared to control groups ranging from 26% to 6% among Quit and Win participants compared to 8% to 2% among control groups. However, intention-to-treat analysis yielded much lower 12-month quit rate estimates among Quit and Win participants relative to control groups (intention to treat (ITT): 17%-6% Quit and Win participants versus 5% to 1% control groups.)
- All studies acknowledged limitations to their study findings including small sample sizes and relatively high attrition at 12-month follow up.
- The authors also reported significant baseline differences between the intervention and control groups. Two found those who entered the Quit and Win contests were predominantly female, younger, more highly educated and more likely to be employed as a semi-professional or professional compared to non-participants while one study reported a higher proportion of blue-collar workers. Differences may be attributed in part to the channels used to promote the contest.

- Increased rates of deception have been documented in studies either by participants falsely claiming to be abstinent or by non-smokers taking part in a contest and then claiming to have quit smoking. One study that biochemically validated quit rates at 12-months found cessation rates to be 7.3% in the intervention group and 0.6% in the control group. These rates were significantly lower than the self-reported abstinence rates of 24.6% and 8.1% respectively.

- The type of prize promoted did not appear to affect cessation rates. Studies found the use of competitions and rewards were effective in attracting more people to make a quit attempt but cessation rates remained the same as for non-contestants. The authors noted that the effects in using incentives did not last over the long-term and tended to dissipate when rewards were no longer offered.

- The study by Hahn, 2005, the most rigorously designed of the included studies only demonstrated a marginal benefit in participating in quit and win contests. Study estimates should be interpreted with caution as they are based on a relatively small number of participants with significant differences observed between the two groups at baseline.

Conclusions

There is no evidence of sufficient quality to suggest that Quit and Win contest are effective in producing short-term and long-term cessation rates.

1 Problem Statement

The provincial government encourages all health units in Ontario to support the delivery of Quit and Win contests. In Ontario, the annual quit and win contest (*The Driven to Quit Challenge*) has been implemented provincially since 2005. This review aims to examine the evidence of the effectiveness of Quit and Win contests in producing short-term and long-term cessation rates.

2 Context

2.1 Quit and Win Contests for Smoking Cessation

“Quit and Win” contests, are a health promotion strategy in which smokers pledge to quit for a brief period (typically 30 days) in exchange for the chance to win a prize. The incentives to participate vary for each program and have included such incentives as cars, trips or money. The first program was developed in the early 1980s as part of the Minnesota Heart Health Program (1). Since then, the program has been modeled in many jurisdictions including an international quit and win challenge hosted every two years by the World Health Organization (2). In 2006, the International Quit and Win program enrolled more than 1 million participants from over 100 countries (2).

2.2 Program Rationale

It has been argued that smoking cessation contests facilitate the link between intentions to quit and a cessation attempt (3). Such contests have been developed based on the recognition that up to 90% of smokers who quit can be expected to do so on their own, rather than through participation in organized smoking cessation programs (4). In addition, smoking cessation research has shown that most quit attempts fail within the first 30 days, with less than half surviving even for one week (2). The challenges experienced by smokers within the first 30 days are likely due to intense physical cravings particularly during the first week. As such, the possibility of winning a large prize could offset the discomforts of quitting (2). Smoking contests offer the opportunity to encourage a large number of smokers to attempt cessation. From a public health perspective, minimal contact strategies such as smoking contests, can potentially serve as

an affordable population-based intervention compared to more intensive programs such as group or individualized cessation counseling.

Competitions and incentives have been widely used in many smoking cessation programs to support quitting. They can be used to either encourage recruitment into a program, or to reward cessation achieved at pre-defined periods of time particularly during the weeks immediately following the quit date when relapse is most likely (5).

2.3 Understanding Cessation Theory: The Transtheoretical Model (TTM)

The transtheoretical model of behaviour change (also known as the Stages of Change model), is a conceptual framework used to understand the process involved in smoking cessation.

Specifically, regular smokers are thought to move through predictable stages of behaviour as they progress towards sustained abstinence from tobacco use (6). Research on Stages of Change theory for smoking cessation have shown that adults smokers are not capable of changing a chronic behaviour such as smoking in a “linear fashion” (7). Rather, the model acknowledges that relapse is a normal part of the quitting process resulting in situations where smokers regress through the stages or cycle through them on multiple occasions (8).

The utility of the transtheoretical model has been well documented in the literature and serves as a useful planning tool for tobacco cessation programs. In the original work with this model, Prochaska and Goldstein reported that a typical smoker might relapse three to four times before being able to make a successful quit attempt (7). Studies that have aimed to validate the transtheoretical model have also reported that the model is capable of accurately distinguishing those smokers who eventually go on to quit from those who continue to smoke (9). However, a

systematic review examining intervention studies using the transtheoretical model found that research is less clear on specific strategies that can be used to move an individual along the change continuum (10).

2.4 The Ideal Quit and Win Study

It is recognized that studies examining smoking cessation contests are fraught with methodological challenges. These challenges often make it difficult to draw meaningful conclusions about the effectiveness of Quit and Win contests in producing short-term and long-term cessation rates. The “ideal quit and win study” would aim to remove or minimize these methodological issues. We describe components of an ideal study below:

2.4.1 Adequate Sample Size with Minimal Loss to Follow-up

Studies must have a sample size large enough to detect differences in quit rates between intervention and control groups. Given that quit and win studies aim to assess smoking cessation at different time points (e.g. 3 months, 6 months, 12 months), it is recognized that retaining participants over the long-term can be difficult. This may lead to insufficient power to detect differences at the study’s longest time point. An ideal quit and win study should be cognizant of the importance of having a large enough sample size and ensure losses to follow-up are minimized.

2.4.2 Selects the Appropriate Control Group

Smokers who enter quit and win contests are a self-selected group that may share different characteristics from smokers who choose not to participate in the contest (2). Of key concern are differences between the intervention and control groups in relation to the proportion of smokers

who report being in the action or preparation stages to smoking cessation. We would expect to see differences in quit status to be inflated in many studies given that a greater proportion of those in the control group are likely to report being in either pre-contemplative or contemplative phase when compared to those in the intervention group. An ideal study would aim to ensure the proportion of smokers in the action/preparation stages is roughly the same in both intervention and control groups in order to facilitate meaningful comparisons.

2.4.3 Ensures Only Smokers Sign Up for the Contest

It is recognized that contests promoting the chance to win large prizes can motivate smokers and non-smokers alike to register for the contest. Most quit and win contests do not require participants to biochemically prove their smoking status. An ideal quit and win study would be able to verify smoking status as a condition of entry into the contest.

2.4.4 Uses Biochemical Validation to Confirm Quit Status

It is recognized that assessment of quit status may often lead self-reporting biases. As such, biochemical validation of abstinence is the preferred gold standard to assessing smoking cessation (11). Biochemical validation to all participants is not routinely done in practice as it is expensive and impractical. Instead, biochemical validation to verify smoking status is often restricted to final prize winners. An ideal quit and win study would ensure biochemical measures are in place for all participants.

2.4.5 Uses Intention-to-Treat (ITT) Analysis

The ITT principle stipulates that all participants who are allocated into an intervention or control group must be included in statistical analyses according to the treatment group to which they

were assigned, regardless of what treatment, if any, they actually received (12). For example, in a Quit and Win contest aimed to assess quit status at 12-months, registrants who are lost to follow-up at 12-months are retained in the denominator in which they were assigned (treatment or control group). ITT uses a conservative approach to analyses and assumes that those who are lost to follow-up have resumed smoking. ITT analysis guards against potential bias and is therefore the preferred approach to assessing differences between intervention and control groups.

2.5 Tobacco Use in Peel: Smoking Rates

In 2008, 17% of residents in Peel (approx 184, 500 people) were current smokers compared to 20% observed in Ontario (13). The lower rate of smoking in Peel could be attributed in part to the large population of immigrants in Peel who tend to have lower smoking rates (14). In both Peel and Ontario, males have higher current smoking rates than females. The current smoking rates for Peel females declined from 18% in 2001 to 11% in 2008 (13). This decline was also observed among Ontario females. Conversely, the smoking rate for Peel males has not changed since 2000/2001 and was 23% in 2008. In Peel, young males have the highest smoking rate and are an important group to target for prevention efforts.

2.6 Smoking Cessation in Peel

About 25% of Peel residents are former smokers. The average length of time since former smokers (who had smoked 100 or more cigarettes in their lives) had quit smoking completely was 15 years. About 8% of these former smokers, representing about 14,700 people, quit smoking completely in the past year (13).

2.7 Cessation Programs and Services in Peel

The following services are currently offered by the Region of Peel Health Department:

2.7.1 Brief Contact Intervention (BCI) Training for Families First and Family Health Public Health Nurses

Public Health Nurses (PHNs) in the Families First Program have received BCI training to assess client smoking behaviours, readiness to quit and provide referrals to cessation resources/services as appropriate. Family Health PHN's will receive training in the fall of 2010. Family Home Visitors (serving Families First and Family Health clients) will also receive training to assist them in supporting clients in accessing tobacco cessation resources.

2.7.2 Group Counseling

Group cessation counseling is provided in partnership with the three regional hospitals. Clients are screened and referred to the group by staff in pulmonary rehabilitation and cardiac rehabilitation programs. Sessions include carbon monoxide testing, quit kits and 10 weeks of free Nicotine Replace Therapy (NRT).

2.7.3 Individual Counseling

Individual counseling is provided based on the Stages of Change, trans-theoretical model. Nurses use motivational interviewing, carbon monoxide testing, quit kits and provide 10 weeks of free NRT treatment to eligible clients.

3 Using Evidence to Inform Health Practice: A Case Study

The following scenario describes the events that led to the writing of this report:

The provincial government encourages all health departments in Ontario support the delivery of the Driven to Quit Challenge - a campaign aimed to encourage Ontario adults who are daily smokers or tobacco users to make a quit attempt for one month for the chance to win prizes.

To qualify for draw prizes, daily smokers or tobacco users must remain tobacco-free for at least the month of March. They must also sign up a support “buddy” who will help them through their cessation effort. The 2010 contest drew 28, 882 participants across Ontario with 1,572 participants residing in the Region of Peel.

In an effort to promote the upcoming 2010 challenge, Public health staff in the Region of Peel posted bulletin board ads throughout the community encouraging smokers to register for the contest.

The Medical Officer of Health (MOH) in the Region of Peel drove past one of these bulletin boards prompting him to question the health department’s involvement with the contest. The MOH has previously been involved in public health research examining the effectiveness of competitions for smoking cessation. Evidence from this research found Quit and Win contests were not an effective strategy for long-term cessation among contest participants.

The Region of Peel strives to be a leader in the application of the evidence-informed decision making process (EIDM). In an effort to be accountable to the programs and services delivered to residents in the Region of Peel, this report focuses on the following research question:

“What is the evidence concerning the effectiveness of Quit and Win contests for smoking cessation?”

4 Analytical Model

An analytical modeling exercise was conducted to set the parameters for this review. This included consulting with select public health staff working in the tobacco field to identify important research questions pertaining to Quit and Win contests. In addition, abstracts on the topic of interest were scanned to help identify important themes and/or sub-research questions deemed important for this review. The analytical map developed for this review is shown appendix 1.

5 Developing the Research Question

The main research question for this review is as follows:

Are Quit and Win Contests effective in producing short-term and/or long-term cessation rates?

Other questions pertinent to this literature review are found below:

- 1) Are Quit and Win contests effective in producing short-term and/or long-term cessation rates among for high-risk groups (e.g. pregnant women, low-income participants)?
- 2) How effective are Quit and Win contests in moving smokers through the stages of change (over a one-year period)?
- 3) Who signs up for Quit and Win contests (i.e. who is the target audience)?
- 4) How great are the risks and harms arising from the use of competitions and incentives (e.g.: false claims, ineligible applicants)?
- 5) Does the type of prize promoted affect participation rates?

The research question in the PICO format is found below:

P – Population	Adults who are daily smokers or tobacco users
I – Intervention or Exposure	Quit and Win contests
C – Comparison/Control	Individuals who do not participate in Quit and Win contests
O – Outcome of Interest	<ul style="list-style-type: none"> ➤ Short-term cessation rates ➤ Long-term cessation rates ➤ Ability of smokers to move through the stages of change over a one-year period ➤ Harms, risks

6 Search Strategy

Two main search strategies were used for this review: i) searching of systematic reviews through Ovid MEDLINE and ii) searching for additional studies published following the most recent search detailed in the systematic reviews.

The literature search was conducted using the Ovid search engine platform with the selection of MEDLINE, Healthstar and global health databases. The search strategy used the terms “smoking cessation”, “quit and win”, “competitions”, “contests”, and “prize” and restricted the search to reviews only. Two relevant systematic reviews were found on the topic of interest. Both of these reviews were appraised by healthevidence.ca with a rating of high quality (overall rating of 7 and 8 out of a maximum score of 10).

The second search strategy aimed to retrieve single studies published following the publication of the two retrieved Cochrane reviews. The last documented literature search conducted in November 2007 by the Cochrane Tobacco Addiction Group. To potentially capture citations that may have not yet been indexed, the search was conducted to retrieve studies published two months earlier from this time point to the present (i.e. September 2007 – April 2010). Again, the search strategy was conducted using the terms “smoking cessation”, “quit and win”, “competitions”, “contests”, and “prize” (see Appendix 2 for details pertaining to this search). The most recent search was conducted on April 20th, 2010. The Literature Search Flowchart can be found in appendix 3. The librarian consultant also conducted a cited reference search of the two relevant systematic reviews using the Web of Science platform. This was done in order to ensure all citations pertaining to the topic of interest were retrieved.

6.1 Inclusion/Exclusion Criteria

Studies were restricted to research published in the English language only. Types of studies included were systematic reviews, randomized controlled trials or controlled trials with baseline measures and post-intervention outcomes. The study population was adults (defined as smokers 19 years and older) who were daily smokers. The outcomes of interest were studies reporting either short-term cessation rates (cessation rate at one month) and/or long-term cessation rates (cessation rates reported at 6-months and 12-months) post-intervention. Due to difficulties of attributing cessation rates beyond the 12-month interval to an individual's participation in a quit and win contest, reviews that examined cessation rates beyond the 12-month time period were excluded.

6.2 Search Results

Search Strategy #1: Two Cochrane Systematic Reviews met the inclusion criteria (2,5).

Search Strategy #2: Twenty-one studies were retrieved and three were relevant to the research question. Of three studies, one study was excluded due to its focus on rural areas(15), and a second as it did not include a control group (16). The final search strategy yielded one cohort study relevant to the research question (17).

7 Critical Appraisal and Synthesis of Findings

7.1 Critical Appraisal Tools

The primary tool used to critically appraise the systematic reviews retrieved for this report was the validity tool available from [health-evidence.ca](http://health-evidence.ca/downloads/QA%20tool_Doc%204.pdf) (http://health-evidence.ca/downloads/QA%20tool_Doc%204.pdf). Both reviews retrieved for the research question were appraised by health-evidence.ca providing an overall scoring of 8/10 and 9/10.

In addition to the validity tool, the Critical Appraisal Skills Programme (CASP) tool available from the Public Health Resource Unit in the United Kingdom was used to document details specific to the overall quality of the systematic review (<http://www.phru.nhs.uk/pages/phd/resources.htm>). This tool also provided questions specific to assessing the applicability and transferability of the study findings to the local context and the implications for policy and practice (questions 8-10). In addition, single studies retrieved for the review were appraised using the CASP tool specific to the relevant study design (e.g. cohort studies). A summary of the studies included in this review can be found in the data extraction table of appendix 4.

7.2 Synthesis of Findings - Studies included in this review

Although there is a large body of literature describing Quit and Win contests at the local, national and international level, evaluations have not been implemented using rigorous trial standards. In a systemic review of Quit and Win Contests, only five studies which compared quit and win contests were compared to a no-contest control group (18-22). One of the five studies (Lando 1991a) was a randomized controlled trial while three were controlled trials without

random allocation (Bains, 2000; McAlister, 2000; Hahn 2005). The fifth study was an observational comparison study (Hawk, 2006). This paper also examined a companion systematic review conducted by Cahill and Perera, 2009 on the topic of competitions for smoking cessation to address two of the sub-research questions.

Since the publication of these two reviews, only one study met the inclusion criteria pertaining to our practice question. This study (van Osh, 2009) was critically appraised as weak for its study design and reporting of findings and is excluded from further discussion.

7.3 Study Results

7.3.1 Description of Studies

Studies included in the review differed in the type of intervention provided as well as in the methodology used to examine the program's effectiveness. These differences are described in greater detail below:

Types of Intervention Provided: Hahn (2005) modelled their Quit and Win contest after a program in Toronto, Ontario. The media campaign included paid radio and television advertisement, intensive bill-board promotion, and promotional flyers. The campaign also provided weekly mailings to registrants as well as provided telephone quit assistance to those interested. Hawk (2006) launched a Quit and Win contest coupled with the provision of free nicotine replace therapy (NRT) vouchers. Participants were free to join either or both Quit and Win and NRT components. Additional promotional efforts were conducted to promote the campaign to African American and Latino smokers. Bains (2000) promoted the contests through

local print and radio media as well as through the distribution of promotional print materials.

McAllister used a community trial design that included the promotion of a Quit and Win contest in Russian Karelia. One community (Pitkaranta) was exposed to the Quit and Win campaign while a neighbouring community (Suojarvi) served as the comparison community. Lando (1991) was the intervention the least comparable to the others as it focussed on the effectiveness of self-help print materials. As such, the study did not evaluate the effectiveness of all components of the Quit and Win contest.

Self-reporting bias: Only one study (Hahn 2005) tested for urinary cotinine to validate all participants' claim of abstinence. In the McAlister study, only the potential winners had their claims of abstinence biochemically tested using expired carbon monoxide (CO). Conversely, two studies (Lando, 1991; Bains, 2000) relied on self report or buddy confirmation. Hawk (2006) did not use any attempt to validate respondents' claims of abstinence. The authors acknowledged that self-reported quit rates may be somewhat inflated due to false claims.

Assessment of Quit Status: In the Hawk study, assessment of quit status was conducted at 4 to 7 months post-intervention but was based on a 7-day point prevalence rate of cessation rather than an assessment of continuous abstinence. Hahn (2005) also used a 7-day point prevalence rate of smoking cessation at 3, 6 and 12 months post-intervention. Bains (2000) is the only study that assessed continuous abstinence from cigarettes in the 6-months prior to the interview.

Conversely, two studies did provide sufficient detail on how quit status was assessed. Lando (1991) asked respondents if they currently smoke tobacco, but the definition of "current

smoking” is not clearly defined. Similarly, it is unclear from the McAllister study if the reported quit status reflects continuous abstinence or point prevalence estimates.

7.3.2 Examining Short-term and Long-term Cessation Rates

Results of the studies included in the Cahill and Perera (2008) review are presented below. Quit rates are presented both using intention-to-treat analysis and using responders-only. Intention-to-treat analysis includes all participants randomized at the beginning of the trial (in the denominator) and assumes those lost to follow-up to be continuing smokers. The study by Hahn (2005) was the only study that used biochemically validated measures to confirm self-reported quit rates and also routinely cross-checked with the testimony of a nominated ‘buddy’.

Hahn, McAlister and Bains found significant differences between the intervention and control groups at one year following the contests. However, all studies acknowledged limitations to their study findings including small samples sizes and relatively high participant attrition at 12-month follow up. In addition, most authors reported significant baseline differences between the intervention and control groups.

Study	Cessation Rates Using Intention-to-Treat Analysis	Cessation Rates Using Respondent only	Validation of Cessation Rates
Hawk, 2006	4-7 months: 18% (59/326) Quit and Win 16% (47/300) NRT 17% (39/224) Combined	4-7 months: 29% (59/204) Quit and Win 26% (47/179) NRT 27% (39/143) Combined	Self-reported
Hahn, 2005*	12 months: (biochemically validated) 7.3% (36/494) Quit & Win 0.6% (3/512) controls	12-months: 24.6% (77/313) Quit & Win 8.1% (25/307) Control	Urinary cotinine (for all claims); buddy confirmation
Bains 2000*	12-months: 16.9% (39/231) intervention 0.1% (4/385) Control	12 month: 19.5% (39/200) Q&W 0.1% (4/325) Control	No biochemical validation. “Buddy” confirmation
McAlister 2000*	12-months: 14% (26/176) Quit and Win 1% (2/202) control	12 month: 26% (26/102) intervention 2% (2/85) control	Self-reported Only potential winners tested (expired carbon monoxide)
Lando (1991)	7-months: 5.5% (11/200) Quit and Win 5% (10/200) Quit for Good 4.7% (8/170) Control	7-months: 6% (11/184) Quit and Win 5.3% (10/189) Quit for Good 5.4% (8/148) Control	Self-reported

* = statistically significant differences between intervention and control group

NRT = Nicotine Replacement Therapy

7.3.3 Effects of Moving Smokers through the Stages of Change

Only one of the studies aimed to explore patterns of movement through the stages of change among smokers (8). Members of the cohort were classified by their baseline stage

(precontemplation, contemplation, preparation, action) and assessed again at 12-months. Follow-up interviews asked staging questions to determine if smokers had regressed, remained in the same stage or progressed to one or more stages. Regression to a previous stage was common although it was lowest among contemplators and highest among those in the action stage. Conversely, progression of at least one stage was highest among precontemplators and got consistently lower with higher stages. The authors note that it became incrementally more difficult for the smoker to move through and then maintain progress as they got closer to sustained maintenance. Among Quit and Win participants, those classified in the action stage at baseline did not show differences in movement between the various stages by age, sex, level of education and two measures of smoking.

7.3.4 Who Signs Up for Quit and Win Contests?

Participants who take part in an intervention that offers material rewards may be differently motivated from those who sign up for other cessation methods. This may be reflected by baseline differences observed between the intervention and control groups as well as by differential relapse rates. Bains (2000) observed that those who entered the Quit and Win contests were predominantly female, and compared with the comparison group, were younger, more highly educated, more likely to be employed and more likely to be working as a semi-professional or professional. Hahn (2005) reported similar baseline differences between the intervention and control group while Lando (1991) reported a higher proportion of manual or blue-collar workers. Studies have suggested that the tendency for a higher number of younger, employed and better educated individuals participating in quit and win contests may be attributed in part to the channels used to promote the contest.

7.3.5 Risks and Harms from Using Competitions and Incentives

While the use of incentives may be effective in enhancing participation rates and/or increasing individual motivation to quit smoking, they must also be carefully weighted against the ability to support long-term cessation. Self-reported assessment of quit status may hold some degree of reporting bias and result in inflated quit rates. Specifically, increased rates of deception have been found in studies either by participants falsely claiming to be abstinent, or by non-smokers taking part in a contest and then claiming to have quit smoking (5). The first Quit and Win contest developed from the Minnesota Heart Health Program found 32% of participants quit smoking at one-month. However, 16% of those originally claiming to have quit at one month were found to have falsely reported their cessation status (1). One Australian study drew a sample of 300 entrants who had participated in a national stop-smoking lottery in which the main prize was a car. The study reported that 34% of those who entered were either never smokers or ex-smokers at the time they signed up for the contest even though a condition of entry was being a verified current smoker (23).

Of the five studies included in the review by Cahill and Perera (2008), only one aimed to validate every claim of abstinence by assessing cotinine levels (Hahn, 2005). In this study, the biochemically validated quit rates at 12 months following the contest were 7.3% in the intervention group and 0.6% in the controls. These rates were significantly lower than the 12-month self-reported abstinence rates of 24.6% and 8.1% respectively.

7.3.6 Does the Type of Prize Promoted Affect Participation Rates?

The type of incentive varied across studies and included cash prizes, vouchers for goods and services, state lottery tickets and prize draws. The systematic review by Cahill and Perera (2009) found that the type or size of reward did not affect long-term cessation rates.

A common assumption in the cessation field is that incentives improve participation rates leading to higher quit rates (24). The systematic review by Cahill and Perera (2009) did not find this to be the case. Competitions and rewards may attract more people to make a quit attempt than might otherwise do so, but cessation rates remained the same as for non-contestants. Studies that were included in this review found higher early and medium quit rates for the intervention group but these effects did not survive over the long-term and tended to dissipate when rewards were no longer offered.

8 Summary of Findings

The following summary is based on study findings reported by Cahill and Perera (2008):

1. To date, no randomized controlled trials have shown quit and win contest to be effective in producing short-term and long-term cessation rates among program participants. Controlled studies have found increases in quit rates among contest participants compared to control groups, however the estimates are based on small sample size, high attrition rates and lack of biochemical validation of cessation, making it difficult to draw firm conclusions.
2. Population-level impact suggests that the effect of contests on community prevalence of smoking is small, with less than one in 500 smokers quitting because of the contest. Using the number of individuals in Peel who participated in the 2010 Driven to Quit Challenge, this would translate to approximately 3 out of 1,572 smokers quitting because of the contest.
3. Cessation rates reported in Quit and Win studies should be interpreted with caution as they may be biased due to baseline differences between intervention and control populations. They may also potentially lead to false reporting of smoking status at initiation and quit status at follow-up among program participants.
4. The study by Hahn (2005), the most rigorously designed of the included studies, demonstrated only marginal benefits in participating in quit and win contests. However, study estimates should be interpreted with caution as they are based on a relatively small number of participants, with significant differences between the two groups at baseline.

9 Applicability and Transferability

Region of Peel Public Health staff involved in cessation activities (manager, supervisor, front-line practitioners) were asked to independently complete the applicability and transferability tool available from the National Collaborating Centre for Methods and Tools (NCCMT)

<http://www.nccmt.ca/registry/view/eng/24.html>. The tool aims to account for the contextual and situational factors which influence a public health program. Dr. Donna Ciliska, Scientific Director of NCCMT, facilitated a discussion with Region of Peel Health staff using the applicability and transferability tool.

When presented with the research results, committee members supported the report's recommendation to redirect resources for the *Driven to Quit* contest towards other cessation activities. The following discussion points emerged through the applicability and transferability process:

9.1 *Applicability*

Political Acceptability or leverage:

- The campaign has been running in the province for a number of years. Committee members identified the strong support for the contest among public health practitioners in the tobacco field and discussed their concern specific to communicating to external stakeholders the decision to redirect resources towards other cessation activities.

- Participation in the Provincial Quit and Win campaign has benefits beyond contest participants. Specifically, it helps connect tobacco practitioners to others in the field and facilitates provincial networking for other tobacco-related initiatives.
- Peel Health receives Ministry of Health Promotion and Canadian Cancer Society funding to help support the provincial contest. Concerns were identified that refusal of this funding would be negatively perceived by the public health community and potentially impact future opportunities for tobacco-related funding.

Social Acceptability:

- It was recognized that eliminating Peel Public Health's endorsement of the program may have little effect on the campaign's promotional efforts (as they are perceived by members of the public). This is due to heavy promotional efforts conducted by external partners such as the Canadian Cancer Society. Members of the public would still be able to sign up for future contests even if Peel Public Health chooses to not support campaign efforts.
- It was recognized that Peel Public Health must be accountable to members of the public. We have an ethical duty to ensure our programs and services are reflective of the research evidence that offers the maximum benefit for Peel's population. However, other members felt that deontological ethical arguments could be used to support continuation of the contest. In other words, the program can arguably be said to be successful even if only one person is found to benefit from the program.

Available Essential Resources (Personal and Financial):

- The cost (paid media and staff time) to support the campaign was estimated to be approximately \$20,000. Group members agreed that funds to support the program could potentially be redirected to other cessation activities that are reflective of a broader reach and stronger research evidence.

9.2 Transferability (Generalizability)

Magnitude of Health Issue in Local Setting:

- Interventions that are aimed to reduce adult smoking rates in Peel are part of the health department's 10-year strategic priorities. Members discussed the fact that the decision to no longer support the Driven to Quit contest did not imply that Peel Public Health should redirect funding away from cessation activities. Rather, it was acknowledged that efforts should be made to understand programs and services that are supported by stronger research evidence.

Magnitude of the “reach” and cost effectiveness of removing the intervention:

- Current evaluation measures for the Driven to Quit Campaign are restricted to process indicators. For example, capturing the number of participants signing up for the contest is used to assess campaign reach. It was recognized that assessing quit rates among campaign participants is also an important indicator to assess program success. It was recognized that future campaign evaluation efforts should address this evaluation limitation by emphasizing more objective outcomes (i.e. quit rates).

- Peel Public Health management noted that use of cessation clinic services does not increase during the promotion of the contest. Hence, there is no evidence to suggest that the contest can help increase awareness and/or use of local cessation services in Peel.

Target Population Characteristics:

- Members agreed that the study populations and cessation behaviours as described in the literature review are likely comparable to individuals who participate in the Driven to Quit contest in Peel.

10 Recommendations and Next Steps

Based on the literature review and the applicability and transferability assessment, the following recommendations and next steps are proposed:

Recommendation:

1. The Region of Peel Health Department will request from the Ministry of Health Promotion and Sport that financial resources to support the Driven to Quit contest be redirected towards other smoking cessation activities in Peel.
2. Further, the Region of Peel Health Department will undertake a review of the literature to explore effective cessation strategies within a culturally diverse population.

Next Steps:

3. Obtain comments and feedback of this report from key stakeholders in the public health sector and academia.
4. Initiate dialogue with the Ministry of Health Promotion and Sport to discuss redirecting annual funds to support the campaign towards other cessation activities that appropriately respond to local public health needs.
5. Develop a communication plan to build internal and external support for the proposed recommendation. This may include briefing notes aimed to respond to Peel's position on the *Provincial Driven to Quit* contest and to address counter-arguments in support of the contest.

6. Conduct a systematic review of the literature to explore other cessation interventions that could be broadly shared with provincial stakeholders.
7. Continue to build staff capacity in critically appraising literature to support evidence informed decisions in public health practice.

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Appendices

Appendix 1: Conceptual Model of Physician Communication Strategies to Influence Practice

Appendix 2: Literature Search Flowchart

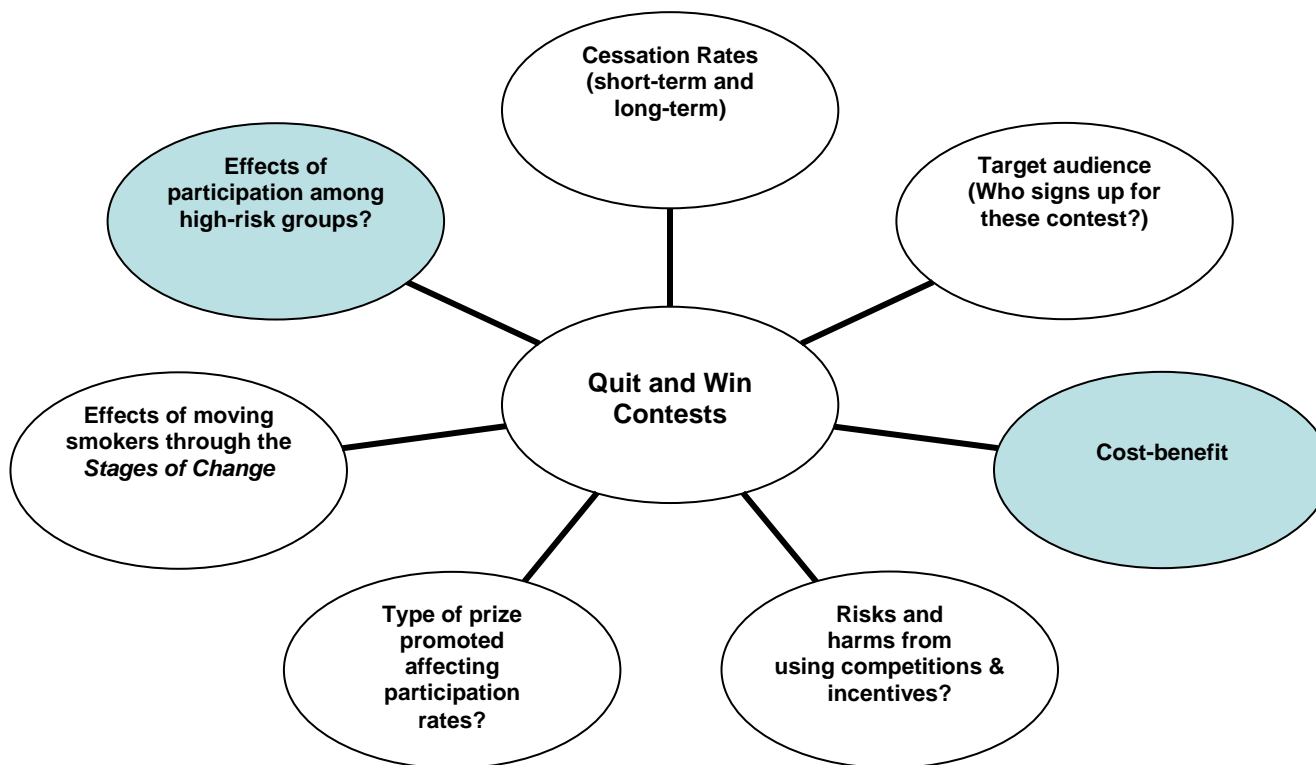
Appendix 3: Data Extraction Table for Systematic Reviews

Appendix 4: Data Extraction Table for Systematic Reviews

Appendix 5: Data Extraction Sheet for Single Studies Included in Cahill & Perera (2008) Review

Appendix 6: Table of Excluded Studies

Appendix 1: Analytical Model of Quit and Win Contests



Note: Research questions considered out-of-scope for this review were shaded in blue.

Appendix 2: Search Strategy

Search Strategy #1: Search for Systematic Reviews

Ovid MEDLINE(R) 1950 to June Week 1 2010

#	Searches	Results
1	Smoking Cessation/	14727
2	smok\$ cessat*.tw.	10793
3	1 or 2	18397
4	((quit adj win*) or (competition* or contest* or prize*)).tw.	52410
5	3 and 4	131
6	limit 5 to yr=2007-2010	28
7	meta-analysis.mp.pt.	40182
8	(search or systematic review or medline).tw.	131795
9	cochrane database of systematic reviews.jn.	6701
10	or/7-9	157046
11	6 and 10	4

Search Strategy #2: Search for Single Studies (Published Post-Reviews)

Ovid MEDLINE(R) 1950 to June Week 1 2010

#	Searches	Results
1	Smoking Cessation/	14727
2	smok\$ cessat*.tw.	10793
3	1 or 2	18397
4	((quit adj win*) or (competition* or contest* or prize*)).tw.	52410
5	3 and 4	131
6	limit 5 to yr=2007-2010	28

Ovid MEDLINE(R) 1950 to June Week 1 2010

#	Searches	Results
1	Smoking Cessation/	14727
2	smok\$ cessat*.tw.	10793
3	1 or 2	18397
4	((quit adj win*) or (competition* or contest* or prize*)).tw.	52410
5	3 and 4	131
6	limit 5 to yr=2007-2010	28
7	randomized controlled trial.pt.	292503
8	(randomized or placebo).mp.	449885
9	clinical trial.pt.	462433
10	or/7-9	674912
11	6 and 10	4

HealthSTAR, Ovid MEDLINE(R)

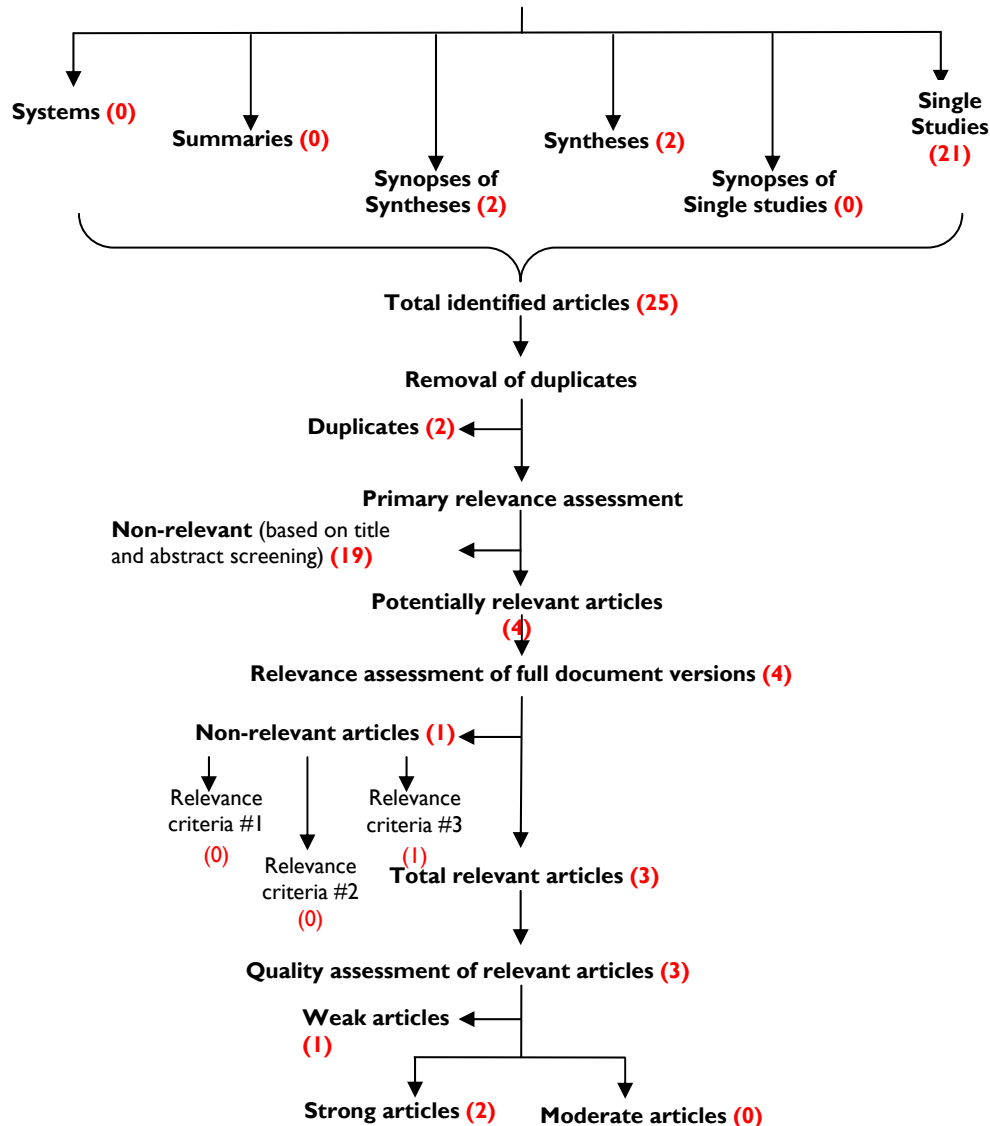
#	Searches	Results
1	Smoking Cessation/	30673
2	smok\$ cessat*.tw.	22161
3	1 or 2	37975
4	((quit adj win*) or (competition* or contest* or prize*)).tw.	72409
5	3 and 4	270
6	limit 5 to yr=2007-2010	53
7	remove duplicates from 6	28
8	from 7 keep 28	1

Global Health 1973 to May 2010

#	Searches	Results
1	smok\$ cessat*.tw.	2146
2	((quit adj win*) or (competition* or contest* or prize*)).tw.	5032
3	1 and 2	18
4	limit 3 to yr=2007-2010	10

Appendix 3: Literature Search Flowchart

(Date of Search: April 20th, 2010)



Relevance Criteria:

Criteria #1: English only

Criteria #2: Adult Smokers

Criteria #3: Systematic reviews, RCTs, or controlled trials with baseline measures and post-intervention outcomes

Source: Health-evidence.ca. (2009, November 25). *Keeping Track of Search Results: A Flowchart*. Retrieved March 1st, 2010.

Link to tool: http://www.health-evidence.ca/public/tools/10/Keeping_Track_of_Search_Results_-_A_Flowchart.ppt.

Appendix 4: Data Extraction Table for Systematic Reviews

Items Reviewed	Review #1 (Cahill & Perera, 2008)	Review #2 (Cahill & Perera, 2009)
General Information and Quality Rating for Each Review		
1. Author(s) and Date	Cahill & Perera, 2008	Cahill & Perera, 2009
2. Country	United Kingdom	United Kingdom
3. Quality Rating	High (9/10)	High (9/10)
4. Objectives of Review	1. To determine whether quit and win contests can deliver higher long-term quit rates than baseline community quit rates. 2. To determine the population-level impact of quit and win contests.	1. To determine whether competitions and incentives lead to higher long-term quit rates. 2. To determine the relationship between incentives and participation rates.
Details of Each Review		
5. Number of primary Studies Included	5	17 Of these 7 were in clinics or health centers and 10 were in worksites.
6. Types of Studies	Randomized controlled trials and quasi-experimental studies	Randomized controlled trials and quasi-experimental
7. Search Period	Most recent search date: November 2007	Most recent search date: December 2007
8. Number of databases searched	5 (Cochrane Tobacco Addiction Group Specialized Register, MEDLINE, EMBASE, CINAHL, PsycINFO) -also conducted hand searching of specialist journals, search of grey literature, and google scholar	5 (Cochrane Tobacco Addiction Group Specialized Register, MEDLINE, EMBASE, CINAHL, PsycINFO) -also conducted hand searching of specialist journals, search of grey literature
9. Inclusion and Exclusion Criteria	<u>Inclusion:</u> Randomized controlled trials and controlled studies with baseline and post-intervention measures	<u>Inclusion:</u> -Randomized controlled trials, allocating individuals, workplaces, groups within workplaces, or communities to experimental or control conditions; -Also considered controlled studies with baseline and post-intervention measures <u>Exclusion:</u> -trials aimed at pregnant smokers and adolescent smokers, trials aimed at healthcare workers (physicians, nurses) for the delivery of smoking cessation interventions

Items Reviewed	Review #1 (Cahill & Perera, 2008)	Review #2 (Cahill & Perera, 2009)
Details of Interventions Included in Review		
10. Description of interventions	Contests that encourage smokers to quit for at least 30 days.	Contests, competitions, incentives, lotteries, raffles, and contingent payments, to reward cessation and continuous abstinence in smoking cessation programs.
11. Intervention settings	Contests delivered either locally, regionally, or nationally	Any setting (workplace, community or healthcare setting)
12. Theoretical frameworks	N/A	N/A
13. Target groups	Adult smokers, either gender	Adult smokers, of either gender
Outcome Measurements in Review		
14. Primary Outcomes	Cessation rates for at least six months from the start of the intervention.	Cessation rates for at least six months from the start of the intervention
15. Secondary Outcomes	Population impact (<i>participation rate x cessation rate</i>) wherever the data are available. This estimate accounts the proportion of the target population entering the contest.	-Dose response assessment of levels of incentives -Rates of recruitment to and participation in smoking cessation programs
Results of Review		
16. Meta-analysis conducted?	No	Yes
17. Main Results of Review	<ul style="list-style-type: none"> - No RCTs have shown that quit and win contests are effective in producing short-term and long-term smoking cessation rates. However, controlled studies suggest that there are marginal increases in quit rates among participants compared to control populations. - Assessment of population level impact suggests that one in 500 smokers in communities targeted by quit and win contests quit as a result of the contest. 	<ul style="list-style-type: none"> - Incentives may improve compliance while they are in place, but once they are withdrawn, the normal pattern of relapse will establish itself. - None of the studies demonstrated significantly higher quit rates for the incentives group than for the control group beyond the 6-month assessment. - The type of reward and whether or not smokers commit their own money to the program make little difference to the success of the quit attempt. - Competitions and rewards may attract more people to make a quit attempt than might otherwise do so, but rates remain the same as for non-contestants.
18. Comments/Limitations	<ul style="list-style-type: none"> - There is considerable bias in study results due to differences between participants and controls. - Reported cessation rates should be interpreted with caution due to challenges in outcome ascertainment that arise when using self-reported cessation rates. 	<ul style="list-style-type: none"> - Note: Studies examining Q&W contests were not the focus of this review – the study aimed to determine whether the use of competitions and incentives lead to higher long-term quit rates; also examined the relationship between incentives and participation rates. - All studies included in this review used some form of biochemical validation to confirm the smoking status of those claiming abstinence. This information is of value to this literature review as it aims to understand how congruent self-reported quit rates are with biochemical validation.

Appendix 5: Data Extraction Sheet for Single Studies Included in Cahill & Perera (2008) Review

Items Reviewed	Hawk (2006)	Hahn (2005)*	McAlister (2000)*	Bains (2000)*	Lando (1991)
1. Study Methodology					
Study Design	Observational comparison study	Quasi-Experimental/ Controlled Trial (without random allocation)	Community Trial (without random allocation)	Quasi-experimental/ Controlled trial (without random allocation)	RCT
Sample Size	N = 1769 849 (Q&W) 690 (NRT voucher) 230 (Q&W =NRT) 524 (control)	N = 1006 494 (intervention) 512 (control)	N = 378 176 (intervention) 202 (control)	N = 616 231 (intervention) 385 (control by random telephone survey)	N = 570 200 (Quit and Win) 200 (Quit for Good - Brochure) 170 (control)
Population	New York, U.S.A	Kentucky, U.S.A	Russian Karelia Pitkaranta (intervention) Suojarvi (control)	Eastern Ontario, Canada	Minnesota, U.S.A.
Random Allocation	No	No	No	No	Yes (but allocation method not described)
Data Collection	Telephone survey of a random sample of participants conducted 4 to 7 months post-intervention.	Tobacco use and quit patterns at 3, 6 and 12 months	Survey of tobacco use 1-year post-intervention	Baseline survey with intervention and control group; Follow-up survey 1-year	Individuals identified as smokers during a community screening were invited by telephone to take part in study. Interested participants (82%) were randomly assigned to three groups
2. Description of Control Groups					
Method of Contacting Control Group	Of the entrants, 40% Quit and Win and 46% NRT voucher participants were randomly selected for telephone follow-up. All 230 combination group follow-up.	Control group participants (n=512) randomly selected from outside the media campaign geographic area using random digit dialing.	A random telephone sample of persons surveyed in the neighbouring community (Suojarvi).	A reference population of adult smokers was selected by random telephone survey from the same geographic area.	A total of 170 respondents were allocated to the wait-list control group while the rest were allocated into either the Quit and Win group or the Quit for Good group.

Items Reviewed	Hawk (2006)	Hahn (2005)*	McAlister (2000)*	Bains (2000)*	Lando (1991)
Assessment of Quit Status	Follow-ups conducted over 3.5 month period using a 7-point prevalence assessment of quit status. Comparison group based on cross-sectional telephone survey of smokers in the same geographical area during roughly the same time period.	Participants asked if they currently smoke even just in a while. Also asked if they had not used any form of tobacco within the past 7 days. Seven-day point prevalence assessed at 3, 6, and 12 months post-intervention.	Cessation rates in the two districts compared via telephone survey 1- year later (n=102 intervention community, n=89 control community.) Actual assessment of quit status (continuous abstinence versus point prevalence estimate not clear)	Follow-up telephone interviews at one year to assess continuous abstinence from cigarette in the 6-months prior to interview.	Subjects were asked if they currently smoked cigarettes. Those who answered no were counted as abstinent.
Comparison of Intervention Group with Control Group	Compared to population estimates from the cross-sectional survey, those in intervention programs were younger, more highly educated and were heavier smokers. Also a higher proportion of minority smokers in the intervention groups.	Treatment group participants were more ready to quit, younger, more educated, and more likely to be female than the control group. Treatment and control group subjects differed significantly on their stage of change. (70% in treatment group in preparation stage vs. only 16% of those in the control group)	Not detained in study. Authors note that control community was very similar to intervention community with respect to demography and economic conditions.	Intervention group were on average younger, heavier smokers, better educated and more likely to be female and more likely to be employed compared to control group.	Those in the intervention group were more likely to be male, and to have attached a higher level of education. Those in the control group were more likely to report using other forms of tobacco.
3. Description of Intervention					
Description of Intervention	Participants could enroll in either or both Quit and Win contest and NRT voucher give-away. Intensive media campaign to promote Q&W contest with specific marketing to visible minorities. Quit month: January	A community quit date that required participants to quit using tobacco for 30 days to be eligible for large cash prizes. Also included media campaign, the provision of online/telephone cessation assistance and worksite promotion.	A continuous Quit and Win contest. Smokers could register whenever they wanted and were eligible for prizes if they remained abstinent at least for 4 continuous weeks. Draw for prizes were held once a month.	Quit and Win challenge in which smokers pledge to quit for one month. Local print and radio media used to promote contest. Educational materials and resources sent to participant.	Assessed the effectiveness of self-help materials in achieving smoking cessation. (This study focused specifically on the print materials used for Quit and Win contests and not the overall contest).

Items Reviewed	Hawk (2006)	Hahn (2005)*	McAlister (2000)*	Bains (2000)*	Lando (1991)
Type(s) of Intervention	Participation in 30-day Quit and Win contest; NRT voucher giveaway; or combination of both	30-day Quit and Win contest.	A continuous contest with registering smokers required to quit at least 4 weeks to be eligible to win a prize.	30-day Quit and Win contest (March 1995)	Randomization of three groups: 1) Quit for Good materials 2) Quit and Win materials 3) control
4. Outcome Measurements					
Primary Outcome	Quit status at 4-7 month cessation using a 7-day point prevalence assessment of quit status	Quit status at 12 week and 3,6 and 12 months	12-month cessation rates (no definition provided of quit smoking status).	Abstinence from smoking in the 6-months prior to interview	7-month cessation rates [in practice 3-4 months]
Secondary Outcome	Predictors of smoking abstinence	7-day point prevalence at 3, 6, and 12 months	---	----	---
5. Main Results					
Cessation Rates (Using ITT)	4 to 7-month cessation: 18% (Q&W) 16% (NRT) 17% (Both)	12-month cessation (using biochemical validation): 7.3% (36/494) intervention versus 0.6% (3/512) control *	12-month cessation: 14% (26/176) intervention versus 1% (2/202) control*	12-month: 16.9% intervention 1% (4/385)control*	7-month: 5.5% Quit and win 5% Quit for Good 5.4% control
Cessation Rates Using Respondents Only	4 to 7 months: 29% (Q&W) 26% (NRT) 27% (Both)	12-month: 24.6% (77/313) intervention versus 8.1% (25/307) control*	12-month: 26% (26/102) intervention versus 2% (2/85) control*	12-month: 19.5%(39/200) intervention 1% (4/325) control*	7-months: 6% (11/184) (Quit and Win) 5.3% (10/189) (Quit for Good) 5.4% (8/148) (Control)
Validation of Cessation Rates	Self-reported	Urinary cotinine (all claims); Support buddy confirmation	Self-reported Only potential winners tested (expired CO)	Self-reported	Self-reported
Population Impact (Calculated by multiplying achieved quit rate by the % smokers who participated in contest)	---	---	1 in every 500 smokers	1 in every 588 smokers	N/A (distributive effects of randomization does not permit estimations of population level impacts)

Items Reviewed	Hawk (2006)	Hahn (2005)*	McAlister (2000)*	Bains (2000)*	Lando (1991)
6. Additional Notes					
Comments		<p>Also conducted sub-group analysis of Q&W effectiveness for low SES populations</p> <p>Only 59% of self-reported quitters who agreed to provide a urine sample actually did so.</p>	<p>This study is an ecological assessment of quit status in the intervention and control communities. The authors did not ask if participation in quit and win contest was related to participants' quit status.</p>	<p>Winner had to provide name of a "buddy" to verify his or her smoking status at 3 months after the contest was initiated.</p>	<p>Individuals recruited from a group of people who had already signed up to receive MHHP (Minnesota Heart Health Program) resources</p> <p>More than half of the smokers (24/53) had stopped smoking before the materials were sent out. ITT and self-reported rates stated above represent these individuals removed from analysis.</p>
Limitations	<p>No direct comparisons specific to socio-demographic factors were reported or quantified between the intervention and control groups</p>	<p>Used several strategies along with 30-day contest including weekly postcards, online quit assistance, one-on-one telephone quit assistance, and media campaign. It is therefore difficult to ascertain success of Q&W alone.</p> <p>The authors note significant differences between the intervention and control groups (this was controlled for in the analysis)</p>	<p>The authors note that communities in intervention and control were similar; no direct comparisons were reported or quantified.</p> <p>Authors note that greater success in the experimental group may be attributed to more intense activity and interest in smoking issues among health workers in Pitkaranta.</p>	<p>The authors note significant differences between the intervention and control groups</p> <p>The sample of random smokers (control group) may have been biased toward subpopulations that are more likely to be at home which may have exaggerated differences in quit rates between these two groups.</p>	<p>Follow up intended to occur at 7 months was conducted at 3-4 months after distribution of brochures – results for this group may therefore not represent long-term quit rates.</p> <p>The study concentrated on the effectiveness of self-help print resources. It is therefore not possible to assess the effectiveness of a fully functional contest.</p>

ITT = Intention to Treat Analysis

CO = Carbon Monoxide Levels

*statistically significant differences between intervention and control group were found for the following studies: (Hahn (2005), McAlister (2000) and Bains (2000)

Appendix 6: Table of Excluded Studies

Items Reviewed	vanOch (2009)	Thomas (2010)
1. Study Design	Cohort Study	Cohort Study (without controlled group)
2. Sample Size	N = 1795 1551 (Q&W) 244 (control)	N = 588
2. Population	Netherlands	University of Minnesota, Saint Cloud State University Saint Cloud Technical College, Hennepin Technical College
Type(s) of Intervention	30-day Quit and Win contest + 5 supportive email messages -participants offered the option of receiving a computer-tailored cessation advice, support from telephone coach and/or enroll in an e-mail counseling program	30-day Quit and Win contest One of the universities offered free 1 month supply of NRTs
3. Data Collection	Data collected by web-based surveys at baseline (pre-contest) and 1 and 2 months post-contest.	Baseline data collection (unclear) Email survey at 30-days To discourage nonsmoking participants from joining the contest, urine samples were collected from all participants at baseline.
4. Primary Outcome	Short term cessation (1-month)	Short term cessation (1-month)
5. Secondary Outcome	Long-term cessation (12-months)	---
Cessation Rates (Using ITT)	1-month: 35.4% intervention 10.9% control 12-month: 11.9% intervention versus 2.9% control	1-month: 53.2% self-reported cessation for the entire contest period
Cessation Rates Using Respondents Only	1-month: 57.7% intervention 15.3% control 12-month: 27.1% intervention versus 5.6% control	1-month: 72.1% self-reported cessation for the entire contest period Of those who claimed abstinence at the end of the contest 55.3% (114/206) resumed smoking 2 weeks post-contest.

Items Reviewed	vanOch (2009)	Thomas (2010)
Validation of Cessation Rates	Self-Reported	Self-reported (note: urine samples collected to confirm smoking status at baseline)
Impact Rate/Numbers Needed to Treat (NNT)	----	----
Comments and Limitations	<p>Comparison between the study groups showed that respondents in the control group were older, had lower education; The control group was also found to have smoked longer, to have made less previous quit attempts and to have smoked their first daily cigarettes earlier compared to those in the Q&W group. (This suggests that control group tended to be more strongly nicotine dependent compared to the intervention group making comparisons between these 2 groups very difficult)</p> <p>Difficult to assess effectiveness of Q&W contest (on its own) as 928/1551 (60%) participants used additional cessation supports such as (e-mail counseling and messages, computer-tailored cessation advice, telephone coach and NRTs)</p>	<p>The contest aimed to discourage nonsmoking participants from entering the contest by requiring participant to provide a urine sample at baseline.</p> <p>The study population was specific to young adults attending U.S. colleges with existing indoor smoke-free policies. This may affect generalizability of the study's findings.</p> <p>The study design lacked the inclusion of a control group.</p>
Reason(s) for Study Exclusion	<p>Non-equivalence between treatment and control groups on important measures (age, education level, level of addiction). This indicates that the study groups were not entirely comparable influencing study results.</p> <p>High attrition rates from baseline to follow-up and the finding that attrition was not random between treatment and control groups.</p>	<p>Study design did not include a control group</p>