



Workplace Interventions for Smoking Cessation

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Key Messages

Effective Interventions – What Works?

- Individual and group interventions are the most effective smoking-cessation interventions, in particular: individual counselling, group therapy, and pharmacotherapy.
 - Self-help and social support interventions are less effective at helping employees stop smoking.
- Smoking-cessation interventions that are effective in workplaces are generally those with proven effectiveness in non-workplace settings. Research indicates that there currently are no smoking-cessation interventions, with proven effectiveness, that are unique to the workplace setting.

Interventions with Limited Effectiveness

- Incentives (typically monetary) might motivate and/or encourage smokers to quit and may improve recruitment into workplace programs. However, there is not enough evidence to indicate that incentives will directly increase quit rates among employees.
- Comprehensive workplace smoking-cessation programs and enriched workplace environments do not lead to significant decreases in overall smoking rates in workplaces.
- There is limited, inconclusive and/or weak evidence as to the effectiveness of the following workplace smoking-cessation interventions: workplace health assessments with feedback, online cessation supports, and comprehensive programs that integrate cessation support with occupational health and safety programming.

Executive Summary

Research Question

What are effective workplace smoking-cessation interventions to reduce the number of smokers in the workplace?

Context

Tobacco use among Region of Peel residents continues to be an issue; rates are particularly high among those aged 19-29 (1). Workplaces are a potential setting to reach smokers in Peel, including the young adult population. There are approximately 68,900 Peel residents who are smokers and work in the Region of Peel (1,2). In February 2011, the Peel Public Health (PPH) Tobacco Prevention, Tobacco Enforcement and Workplace Health Teams conducted a rapid review of the literature related to workplace smoking-cessation strategies.

Methods and Results

A search of both the academic and grey literature yielded 66 results. Of these results, 64 were excluded based on primary and secondary relevance assessment. The remaining NICE guideline and Cochrane review were appraised as strong quality and were included in this rapid review.

Synthesis of Key Findings

- Individual counselling, group therapy, and pharmacotherapy (e.g., nicotine replacement therapy) are the most effective smoking-cessation interventions. Self-help and social support interventions are less effective at helping employees stop smoking.
- There aren't significantly effective smoking-cessation interventions that are unique to the workplace setting.

- Incentives might motivate smokers to quit and may improve program recruitment, however there is not enough evidence to indicate that incentives will directly increase quit rates.
- Comprehensive workplace smoking-cessation programs and enriched workplace environments do not lead to significant decreases in overall smoking rates in workplaces.
- There is limited, inconclusive and/or weak evidence as to the effectiveness of the following interventions: workplace health assessments with feedback, online cessation supports, and comprehensive programs that integrate cessation with occupational health and safety.

Applicability and Transferability

- The most appropriate role for PPH in workplace smoking cessation is to support and engage Peel employers and organizational leaders.
- An employer's requirement to meet Smoke-Free Ontario Act (SFOA) regulations provides PPH with a key strategic opportunity for engaging workplaces and enforcing the legislation.
- Community-based resources that support smoking-cessation already exist in Peel.

Recommendations

- PPH should not provide direct smoking-cessation services in Peel workplaces.
- PPH should support and engage Peel employers and organizational leaders by: providing them with a business case, communicating the resources available in Peel for smoking adults, and providing additional tools and resources to employers.
- PPH should create an integrated plan for workplace smoking-cessation across the Workplace Health and, Tobacco Prevention and Enforcement Teams. Key components of the plan include: employer education and awareness-building, enforcement of SFOA and referral of employers and organizational leaders to existing community resources.

1 Issue

Tobacco use among Region of Peel residents continues to be an issue, despite the success of local and provincial tobacco prevention and cessation efforts over the past two decades.

Approximately 15% of Peel residents aged 12 and older are smokers, based on the most recent available data from 2009/10 (1). Among Peel adults aged 19-49, twice as many males smoke compared to females. More specifically, young adult males in Peel aged 19-29 have the highest rates of smoking across all age groups at just under 30% (1).

In February 2011, the Peel Public Health (PPH) Tobacco Prevention Team met to plan for the future of tobacco control based on changes in smoking trends and behaviours. At this meeting staff identified workplaces as a potential setting to reach smokers in Peel, including the young adult population. The Tobacco Prevention, Workplace Health and Tobacco Enforcement teams, with management support, conducted a rapid review related to workplace smoking-cessation strategies. PPH staff examined the research to determine whether workplace smoking-cessation interventions (e.g., programs, policies) are effective in helping to address the burden of tobacco in Peel. Specifically, what are effective workplace smoking-cessation interventions to reduce the number of smokers in the workplace?

2 Context

PPH has made it a priority to decrease the burden of tobacco on Peel residents. *Living Tobacco Free* is one of the nine strategic priorities in PPH's 10-year strategic plan. PPH's current comprehensive tobacco-control strategy involves three areas of focus: (i) to prevent the

initiation of tobacco smoking, (ii) to provide opportunities to help smokers quit, and (iii) to protect against second-hand smoke through enforcing the Smoke Free Ontario Act (SFOA) and other local bylaws.

Workplaces are a potential venue for tobacco-control activities, including smoking-cessation policies and interventions. Workplace settings offer access to large numbers of people across a range of age groups and socio-demographic characteristics, including young adults entering or establishing themselves in the workforce. Further, the employed population spends at least a third of their waking hours at work; as such, workplaces may be barriers or facilitators to healthy behaviours.

In 2009/10 approximately 17% of Peel's employed population smoked, totaling just under 119,000 residents; smoking rates were highest (25%) among employed Peel residents aged 20-29 (1). The top three industries of employment among Peel residents are manufacturing, trade, and finance/insurance/real estate/leasing (2). Provincial data reveal differences in smoking prevalence across industries of employment, including high rates in some of the main employment industries for Peel residents. For example, the prevalence of smoking in Ontario is high in construction (31%), real estate rental and leasing (30%), transport/warehousing (25%) and retail trade (20%) (1). Local data is not available.

When examining workplace interventions for smoking-cessation, PPH must consider the proportion of Peel residents working in Peel Region. As the Region of Peel is part of the Greater

Toronto Area, there are many opportunities for employment outside of the Region. Just under 60% of Peel's total employed labour force actually works in Peel (2). Analysis of data on tobacco use and employment in Peel suggests that there are approximately 68,900 Peel residents who are smokers and work in the Region of Peel (1,2).

Just over half of employed Peel smokers have tried to quit smoking. Peel smokers from all age groups averaged 4 to 5 quit attempts in 2007/08. Data on the reasons for quitting are not available (3). Most (85%) Peel smokers, employed and unemployed, have access to a family physician (3). This is an important consideration when identifying program and resource options for smoking cessation.

3 Conceptual Model

The conceptual model emphasizes workplace smoking- cessation interventions. Workplace tobacco prevention and protection are out of scope. The model also highlights influencers on workplace cessation interventions and the collaboration required between PPH, workplaces and other relevant stakeholders. The model was developed in consultation with the Workplace Health, Tobacco Prevention, and Tobacco Enforcement Teams who play a key role in providing tobacco programs and services to Peel workplaces. The conceptual model is presented in Appendix A.

4 Literature Review Question

The research question for the current rapid review is: What are effective workplace smoking-cessation interventions to reduce the number of smokers in the workplace? The research question in the PICO format is as follows:

Population (P) =	employed smokers
Intervention (I) =	workplace smoking-cessation interventions (e.g., programs, policies)
Control/Comparison (C) =	individuals or worksites receiving minimal ¹ to no intervention
Outcome (O) =	smoking reduction and smoking cessation

5 Literature Search & Relevance Assessment

A search for both published and grey literature was conducted in September/October 2011.

The search included the following grey literature sources for summaries/guidelines: the National Guidelines Clearinghouse, the National Institute of Clinical Excellence (NICE), and the Centres for Disease Control and Prevention (CDC) Community Guide. PPH librarians searched the Medline, PsycINFO and Cochrane databases, limiting the search by date (i.e., 2009 onwards) and type of paper (i.e., guidelines, systematic reviews and meta-analyses). In addition, the health-evidence.org database was searched from 2008 to 2011. A supplementary search of the same sources was then conducted in August 2012 with revised date limits (January 2011 to August 2012) in order to retrieve any newly indexed articles. Refer to Appendix B for the detailed search strategy.

¹ For the control/comparison category, 'minimal' intervention typically refers to a less intense form or version of the regular intervention offered. For example, an intervention may include several components such as counselling, pharmacotherapy and self-help materials; the comparison or 'minimal' intervention in this case may be the provision of self-help materials.

Two reviewers assessed the search results for relevancy and mutually agreed upon the most relevant articles. Studies were assessed against the following criteria:

- *Inclusion criteria:* published from 2009 onwards, English language, articles primarily focused on smoking-cessation interventions delivered in workplaces, synthesized evidence (i.e., guidelines, systematic reviews, meta-analyses).
- *Exclusion criteria:* articles focused only on the impact of legislative or organizational bans to eliminate smoking inside workplaces.

6 Results of the Search

The academic and grey literature searches retrieved 83 results in total, 51 from the original search and 32 from the supplementary search. After removal of 17 duplicates, staff conducted a primary relevance assessment by reviewing titles and abstracts; this led to the exclusion of 60 articles.

PPH staff then reviewed the full text of the remaining six documents which included five systematic reviews and one guideline. One of these reviews was found on health-evidence.ca; it was not retrieved in the database search because it was published in 2008 however was deemed very relevant to the research question. After full text relevance assessment, PPH staff selected the NICE guideline and a Cochrane systematic review found on health-evidence.org (Cahill, 2008) for critical appraisal. The search results flowchart is provided in Appendix C.

7 Critical Appraisal

PPH staff used the AGREE II tool and the health-evidence.org quality assessment tool to critically appraise the NICE guideline and Cochrane review, respectively. The NICE guideline rated as strong quality (6/7) and was 'recommended for use'. The guideline received a strong quality rating for several reasons, including, but not limited to: a clearly described scope and purpose, high stakeholder involvement, and rigorous methods for development. The Cochrane review also received a strong quality rating (8/10) due to high methodological rigour. Both the NICE guideline and Cochrane review were selected for inclusion in this rapid review.

8 Description of Included Studies

The following guideline and systematic review were selected for inclusion:

- NICE Guideline (2007; updated in 2011) – Workplace health promotion: how to help employees to stop smoking (4)
- Cochrane Review (Cahill, Moher & Lancaster; 2008) – Workplace interventions for smoking cessation (5)

Although the guideline and review cover similar research areas, they both add value to the rapid review.

8.1 NICE Guideline (2007; updated in 2011)

This document outlines NICE's formal guidance on how employers and other relevant stakeholders (e.g., health professionals, local health authorities) can encourage and support employees in quitting smoking (4). The authors reviewed evidence related to the impact and

cost effectiveness of workplace smoking-cessation interventions. The evidence used to inform the guideline development included: a review of the effectiveness of workplace smoking-cessation interventions, an economic analysis, a survey of current practice and service provision in the United Kingdom, and stakeholder input (4). For the purpose of this rapid review, PPH staff focused on the overall practice recommendations in the guideline and the results of the effectiveness review.

The effectiveness review conducted for NICE describes the evidence on workplace smoking-cessation interventions and includes both synthesized and primary research (6). The authors combined 32 studies of various designs, as follows: two systematic reviews, one meta-analysis, 14 cross-sectional studies, six cohort studies, five randomized controlled trials (RCTs), one longitudinal study, one case-control study, one interrupted time series study, and one qualitative study. Studies were conducted in a variety of workplace settings (e.g., hospital, manufacturing plant, warehouse, university) and were published between 1990 and 2006 (6).

The studies in both the primary and synthesized research included in the effectiveness review were significantly heterogeneous, particularly in their research design and objectives. For example, roughly half of the studies were a cross-sectional design. The cross sectional studies varied in focus, some of which are not relevant to this review. Some of these studies assessed the state of workplace smoking-cessation strategies in a specific jurisdiction and therefore were not as relevant to the current review. The relevant cross-sectional studies examined the relationship between individual or workplace variables (e.g., demographic factors, employee

stress levels, exposure to a workplace smoking ban, organizational characteristics) with employee attitudes and behaviours (e.g., motivation and intention to quit smoking, participation in workplace program, smoking reduction) (6).

The interventions in both the synthesized and primary research were also notably heterogeneous in regard to design, implementation and evaluation. In particular, the interventions varied in both type (e.g., counselling, pharmacotherapy, comprehensive programs) and delivery (i.e., individual-, group-, or whole workplace focused). In addition, the participants, outcomes and type of control/comparison groups varied across studies.

The effectiveness review primarily included interventions focused on individuals or groups. Many of the studies examined the impact of the following, either alone or in some combination, on smoking reduction and cessation: counselling, brief advice (i.e., opportunistic advice given in 5-10 minutes, discussion, negotiation), group behaviour therapy, incentives, self-help materials and nicotine replacement therapy (NRT) (6). The groups receiving interventions were typically compared to control groups receiving no treatment or minimal intervention.

The review also included primary studies with interventions geared towards the workplace as a whole. A few of these studies were relevant to this rapid review as they assessed the impact of an enriched workplace environment on smokers not ready to quit. In these studies an enriched workplace environment typically included worksite cessation support in conjunction with components such as an educational campaign, smoking ban and worksite health promotion

activities (6). The remainder of the whole-workplace-focused studies were not relevant as they examined the impact of some form of jurisdictional smoking ban on cessation and compliance.

Refer to Appendix D for a data extraction table which provides further details on the NICE guideline.

8.2 Cochrane Review – Cahill, Moher & Lancaster (2008)

The Cochrane review by Cahill, Moher and Lancaster examined the impact of workplace smoking-cessation interventions on employee smoking behaviours (e.g., cessation/abstinence rates, prevalence of workplace tobacco use) (5). The authors included RCTs and quasi-randomized controlled trials published from the mid 1980s up to 2007. They selected studies that assessed workplace cessation interventions among employed smoking adults and had a minimum follow-up of 6 months (5). Study quality was assessed on four criteria: randomization, allocation concealment, participant follow-up and biochemical validation of outcomes. The authors also incorporated findings from systematic reviews of non-workplace smoking-cessation interventions into their conclusions, having indicated that intervention effectiveness must be considered in this broader context.

In total, the authors selected 53 primary articles; 37 with interventions aimed at individual employees and 16 with interventions aimed at whole workplaces. The authors then categorized the primary studies by intervention type, as follows (5):

- group intensive behavioural interventions (12 studies),

- individual intensive behavioural interventions (9 studies)
- self-help interventions (9 studies)
- comprehensive workplace programs (8 studies)
- pharmacological interventions (5 studies)
- incentive-based interventions (5 studies)
- environmental or institutional support programs (3 studies)
- social support interventions (2 studies)

Across the primary studies included in the review, the majority of interventions were conducted in a workplace setting; additional settings include medical centres, physician offices and the home (i.e., if internet-based intervention). The interventions were conducted across a range of workplaces (e.g., universities, a telephone company) and industries (e.g., manufacturing, construction) therefore participant characteristics varied.

Just over 70% of the studies included in the Cochrane review used biochemical validation measures such as saliva and urine samples to assess smoking cessation (5). In regard to risk of bias, the authors noted that approximately 75% of the studies failed to perform or describe randomization sufficiently; whether most of these studies used allocation concealment was unclear. Among those studies that reported participation rates, the range varied from 9% to 88% (5).

The primary studies in the Cochrane review varied as to the design and delivery of intervention and control conditions. The individual and group interventions often involved, alone or in combination, some form of counselling, competitions, incentives, risk assessments, NRT and goal setting (5). The groups receiving the interventions were usually compared to control groups with no treatment or a less intensive intervention (e.g., brief advice with no follow-up, self-help materials). The self-help interventions, described in nine studies, typically provided materials such as magazines, videos and/or computer-tailored advice to intervention participants, while providing control group participants with no materials or less support/follow-up. The two studies that examined social support interventions assessed the impact on smoking behaviours of cessation education and/or programming in addition to support from a peer, family, or friend. Among the five studies that examined the use of incentives, the intervention participants were often exposed to cessation education and/or programming in addition to receiving monetary support. The pharmacological interventions generally compared providing nicotine gum, alongside advice or counselling, to no or minimal treatment (e.g., smaller dose of gum, placebo gum or patch, brief advice) (5).

Across the eight studies that examined comprehensive workplace programs, most compared some form of a multi-component intervention to a minimal intervention (i.e., only one or two components). The comprehensive workplace programs typically included a selection of the following interventions: health risk assessments, education, social support, workshops, self-help materials, workplace media campaigns and employee steering committees (5). Similarly, research focused on enriching the workplace environment often involved adding health

promotion activities in the workplace (e.g., posters, social support, plant-wide activities) to a basic smoking cessation program; controls usually received the basic cessation program or education without the environmental supports (5).

Refer to Appendix D for a data extraction table which provides further details on the Cahill et al. Cochrane review.

9 Synthesis of Findings

The NICE guideline and Cochrane review contain many consistent findings related to workplace smoking-cessation research; the relevant key findings from these documents are outlined below.

Intervention Effectiveness

- Individual and group interventions are the most effective smoking-cessation interventions, in particular: individual counselling, group therapy, and pharmacotherapy (e.g., NRT).
 - The NICE effectiveness review found strong evidence that individual counselling, group behaviour therapy, pharmacotherapy, and brief advice are effective interventions in helping people to stop smoking (1++ systematic review², 1+ meta-analysis) (4-6).
 - The Cochrane review reported that there is strong evidence for an effect of group therapy, individual counselling and pharmacological treatments on smoking

² In the NICE guideline, each study was categorized by study type (level 1 includes systematic reviews (SR), meta-analyses, SR of RCTs, RCTs themselves; level 2 includes SRs of and individual quasi experimental and/ or observational studies; level 3 includes non analytic research; level 4 includes expert opinion and formal consensus) and graded for quality using a code '++', '+' or '-', based on the extent to which the potential sources of bias had been minimized.

- cessation (5). However, the authors noted some inconsistent and insignificant findings for these interventions when delivered in a workplace setting. Despite these findings, the authors interpreted the data within the broader context of non-workplace smoking-cessation research; as such, they reported the evidence for the effect of these individual and group interventions as strong (26 studies).
- Self-help and social support interventions are less effective at helping employees stop smoking than those effective interventions noted above.
 - Both the NICE guideline and Cochrane review found that self-help interventions and materials were less effective at increasing smoking cessation than the individual- and group-focused interventions (NICE: 1++ systematic review, 1+ meta-analysis; Cochrane: 9 studies) (4-6).
 - The Cochrane review found that social support interventions were less effective than other individual interventions (e.g., individual counselling) at increasing smoking cessation among employees (2 studies) (5).
 - Smoking-cessation interventions that are effective in workplaces are generally those with proven effectiveness in non-workplace settings. Research indicates that there currently are no smoking-cessation interventions with proven effectiveness that are unique to the workplace setting.
 - Both the NICE guideline and Cochrane review found similar effects for smoking-cessation interventions when delivered in workplace and non-workplace settings (NICE: 1++ systematic review, 1+ meta-analysis) (4-6). Although the Cochrane authors found some inconsistent and insignificant results for interventions delivered

- in workplaces, they interpreted the results within the broader context of research conducted in other settings (5).
- Incentives (typically monetary) might motivate and/or encourage smokers to quit and may improve recruitment into workplace programs. However, there is not enough evidence to indicate that incentives will directly increase quit rates among employees.
 - The NICE guideline found that adding incentives to workplace smoking-cessation interventions did not increase their effectiveness or directly increase cessation rates. However, the authors noted that financial incentives may increase employee motivation and/or encourage recruitment and participation in workplace smoking-cessation programs (two 1++ systematic reviews) (4-6).
 - The Cochrane review also found that incentive- and competition-based workplace smoking-cessation interventions were not effective in significantly increasing quit rates. Evidence was limited as to the effectiveness of competitions and incentives for increasing employee participation in workplace smoking-cessation programs (5 studies) (5).
 - Comprehensive workplace smoking-cessation programs and enriched workplace environments do not lead to significant decreases in overall smoking rates in workplaces.
 - The NICE effectiveness review found interventions that aimed to create an enriched workplace environment (e.g., educational campaigns and health promotion activities) did not significantly increase cessation rates among employees. However, these environmental support interventions may have reduced perceived barriers to

- quitting and/or encouraged reduced cigarette use (two 2+ studies, one 2- study) (4,6).
- The Cochrane review noted that comprehensive interventions that targeted whole workplaces (e.g., comprehensive programs, environmental support interventions) did not significantly reduce the prevalence of smoking in workplaces, despite their strong theoretical underpinnings. The authors noted that there is limited evidence to indicate that individually-focused interventions for smoking cessation are more effective with the addition of environmental supports (8 studies). What's more, the authors referenced previous research which indicated that participation rates in smoking-cessation programs were generally low, even when delivered in a workplace setting (5).
 - There is limited, inconclusive and/or weak evidence as to the effectiveness of the following workplace smoking-cessation interventions: workplace health assessments with feedback, online cessation supports, and comprehensive programs that integrate cessation support with occupational health and safety programming.
 - The NICE effectiveness review noted that the evidence is inconclusive as to whether workplace health assessments with feedback lead to increases in smoking cessation rates among employees (1++ study, 1+ study, 2+ study). Research related to online smoking-cessation programs was also very limited and lacked in long-term evaluation (4+ report). In addition, there were no controlled studies available that compared integrated smoking cessation and occupational health and safety

programs to traditional cessation programs (4+ report); thus the effectiveness of these integrated programs is unknown (4,6).

Implementation Effectiveness

- Employers, health professionals and health authorities all have potential roles in the designing, delivering and/or promoting of workplace smoking-cessation programs.
 - NICE recommends that employers should play a role in promoting effective smoking-cessation interventions and related local resources to their employees. This also includes providing cessation support on-site during working hours and without loss of pay, when possible (4). The NICE guideline highlights the importance of tailoring smoking-cessation interventions to employee needs and stage of change (one 2+ study), preferences and other factors (e.g., sex, ethnicity) (4,6).
 - The NICE guideline recommends that health professionals and health authorities directly support employers who want to help their employees stop smoking. Health professionals and authorities need to take company size and employer attitude towards employee health into account as these factors will predict a workplace's ability and/or willingness to provide cessation support to employees. NICE found that an employer's personal attitude towards employee health is a key predictor as to whether workplaces will provide cessation support to employees (two 2++ studies). In addition, the authors indicated that smaller organizations are less likely to provide cessation support to employees than larger organizations, given financial and other resource constraints (two 2++ studies, 2- study, 2+ study) (4,6).

- The Cochrane review did not directly identify roles for various stakeholders in regard to workplace smoking-cessation programs.

10 Limitations and Gaps in the Evidence

Despite the high quality methods used to develop the NICE guideline and Cochrane review, there are several limitations and gaps to consider when interpreting the results. Limitations include flaws in the design, delivery and evaluation of interventions among the primary studies. Furthermore, workplace based intervention research inherently has methodological limitations which may have introduced bias. For example:

- Many studies relied on self-reported measures to assess outcomes (e.g., smoking cessation, cigarettes smoked), thus introducing the possibility of desirability bias (6).
- Studies did not consistently indicate how 'successful quitting' was defined or measured (6).
- Most studies failed to assess the differential effects of interventions on age, sex and ethnicity (6).
- Some interventions were only evaluated in the short-term (5).
- Many studies failed to describe randomization methods in sufficient detail, potentially introducing selection bias (5).
- Many studies failed to report on participation rates (5).
- Some cluster-randomized studies conducted analysis at the individual level, despite having allocated whole workplaces to intervention and control conditions (5).

- Some studies analyzed data for all workplace staff at baseline and follow-up, not taking into account employees who may have left or joined the organization; this may have over or underestimated the effect of the intervention (6).
- Many studies failed to identify significant differences in effect size among the effective 'types' of interventions, making it difficult in some cases to isolate the effective components of interventions (6).

The NICE guideline and Cochrane review noted several gaps in the evidence base, including:

- Limited evidence on interventions conducted in less 'stable' workplace settings (e.g., workplaces in which employees may not spend most of their day in one location) (5).
- No research available on workplace cessation interventions for temporary or casual employees (6).
- Few studies available that assessed the impact of an enriched workplace environment on employee smoking behaviours; among those available, most focused on employees not ready to quit (6).
- No controlled studies available to compare the effectiveness of traditional smoking-cessation programs to those that integrate occupational health and safety with cessation programming (6).
- Very little research available that evaluated the effectiveness of online cessation programs (6).
- Very little evidence regarding what interventions were most effective for different sectors of the workforce (e.g., by age, sex, ethnicity, type of employee) (6).

- No studies available which examined the effectiveness of workplace cessation interventions in the context of smoke-free legislation (6).

In addition to the above gaps and limitations, there are additional factors to be taken into consideration when interpreting the results of the current rapid review. For example, the guideline and review primarily included an examination of individual- and group-focused interventions as these are predominant in the smoking-cessation literature. Some of the studies that assessed interventions geared towards whole workplaces were not relevant to the current rapid review because they examined the impacts of a jurisdictional or organizational ban on indoor smoking on cessation and compliance. There is limited published and synthesized research available on whole-workplace-focused policy interventions for smoking cessation, beyond those banning indoor smoking.

Many of the primary studies were also conducted during the 1980s and 1990s when societal values and norms related to smoking differed from those today. Thus, the interventions may lead to different results if implemented today. Finally, the primary studies showed large variations in population, intervention type and control/comparison conditions. Given such large heterogeneity among the primary studies, the review authors could not pool the data and quantify impacts on outcomes. The variation both within and between intervention types and control conditions adds complexity to the interpretation of results, especially given that many studies examined variations of multi-component interventions.

11 Applicability & Transferability

On March 13th 2013 a meeting was held to discuss the applicability and transferability of the research. Lori Greco (Knowledge Broker) facilitated the meeting. Senior management and staff from the Workplace Health, Tobacco Prevention and Tobacco Enforcement Teams participated in the discussion. Highlights from the meeting are outlined below; refer to Appendix E for further details.

Applicability

Political Acceptability or Leverage

- ‘Support Tobacco-Free Living’ is a current Term of Council priority for the Region of Peel.
- A Peel by-law related to outdoor tobacco smoke passed in February 2013.
- The Ministry of Health and Long-Term Care is currently funding workplace pilot projects for tobacco cessation.
- The Ontario Drug Benefit covers two prescription medications for smoking cessation, but employed young smokers may not qualify. PPH may want to consider a pilot with workplaces to enhance benefits package to cover or increase coverage of NRT for employees.

Social Acceptability

- Peel workplaces are heterogeneous (e.g., by size, by employee demographics).
 - There are 130 businesses in Peel with 500 or more employees. These workplaces are in the scope of PPH’s smoking-cessation initiatives as they include a large number of employees and are likely to have formal Human Resource (HR) departments.

- It is unclear whether Peel residents want to receive cessation support in their workplaces.
 - The size and type of workplace will likely predict whether this would be perceived as acceptable.
 - Some employers might be very resistant to receiving any education or support.
- Peel young adult males have the highest rates of smoking and aren't likely to seek out a primary care provider. Is the workplace setting a good venue to reach this target group?
- PPH could develop a business case to encourage employers to provide smoking-cessation support to their employees, highlighting benefits such as reduced sick time, fewer breaks during day, less exposure to non-smoking employees.
- Smoke-Free Ontario Act (SFOA) prohibits smoking in enclosed workplaces. The Tobacco Enforcement Team receives numerous complaints regarding indoor smoking in Peel workplaces. Complaints are particularly an issue among auto body shops.
- The last provincial campaign that targeted employers regarding their SFOA obligations was in 2006.
- Some of the 88,000 employers in Peel might be new and/or not fully aware of SFOA.
- Workplace Health Team staff noted that some large workplaces lack awareness of their SFOA obligations. A campaign to raise awareness and understanding of employer obligations may be a future consideration.

Available essential resources (personnel and financial)

- Key community resources in Peel for smoking cessation include: family physicians, Family Health Teams, the 'Kick It' program at William Osler Hospital and the Smokers' Helpline.

- Some of the successful strategies for physician outreach may also apply to employers.
- PPH can connect with larger employers (e.g., hospitals, school boards, colleges) to identify if their benefits fund NRT (and to what level) for employees. Many plans cover only one course of NRT in a lifetime (i.e., one quit attempt).
- PPH needs to develop a coordinated approach to drive Peel residents towards cessation resources. This approach should combine:
 - employer education and awareness-building.
 - enforcement, possibly reframed as education instead of as responses to complaints.
 - linking residents and employers to existing community resources.

Organizational Expertise and Capacity

- There is opportunity for ongoing collaboration among three departmental teams:
Workplace Health, Tobacco Prevention and Tobacco Enforcement Teams.
 - PPH can use SFOA obligations as a foundation for connecting with employers and organizational leaders. The Tobacco Enforcement Team can identify opportunities for education when complaints are received.
 - Initiatives can be maximized through resource sharing across teams.

Transferability

- The potential overall reach for workplace-based smoking-cessation initiatives is the 68,900 Peel residents who smoke and work in Peel Region.
- It is still unclear how to best reach the young adult males in Peel. Peel data reveal higher smoking rates among young adult males, a group which is also less likely to seek help from

their primary care provider. The PPH Tobacco Transition Years Working Group is exploring this further.

12 Recommendations

Peel Public Health should:

- not provide direct smoking-cessation services (e.g., counselling, delivery of multi-component programs) in Peel workplaces.
- support and engage Peel employers and organizational leaders by:
 - providing a business case for investing in employee health and well-being through smoking-cessation support.
 - communicating the resources (e.g., health professionals, community-based cessation services) that are available in Peel for smoking adults so that employers can publicize these to their employees.
 - providing additional tools and resources (e.g., information on SFO obligations) required. The organization's size and capacity should be taken into account.
- create an integrated plan for workplace smoking cessation across the Workplace Health, Tobacco Prevention and Tobacco Enforcement Teams. Key components of the plan include:
 - employer education and awareness-building (e.g., of SFOA obligations).
 - SFOA enforcement.
 - referral of employers and organizational leaders to existing community smoking-cessation resources (e.g., family physicians and family health teams, the 'Kick it Program', Smokers' Helpline).

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- (2) Statistics Canada. Census. 2006.
- (3) Region of Peel - Peel Public Health. Burden of Tobacco - The Use and Consequences of Tobacco in Peel. 2012.
- (4) National Institute for Clinical Excellence. Workplace Health Promotion: How to Help Employees to Stop Smoking. 2007; updated in 2011;Public Health Intervention Guidance 5.
- (5) Cahill K, Moher M, Lancaster T. Workplace Interventions for Smoking Cessation. 2008(4).
- (6) Bell K, Richardson L, McCullough L, Greaves L. NICE Rapid Review – Workplace Interventions to Promote Smoking Cessation. Feb 2007.

Appendices

Appendix A: Concept Model

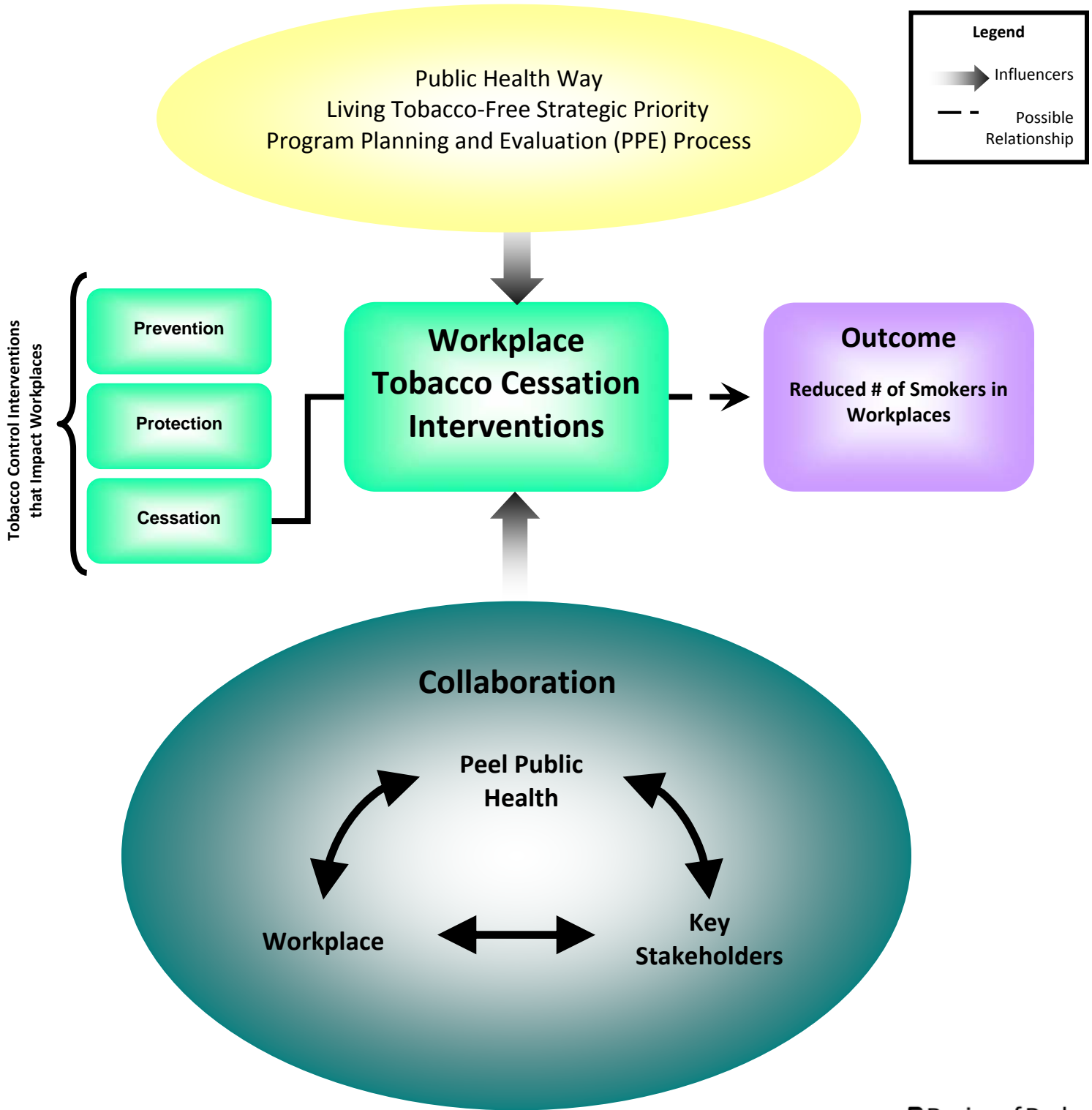
Appendix B: Search Strategy

Appendix C: Literature Search Flowchart

Appendix D: Data Extraction Tables

Appendix E: Applicability & Transferability Worksheet

Appendix A: Concept Model



Appendix B: Search Strategy

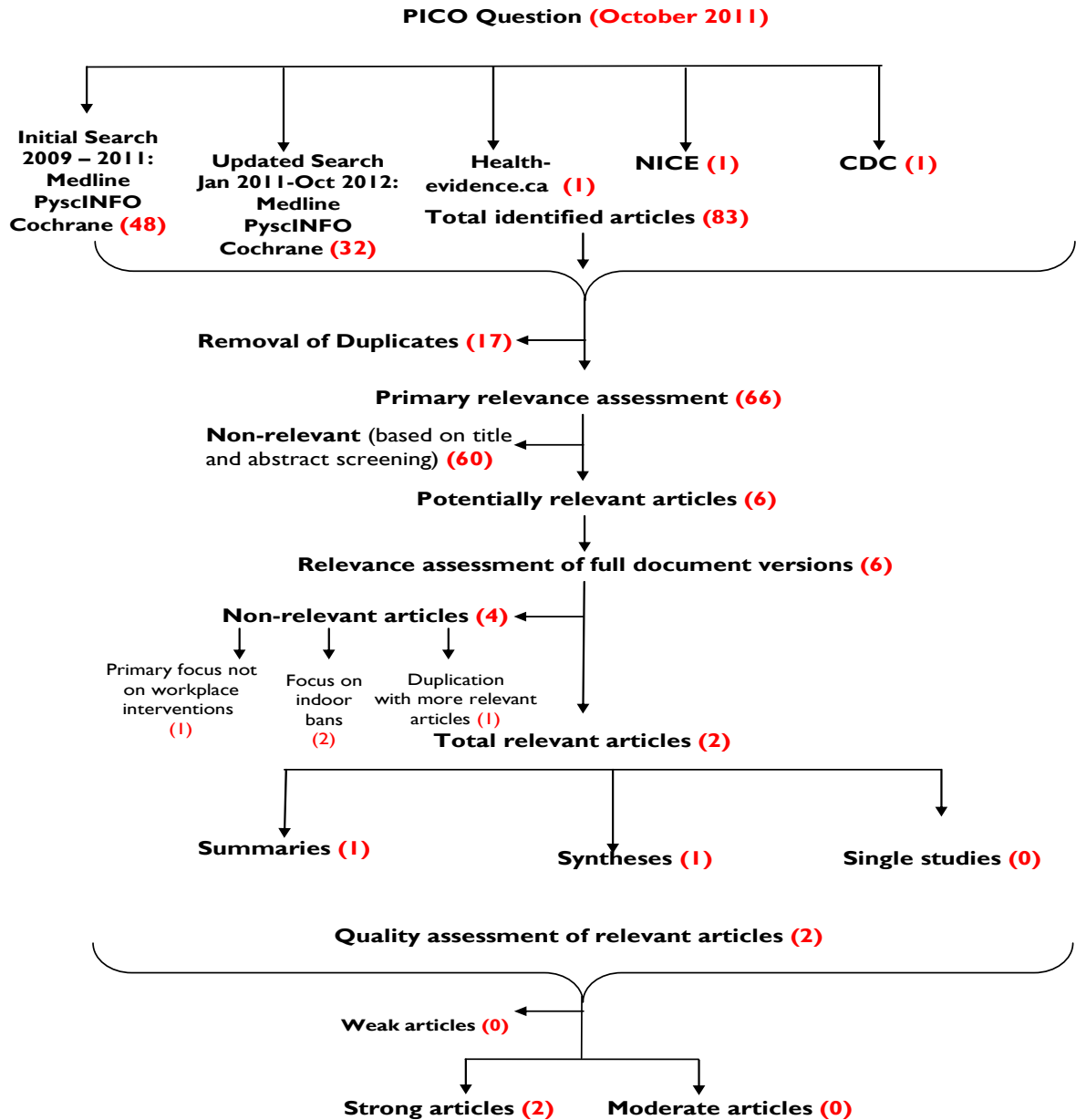
Database: EBM Reviews - ACP Journal Club <1991 to July 2012>, EBM Reviews - Cochrane Database of Systematic Reviews <2005 to July 2012>, EBM Reviews - Database of Abstracts of Reviews of Effects <3rd Quarter 2012>, Ovid MEDLINE(R) <1946 to August Week 3 2012>, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations <August 27, 2012>, PsycINFO <2002 to August Week 3 2012>

Search Strategy:

-
- 1 exp workplace/ (11609)
 - 2 work*.ti,ab. (1049053)
 - 3 workplace*.ti,ab. (34070)
 - 4 worksite*.ti,ab. (2818)
 - 5 employee*.ti,ab. (48652)
 - 6 employer*.ti,ab. (16677)
 - 7 occupational.ti,ab. (93853)
 - 8 exp working conditions/ (10305)
 - 9 exp employment status/ (56058)
 - 10 exp organizational climate/ (4124)
 - 11 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 (1155382)
 - 12 exp smoking cessation/ (23138)
 - 13 exp smoking/ (111437)
 - 14 smoking.ti,ab. (150613)
 - 15 smoking cessation.ti,ab. (18026)
 - 16 12 or 13 or 14 or 15 (198792)
 - 17 exp health promotion/ (56891)
 - 18 exp policy making/ (44141)
 - 19 by-law*.ti,ab. (2692)
 - 20 bylaw*.ti,ab. (541)
 - 21 policy.ti,ab. (141764)
 - 22 policies.ti,ab. (60777)
 - 23 prevent*.ti,ab. (925110)
 - 24 protect*.ti,ab. (500650)
 - 25 cessation.ti,ab. (54081)
 - 26 strateg*.ti,ab. (605270)
 - 27 intervention*.ti,ab. (593772)

- 28 "health promotion".ti,ab. (21777)
- 29 program*.ti,ab. (623836)
- 30 initiative*.ti,ab. (54905)
- 31 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 (2896349)
- 32 meta-analysis.ti,ab,pt. (67225)
- 33 guideline.ti,ab,pt. (37133)
- 34 systematic review.ti,ab,pt. (51430)
- 35 32 or 33 or 34 (139894)
- 36 11 and 16 and 31 and 35 (237)
- 37 limit 36 to english language [Limit not valid in ACP Journal Club,CDSR,DARE; records were retained] (219)
- 38 limit 37 to yr="2009 -Current" [Limit not valid in DARE; records were retained] (83)
- 39 remove duplicates from 38 (67)
- 40 unemployment.ti. (1526)
- 41 39 not 40 (66)
- 42 remove duplicates from 41 (66)
- 43 limit 42 to yr="2011 -Current" [Limit not valid in DARE; records were retained] (32)

Appendix C: Literature Search Flowchart



Source: Health-evidence.ca. Keeping Track of Search Results: A Flowchart. [Retrieved January 13, 2010]

Appendix D: Data Extraction Tables

Items Reviewed	Guideline – Workplace health promotion: how to help employees to stop smoking
General Information & Quality Rating for Guideline	
1. Date	Updated/Reviewed in 2011 (original publication date: April 2007)
2. Organization & Country	National Institute for Health and Clinical Excellence (NICE), United Kingdom
3. Quality Rating	<p>Rated using the AGREE II Tool</p> <ul style="list-style-type: none"> • Overall Rating: 6/7 (i.e., guideline recommended for use) <ul style="list-style-type: none"> ○ Point deducted as further details related to barriers and facilitators for employers, external reviewers and conflicts of interest would be beneficial • Domain Ratings: <ul style="list-style-type: none"> ○ Scope and Purpose: 19 ○ Stakeholder Involvement: 19 ○ Rigour of Development: 50 ○ Clarity of Presentation: 21 ○ Applicability: 23 ○ Editorial Independence: 10
4. Focus & Objective(s)	<ul style="list-style-type: none"> • Outlines NICE’s formal guidance on “how to encourage and support employees to stop smoking” • To review the evidence of the effectiveness and cost effectiveness of workplace interventions to motivate and support smoking cessation among different sections of the workforce
5. Target Audience (of Guideline)	<ul style="list-style-type: none"> • Health professionals and employers who may play a role in supporting and encouraging smoking cessation among employees; audience includes local health authorities, and those in community, voluntary and private sectors
6. Types of Evidence used to Inform the Guideline	<ul style="list-style-type: none"> • Review of effectiveness (i.e., of workplace interventions to promote smoking cessation) • Economic analysis: review and modelling report • Survey of current practice/service provision in UK • Stakeholder input/comments
7. Overall Relevant Recommendations	<ul style="list-style-type: none"> • The following smoking-cessation interventions are effective: <ul style="list-style-type: none"> ○ Brief interventions (e.g., simple opportunistic advice given in 5-10 minutes, discussion, negotiation) ○ Individual behavioural counselling ○ Group behaviour therapy delivered over at least two sessions (e.g., cognitive behavioural therapy) ○ Pharmacotherapy (e.g., nicotine replacement therapy (NRT)) ○ Self-help materials (written or electronic)

	<ul style="list-style-type: none"> ○ Telephone counselling and quitlines ● Smoking cessation support and treatment should be tailored to employee needs and preferences ● Employers should: <ul style="list-style-type: none"> ○ Publicize effective smoking-cessation interventions to employees ○ Provide detailed information on local smoking-cessation services to employees ○ Provide smoking cessation support on-site (in workplaces) and during working hours without loss of pay, when feasible and if there is sufficient demand ○ Collaborate with staff to develop smoking-cessation policy ● Health professionals, organizations and/or authorities should: <ul style="list-style-type: none"> ○ Offer effective smoking-cessation interventions by trained staff ○ Support employers who want to assist their employees in smoking cessation ○ If demand exceeds resources, consider focusing on: small and medium-sized workplaces and/or workplaces with a high proportion of employees that are heavy smokers, in lowing pay jobs and/or disadvantaged
<p>NOTE: *The following outlines the details and results of the review of effectiveness that was conducted to inform the NICE guidance; below information does not include details of the economic analysis, survey of current practice or stakeholder input/comments.</p>	
<p>Details of Effectiveness Review</p>	
8. Focus of Effectiveness Review	<ul style="list-style-type: none"> ● Effective workplace interventions to promote smoking cessation; to determine what is effective to motivate and change employee's health behaviour ● Some key questions outlined for the review include: <ul style="list-style-type: none"> ○ How can employers support and encourage people who smoke to quit? ○ What support can employers offer people who smoke and who are not currently ready to quit? ○ How can employers be encouraged to provide smoking-cessation support?
9. Number of Studies	<ul style="list-style-type: none"> ● 32 studies met inclusion criteria
10. Types of Studies	<p>Note: a 2005 Cochrane review by Moher et al. on the effectiveness of workplace smoking-cessation interventions was used as a main source of evidence in this NICE guideline</p> <p>Variety of study designs included:</p> <ul style="list-style-type: none"> ● 1 meta-analysis ● 2 systematic reviews ● 5 randomized controlled trials ● 6 cohort studies ● 1 longitudinal study ● 1 case control study ● 14 cross sectional studies ● 1 interrupted time series study ● 1 qualitative study
11. Search Period	<ul style="list-style-type: none"> ● 1990 – 2006
12. Databases searched	<ul style="list-style-type: none"> ● MEDLINE, EMBASE, British Nursing Index, CINAHL, PsycINFO, DH-Data, King's Fund, Cochrane Database of

	<p>Systematic Reviews, National Research Register, DARE, Health Technology Assessment Database, National Guideline Clearinghouse, SIGN guidelines, HSTAT, TRIP</p> <ul style="list-style-type: none"> • A search of key websites (e.g., UK National Smoking Cessation Conference, UK Department of Health, Action on Smoking and Health) was also conducted
13. Inclusion and Exclusion Criteria	<ul style="list-style-type: none"> • <u>Inclusion</u>: published between 1990 and 2006, various study designs (e.g., systematic reviews, RCTs, controlled non-randomised trials, controlled before and after studies), various intervention types (e.g., individual versus broadly focused), interventions aimed at those aged 16 and older who do paid or voluntary employment outside of home • <u>Exclusion</u>: non-English language publications; editorials, non-systematic reviews and letters
Details of Interventions (in Effectiveness Review)	
14. Description of Interventions (note: not an exhaustive list)	<p>Meta-analysis:</p> <ul style="list-style-type: none"> • Examined the effectiveness of worksite smoking-cessation interventions (e.g., self-help materials, physician advice, incentives, behavioural methods) after at least 1 year follow-up; compared to control/comparison condition <p>Systematic Review:</p> <ul style="list-style-type: none"> • Examined the effects of contests/competitions/incentives on smoking cessation rates and recruitment to programs • Examined the impact of various types of workplace interventions (e.g., group programs, individual counselling, NRT, comprehensive programs) on quit rates and cigarette consumption; compared to no/minimal treatment <p>RCT:</p> <ul style="list-style-type: none"> • Computer tailored messages and social support activities in the workplace • Examined impact of various workplace programs/activities (e.g., posters, interactive events, self-assessments, smoking restrictions) on cessation rates compared to minimal intervention (e.g., posters, brochures) • Examined impact of four worksite cardiovascular disease risk factor interventions (e.g., HRA, education, behavioural counselling with or without incentives) on outcomes such as smoking-cessation rates; assessed over 1 year period <p>Cohort, with examination of:</p> <ul style="list-style-type: none"> • Association between workplace factors/demands (e.g., psychological, decision making, physical) and probability of smoking cessation; examined over a 5 year period • Impact of self help materials, education and feedback on smoking cessation compared to self-help materials and newsletters only with a 4 year follow-up • Impact of a multi-component worksite health promotion program including screening, counselling and physician referral on health behaviours (including cigarette use) over 1-6 year period • Impact of a jurisdictional worksite smoking ban on participation in workplace smoking-cessation programs

	<p>Longitudinal:</p> <ul style="list-style-type: none"> Examined the effect of participation in Allen Carr seminars on long-term abstinence (i.e., approximately 3 years) <p>Case Control:</p> <ul style="list-style-type: none"> Examined the effects of an 'enriched' workplace environment (e.g., education, anti-smoking campaign, policy) on quit attempts and quit rates over an 18 month period; compared to basic program without enriched environment <p>Cross-sectional with examination of:</p> <ul style="list-style-type: none"> Relationship between demographic and psychosocial factors with motivation and intention to quit Relationship between worksite and company size with workplace smoking restrictions and programs Variation in support and compliance for smoke-free polices across various countries Relationship between stress levels and intention to participation in workplace smoking-cessation program Perceptions and beliefs of non-smoking employees regarding smoking employees (e.g., negative attitudes, if smokers are believed to have additional breaks or benefits) Association between exposure to a health-promoting environment in the workplace (e.g., risk reduction programs, counselling, education) and smoking reduction after 1 year The current state of health promotion activity across workplaces in Scotland Relationship between key organisational characteristics and prevalence of tobacco-control activities Relationship between a university smoking ban and employee smoking behaviour at work and home <p>Qualitative:</p> <ul style="list-style-type: none"> Exploration of views, awareness and perceptions of hospital nurses in regards to the impact of a hospital smoking policy on staff and patients
15. Intervention Countries & Settings	<ul style="list-style-type: none"> Countries include: Australia, Austria, Canada, Denmark, England, Ireland, Scotland, Switzerland, United States Majority of settings were workplaces, for example: hospitals, manufacturing companies or plants (e.g., steel plant), warehouse distribution sites, ambulance service stations, universities
16. Target groups	<ul style="list-style-type: none"> Employees Both blue collar and white collar employees included across studies
17. Primary Outcomes	<ul style="list-style-type: none"> Changes in smoking-related knowledge, attitudes and behaviours following the intervention, for example: <ul style="list-style-type: none"> Views, awareness, perceptions Readiness to quit smoking Attitudes, perceptions knowledge and behaviour related to smoking Perceived barriers to quitting smoking Daily cigarette consumption; reduction in amount inhaled Other outcomes included: job related stress and intention to participate in a smoking-cessation program

18. Outcome Measures	<ul style="list-style-type: none"> • Studies examining exposure (versus intervention based); data taken from sources such as: <ul style="list-style-type: none"> ○ Central Population Register of Denmark ○ Canadian population-based telephone survey ○ Presence of smoking-related ban in a jurisdiction or country • In-person and phone interviews • Self-report questionnaires regarding smoking abstinence, quitting and/or cigarette use • Surveys (including validated measures relating to stage of change) • Biochemical validation (when recorded)
Results (of Effectiveness Review)	
19. Meta-analysis?	No (significant heterogeneity in study designs, interventions, etc.)
20. Main Results of Review	<ul style="list-style-type: none"> • Overall, the most effective workplace smoking-cessation interventions are those that have proven to be effective in other (non-workplace) settings (1++ systematic review, 1+ meta-analysis). • Strong evidence to indicate that group therapy, individual counselling and pharmacological therapy are effective in increasing smoking cessation (1++ systematic review, 1+ meta-analysis). Taken from the Moher 2005 Cochrane review: <ul style="list-style-type: none"> ○ group therapy may double odds of quitting in various settings compared to self-help (OR 1.97; CI 1.57-2.48) ○ no difference in effect between group therapy and individual counselling (OR 1.33; CI 0.83-2.13) ○ no evidence that intensive counselling is more effective than brief counselling • Less intense interventions such as brief advice from a health professional are effective (OR 1.69; CI 1.45-1.98). • Self-help interventions and materials are less effective than the individual- and group-focused interventions (1++ systematic review, 1+ meta-analysis). • There is limited, inconclusive and/or weak evidence available regarding the effectiveness of : <ul style="list-style-type: none"> ○ workplace health assessments with feedback (inconclusive evidence; 1++ study, 1+ study, 2+ study). ○ online smoking-cessation support (weak evidence; no formal research/evaluations available: 4+ report). ○ Allen Carr seminars (weak evidence; more research needed: two 2- studies). ○ comprehensive programs that integrate cessation with occupational health and safety (weak evidence; no controlled studies available that compare these to traditional smoking cessation programs: 4+ report). • Financial incentives may encourage smokers to quit and may improve recruitment rates into workplace programs, potentially leading to a higher number of absolute quitters in the long-term (two 1++ systematic reviews). <ul style="list-style-type: none"> ○ However incentives do not directly increase quit rates of workplace smoking-cessation interventions • Individually tailored interventions (e.g., by sex, by ethnicity, by stage of readiness to quite) may be more effective at increasing smoking cessation among workers than a ‘one size fits all’ approach. <ul style="list-style-type: none"> ○ Evidence indicates that women are less confident in their ability to quit and may need additional support.

	<ul style="list-style-type: none"> ○ Younger smokers may need more intensive support to quit than older smokers (although limited evidence); workplace interventions may be more effective in helping older smokers successfully abstain from smoking. ● Research indicates that most smokers are not ready to quit; as such, interventions should be tailored for smokers at various stages of change (including changes to workplace social norms and physical environment). ● Employers can do several things to encourage employees to quit smoking, for example: <ul style="list-style-type: none"> ○ offering a variety of smoking-cessation supports/options to meet various employee needs (e.g., on-site program, work time to attend off-site services, access to pharmacotherapies or self-help materials). ○ provide incentives for quitting to increase recruitment rates (however there is limited evidence to indicate that incentives will increase the effectiveness of workplace cessation interventions). ● An ‘enriched’ workplace environment (e.g., smoking bans, educational campaigns and activities) may encourage smokers who are not ready to quit to reduce their daily cigarette consumption and reduce their perceived barriers to quitting. <ul style="list-style-type: none"> ○ However an ‘enriched’ environment may not increase actual quit rates among smokers (two 2+ studies, one 2- study). ● The personal attitude of the employer regarding employee health and well-being is one of the main factors to predict whether a workplace will offer smoking-cessation support to employees (two 2++ studies); as such, they should be targeted directly. <ul style="list-style-type: none"> ○ There is an inverse relationship between company size and its abilities to provide smoking-cessation supports/activities for its employees; small workplaces may face significant constraints (e.g., financial) and therefore are less likely to provide such supports.
21. Comments/Limitations	<ul style="list-style-type: none"> ● Some of the cross-sectional research included in the effectiveness review/guideline focused on the impact of legislative bans on second hand smoke exposure or explored the status of smoking policies and activities in the UK at that time; this research was not relevant to this rapid review’s research question. ● Overall, the majority of the interventions reviewed were individual or small group focused (e.g., counselling, therapy, NRT). In addition, the interventions that were geared towards the workplace as a whole typically examined the impact of a jurisdictional smoking ban on cessation and compliance. ● There are several limitations to these findings due to the nature of workplace intervention research; including: <ul style="list-style-type: none"> ○ Studies generally use self-reported measures (i.e., issue of ‘desirability bias’) ○ Studies do not consistently indicate how ‘successful quitting’ is defined or measured (i.e., by self-report or biochemical validation) ○ Studies largely vary in factors such as intervention types and populations ○ Studies largely vary in control/comparison conditions; while some include a no treatment control group, others include a minimal intervention control group ○ Majority of studies and reviews did not assess the differential effects of workplace cessation interventions

on factors such as sex, ethnicity and age

- No research available on workplace smoking-cessation interventions for temporary or casual employees
- For some 'alternative' workplace smoking-cessation interventions such as Allen Carr seminars, only short-term evaluation has been completed; the majority of which was conducted by the company itself (i.e., biased).
- In a small number of studies the data was analysed for the entire workplace staff at both baseline and follow-up; as such, the effect of the intervention may have been over or underestimated depending on the smoking status of employees who joined or left the organization(s).
- It can be difficult to identify significant differences in effect size across the different intervention 'types', among those that are effective (i.e., "to determine the incremental effectiveness of the different intervention types"...."both reviews failed to identify effects due to particular intervention type"). The authors suggest that this may be due to several factors including:
 - workplace cessation interventions tend to be multi-component in nature (thereby making it difficult to isolate effects of individual intervention components)
 - low statistical power
 - there may not be one 'optimal' approach or silver bullet to stand out among the interventions

Gaps in Evidence Base:

- Only a few single studies included in the guideline (conducted in the 1990s) which examined the impact of an enriched workplace environment, and the majority of which were focused on individuals not ready to quit; results up to this point are limited and inconclusive.
- No studies available which examined effectiveness of workplace interventions in context of smoke-free legislation.
- No controlled studies available to compare the effectiveness of traditional smoking-cessation programs and those that integrate tobacco cessation with occupation health and safety programming in the workplace.
- Very little, if any, research available to evaluate the effectiveness of online smoking cessation programs.
- Very little evidence available regarding what interventions are most effective for different sectors of the workforce (e.g., by age, sex, ethnicity, type of employee).
 - In particular, no studies found that specifically identified effective interventions for younger and older smokers.

Items Reviewed	Systematic Review- Cahill et al., 2008
General Information & Quality Rating for Review	
1. Author(s) and Date	Cahill K., Moher M., Lancaster T., 2008
2. Country (of authorship)	United Kingdom (UK)
3. Quality Rating	Rated on health-evidence.ca as <u>strong</u> quality (8/10); the article lost points for the following reasons: <ul style="list-style-type: none"> • Question # 7 - Not clear if more than one reviewer assessed the quality of the primary studies • Question # 9 (re: combining/comparing studies) – No indication that weighting of the primary studies (by factors such as quality, sample size) was conducted
4. Objectives of Review	<ul style="list-style-type: none"> • To examine the evidence on the effectiveness of workplace interventions to help individuals stop smoking, including a review of the data available regarding cost and cost effectiveness of such interventions.
Details of Review	
5. Number of primary Studies Included	<ul style="list-style-type: none"> • 51 studies (in 53 articles) – see below under ‘descriptions of interventions’ for further details
6. Types of Studies	<ul style="list-style-type: none"> • Randomized controlled trials (RCTs) and quasi-randomized controlled trials
7. Search Period	<ul style="list-style-type: none"> • Not explicitly stated in review or in search strategy (appendix 1), however individual trials appear to date back to as early as 1980 (majority of trials published during mid to late 1980’s to early 2000s)
8. Databases searched	<ul style="list-style-type: none"> • Cochrane Tobacco Addiction Review Group Specialized Register <ul style="list-style-type: none"> ◦ Includes searches of various databases, conference proceedings, grey literature and hand searching • Ad hoc searches of: MEDLINE, EMBASE and PyscINFO • Also reviewed reference lists of relevant articles and contacted authors/experts in the field
9. Inclusion and Exclusion Criteria	<ul style="list-style-type: none"> • <u>Inclusion:</u> employed smoking adults aged 18 years and older, studies with follow-up of ≥ 6 months, studies that included interventions aimed at helping individual smokers to quit • <u>Exclusion:</u> studies with follow-up of < 6 months, workplace tobacco-cessation interventions focused on bans or restrictions (as covered by another review; Callinan 2010)
Details of Interventions	
10. Description of interventions	<ul style="list-style-type: none"> • This review focuses on cessation interventions geared towards individual workers who smoke, including: individual and group counselling, self-help materials, pharmacological therapy, social and environmental supports, incentives and comprehensive workplace programs • Interventions allocated either individuals or workplaces/companies to intervention and control conditions

	<p>51 primary studies outlined in 53 articles; 37 aimed at individual workers and 16 aimed at workplaces as a whole, categorized as per intervention focus (with intervention and control examples):</p> <ul style="list-style-type: none"> • <i>Group intensive behavioural interventions – 12 studies</i> <ul style="list-style-type: none"> ○ Interventions: hypnosis, competitions, group counselling, behavioural cessation classes, relapse prevention ○ Controls: no treatment, self-help materials, variation of group program, waiting list • <i>Individual intensive behavioural interventions (i.e., individual counselling) – 9 studies</i> <ul style="list-style-type: none"> ○ Interventions: individual counselling by physician (most), nurse or phone/mail-based advice, counselling plus monetary incentives, risk assessments (e.g., screening), advice and goal setting with follow-up , NRT ○ Controls: no treatment, brief advice (written or verbal), basic education with no follow-up • <i>Self-help interventions – 9 studies</i> <ul style="list-style-type: none"> ○ Interventions: computer tailored advice magazine, videos, self-help manuals, relapse info, social support ○ Controls: no treatment/non-participants, minimal intervention (e.g., less follow-up or support) • <i>Comprehensive workplace programs – 8 studies</i> <ul style="list-style-type: none"> ○ Interventions: variations of multi-component interventions; components include: health risk assessment, education, social support, workshops, self-help materials, employee steering committee, media campaign ○ Controls: often minimal intervention (e.g., one or two intervention components only) • <i>Pharmacological interventions – 5 studies</i> <ul style="list-style-type: none"> ○ Interventions: advice or ongoing consultations with provision of nicotine gum ○ Controls: no treatment, smaller dose of nicotine gum, placebo nicotine gum or patch, brief advice only • <i>Incentives (additional studies also examined incentives as complement to other interventions) – 5 studies</i> <ul style="list-style-type: none"> ○ Interventions: generally a program or advice/education with monetary incentives ○ Controls: standard program or advice/education without monetary incentives • <i>Environmental or institutional support programs – 3 studies</i> <ul style="list-style-type: none"> ○ Interventions: smoking control and discouragement through cessation program plus workplace health promotion (e.g., posters, social support, plant-wide activities) ○ Controls: basic group cessation program without environmental or group supports, screening and health education without environmental supports • <i>Social support as an addition to other cessation interventions – 2 studies</i> <ul style="list-style-type: none"> ○ Interventions: intervention (e.g., program, group) with social support (i.e., from partner, friend, colleague) ○ Controls: intervention without social support
11. Intervention settings	<ul style="list-style-type: none"> • Settings varied based on type of intervention <ul style="list-style-type: none"> ○ Majority of interventions appear to have been conducted in workplaces ○ Other settings include: medical/health centres, physician offices and home (e.g., if internet or video based)

	<ul style="list-style-type: none"> Majority of studies appear to have been conducted in United States; other countries include Japan, Australia, United Kingdom, Belgium and France
12. Target groups	<ul style="list-style-type: none"> Employed smoking adults aged 18 and older Participant characteristics varied across studies, examples include: employees from a telephone company and their spouses, university employees, factory and/or manufacturing company employees, construction workers
13. Primary Outcomes	<ul style="list-style-type: none"> Employee smoking behaviour, for example: <ul style="list-style-type: none"> prevalence of workplace tobacco use cessation/abstinence rates (> than 6 months) self-reported number of cigarettes smoked percentage of each cigarette smoked
14. Outcome Measures	<ul style="list-style-type: none"> self-reporting records/diaries and questionnaires laboratory analysis of cigarette butts (e.g., examination and weighing) 36 studies (~72%) used biochemical validation to assess (or partly assess) smoking cessation, including cigarette butt counts, saliva, blood and/or urine samples, and testing exhaled breath for carbon monoxide
Results of Review	
14. Meta-analysis?	No (significant heterogeneity across study interventions and outcome measures)
15. Main Results of Review	<p>Overall, the authors report that:</p> <ul style="list-style-type: none"> Strong evidence exists that individually tailored and delivered interventions are effective in increasing cessation rates when compared to no treatment or minimal treatment, in particular: individual counselling, group therapy and NRT (26 studies). <ul style="list-style-type: none"> Note: the authors interpreted the findings of these studies within the broader context of non-workplace based smoking-cessation research; they noted that similar effects are observed for these interventions when delivered in workplace and non-workplace settings. Self-help materials and social support are less effective than other individually delivered interventions in increasing quit rates; absolute number of individuals who quit is low (9 studies). <ul style="list-style-type: none"> A 2005 Cochrane review (Stead, 2005) indicated that group therapy programs (conducted in various settings) may double the odds of quitting compared to self help; OR 1.97 (CI 1.57-2.48) Comprehensive workplace cessation programs (including environmental support interventions) do not lead to significant decreases in overall smoking prevalence, despite their strong theoretical underpinnings (8 studies). Interventions that include incentives may increase quit attempts however there is not enough evidence to indicate that they will increase actual quit rates; despite their potential to improve recruitment rates (5 studies). From review of previous research, the authors noted that participation rates in cessation programs are usually low, even in workplace settings (in which there appears to be increased potential for recruitment).

16. Comments/Limitations	<ul style="list-style-type: none"> • In cases where there were more than one intervention condition/arm, the authors compared the control group (minimal or no treatment) to the next basic/simplest treatment condition. • The authors incorporated findings of systematic reviews of cessation interventions conducted in non-workplace settings; this is because similar effects are typically observed for individually-tailored smoking-cessation interventions, whether they are conducted in a workplace or non-workplace setting. • There is a large variation across the primary studies in regards to intervention and control conditions, both within and between intervention ‘types’, for example: <ul style="list-style-type: none"> ○ Group intensive behavioural – intervention could be a relapse prevention program and control could be a standard behavioural program; intervention could be a multi-component workplace program (education, group lectures, individual counselling) versus control of waiting list • Many of the primary studies are outdated (e.g., dated in 1980s and 1990s) and were conducted at a time when social values and norms related to smoking may have been very different than today; it is questionable if similar interventions would lead to similar effects if conducted presently. • Majority of studies were conducted in ‘stable’ workplace settings, potentially limiting the generalizability of the findings, particularly those that discuss improved recruitment in a workplace setting; the authors report that short-term contracts are increasing and workers are increasingly mobile. • There is a lack of data on the cost effectiveness/economic aspects of workplace smoking cessation interventions. <p>The authors report various methodological limitations throughout the primary studies that may have introduced bias:</p> <ul style="list-style-type: none"> • Some cluster-randomized designed studies allocated entire workplaces to an intervention or control condition, however conducted analysis at the individual level instead of the cluster level. • Majority of included studies (~74%) did not describe randomization in sufficient detail, potentially introducing selection bias; 14% of studies did not use randomization at all or appropriately. • Around 28% of studies relied on self-reporting (e.g., of cessation), without biochemical validation. • Many studies failed to report on participation rates; among those that did, participation rates ranged between 9%-88%.
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Appendix E: Applicability & Transferability Worksheet

Factors	Questions	Notes
Applicability (feasibility)		
Political acceptability or leverage	<ul style="list-style-type: none"> • Will the intervention be allowed or supported in current political climate? • What will the public relations impact be for local government? • Will this program enhance the stature of the organization? <ul style="list-style-type: none"> ○ <i>For example, are there reasons to do the program that relate to increasing the profile and/or creative a positive image of public health?</i> • Will the public and target groups accept and support the intervention in its current format? 	<ul style="list-style-type: none"> • ‘Support Tobacco Free Living’ is a current Term of Council priority for Peel Regional Council; as such, Council will support smoking-cessation related initiatives and supports in Peel workplaces. • This report is timely - it coincides with the Peel by-law related to outdoor tobacco smoke which passed in February 2013. • The Ministry of Health and Long-Term Care is currently funding workplace demonstration pilot projects for tobacco cessation. • Peel young adult males have the highest rates of smoking and aren’t likely to seek out a primary care provider; is the workplace setting a good venue to reach this target group? • The Ontario Drug Benefit covers two prescription medications for smoking cessation but employed young smokers may not qualify. <ul style="list-style-type: none"> ○ PPH may want to consider a pilot with workplaces to enhance benefits packages to cover or increase coverage of NRT for employees (e.g., through occupational health nurse); collect statistics/evaluate well to show changes.
Social acceptability	<ul style="list-style-type: none"> • Will the target population find the intervention socially acceptable? Is it ethical? <ul style="list-style-type: none"> ○ <i>Consider how the program would be perceived by the population.</i> ○ <i>Consider the language and tone of the key messages.</i> ○ <i>Consider any assumptions you might have made about the population. Are they</i> 	<ul style="list-style-type: none"> • Question at hand – do Peel residents want to receive cessation support in their workplaces? <ul style="list-style-type: none"> ○ May be more acceptable in some workplaces than others; the size and type of workplace might predict whether this would be perceived as acceptable or not. • Peel workplaces are very heterogeneous as to a

	<p><i>supported by the literature?</i></p> <ul style="list-style-type: none"> ○ <i>Consider the impact of your program and key messages on non-target groups.</i> 	<p>variety of factors including size, number of employees, etc.</p> <ul style="list-style-type: none"> ○ Approximately 2/3 of the 88,000 workplaces in Peel have 10 or less employees; these small workplaces are not potential targets for us as they may not have a formal HR department (etc.). ○ However in Peel there are 130 businesses that have 500 or more employees – would smoking-cessation supports/interventions be acceptable within these businesses? ○ We have provincial data on the industries in which young adult smokers are working. ● Peel Public Health (PPH) can develop a business case for keeping employees healthy and provide this to HR departments in workplaces; include information on community services and resources (e.g., for 1:1 counselling). ● The Tobacco Enforcement Team has received numerous complaints regarding indoor smoking in Peel workplaces. PPH has a database/log of these complaints and they can be categorized by type of workplace; complaints are particularly an issue among auto body shops and other small workplaces. There were complaints from approximately 250 auto body shops in Peel last year. ● The Smoke-Free Ontario Act (SFOA) prohibits smoking in enclosed workplaces. <ul style="list-style-type: none"> ○ In Peel there are some trucking companies that are federally regulated so their obligations are different than SFOA (re: smoking inside vehicles/trucks). ○ The last provincial campaign that targeted employers (re: their SFOA obligations) was in 2006. ● Some of the 88,000 employers in Peel might be new and/or aren't fully aware of the provincial regulations
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		<ul style="list-style-type: none"> ○ Workplace Health Team staff noted that some large workplaces lack awareness of their SFOA obligations. ○ A municipal campaign to raise awareness and understanding of employer obligations may be a future consideration. ● Some employers/organizational leaders might be very resistant to receiving any education or support related to smoking cessation and/or provincial obligations.
<p>Available essential resources (personnel and financial)</p>	<ul style="list-style-type: none"> ● Who/what is available/essential for the local implementation? ● Are they adequately trained? If not, is training available and affordable? ● What is needed to tailor the intervention locally? ● What are the full costs? <ul style="list-style-type: none"> ○ <i>Consider: in-kind staffing, supplies, systems, space requirements for staff, training, and technology/administrative supports.</i> ● Are the incremental health benefits worth the costs of the intervention? <ul style="list-style-type: none"> ○ <i>Consider any available cost-benefit analyses that could help gauge the health benefits of the intervention.</i> ○ <i>Consider the cost of the program relative to the number of people that benefit/receive the intervention.</i> 	<ul style="list-style-type: none"> ● Many Peel residents aren't aware of the smoking-cessation resources available to them ● PPH needs to develop a coordinated approach to drive Peel residents towards cessation resources. PPH needs to combine: <ul style="list-style-type: none"> ○ Employer education/awareness-building (i.e., regarding provincial obligations) ○ Enforcement (perhaps reframe response as education versus complaint response) ○ Community Resources – linking residents and employers to resources available ● In regard to meeting provincial regulations - strategies are needed to address the potential reluctance of some employers/workplaces. Also, different strategies are needed for small versus large workplaces. There may be differing responsibilities for an employer and their building manager (e.g., proprietary obligations of building manager). ● The previous rapid review on physician outreach strategies found that 'academic detailing' works best; this involves going into physician offices and providing very specific information directly to them <ul style="list-style-type: none"> ○ Can the same approach apply to employers/organizational leaders? ○ Audit and feedback also works well with physicians. ● Key community resources are the family physicians

		<p>(~850 in Peel).</p> <ul style="list-style-type: none"> ○ About 10% of Peel residents have access to free NRT through the family health teams (FHTs); this might address a small portion of Peel residents who both smoke and work in Peel. However about 90% of Peel residents don't have free access to NRT. ○ Both individual and group interventions are shown to be effective in the research and can be provided through family physicians. ○ There is currently only one FHT in Peel that has noted that they are providing a one-time smoking cessation group; however others are interested and PPH may be able to provide some training and resources to support the FHTs. <ul style="list-style-type: none"> ● The 'Kick It Program' (at Osler hospital) is another key community resource; potential to expand this program to other hospitals? ● The Smokers' Helpline is an additional community resource. ● PPH should explore which large employers in Peel are offering NRT through their health plans (and to what extent); can begin by connecting with largest employers such as the school boards, the Region, hospitals, etc. <ul style="list-style-type: none"> ○ Many plans that provide coverage only cover one course of NRT in a lifetime (i.e., 1 quit attempt). ● If a business case is developed it should highlight the benefits of supporting employees in living tobacco free (e.g., less sick time, less breaks during day, less exposure to non-smoking employees); it can also identify ways that employers can support their employees (e.g., adjusting benefits packages, policy development). ● An area to explore further – would it be cheaper for
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		<p>an employer to provide smoking-cessation supports (e.g., NRT) directly to a physician? (versus going through insurance/benefits)</p>
<p>Organizational expertise and capacity</p>	<ul style="list-style-type: none"> • Is the intervention to be offered in line with Peel Public Health’s 10-Year Strategic Plan (i.e., 2009-2019, ‘Staying Ahead of the Curve’)? • Does the intervention conform to existing legislation or regulations (either local or provincial)? • Does the intervention overlap with existing programs or is it symbiotic (i.e., both internally and externally)? • Does the intervention lend itself to cross-departmental/divisional collaboration? • Any organizational barriers/structural issues or approval processes to be addressed? • Is the organization motivated (learning organization)? <ul style="list-style-type: none"> ○ <i>Consider organizational capacity/readiness and internal supports for staff learning.</i> 	<ul style="list-style-type: none"> • <i>Living Tobacco Free</i> is a strategic priority in PPH’s 10-year strategic plan. • The Tobacco Use Survey has a question related to workplace tobacco exposure. There is also a youth transitions workgroup that is exploring initiatives for the young adult smoking population. • There is opportunity for ongoing collaboration with three teams/areas across the department: Workplace Health, Tobacco Prevention and Tobacco Enforcement Teams. <ul style="list-style-type: none"> ○ PPH can use SFOA obligations as a foundation for connecting with employers/organizational leaders. ○ A website outlining employer obligations (e.g., SFOA, outdoor smoking by-law) may be a key resource for PPH to develop. • The Tobacco Enforcement team in Environmental Health has limited resources (both funding and staffing) and this is a an important factor to consider; if they are asked to do additional work related to education or if additional work is created as a result of education or campaigns. Complaints are a priority for this team however it may be a capacity issue if additional visits need to be made as a result of increased complaints. <ul style="list-style-type: none"> ○ Group discussed the potential to do cost-sharing for non-enforcement related initiatives (e.g., campaign) and the need for further advocacy to the province in regard to the funding structure for tobacco enforcement. • PPH may want to consider a future Council report on this topic/issue.

Transferability (generalizability)		
Magnitude of health issue in local setting	<ul style="list-style-type: none"> • What is the baseline prevalence of the health issue locally? • What is the difference in prevalence of the health issue (risk status) between study and local settings? <ul style="list-style-type: none"> ○ <i>Consider the Comprehensive Health Status Report, and related epidemiological reports.</i> 	<ul style="list-style-type: none"> • See issue/context section of report and notes above for further details.
Magnitude of the “reach” and cost effectiveness of the intervention above	<ul style="list-style-type: none"> • Will the intervention appropriately reach the priority population(s)? <ul style="list-style-type: none"> ○ What will be the coverage of the priority population(s)? 	<ul style="list-style-type: none"> • There are approximately 68,000 Peel residents who both smoke and work in Peel Region – this is our potential reach. • It is still unclear how to best reach the young adult males in Peel who are smoking; this is something to explore further.
Target population characteristics	<ul style="list-style-type: none"> • Are they comparable to the study population? • Will any difference in characteristics (e.g., ethnicity, socio-demographic variables, number of persons affected) impact intervention effectiveness locally? <ul style="list-style-type: none"> ○ <i>Consider if there are any important differences between the studies and the population in Peel (i.e., consider demographic, behavioural and other contextual factors).</i> 	<ul style="list-style-type: none"> • Peel data reveal higher rates of smoking among young adult males; a group which is also less likely to seek out help from their primary care provider. • It is still unclear how to best reach young adult smokers; whether workplaces are a good channel to do so will need to be explored further and any pilot projects will require ongoing monitoring and evaluation. • May need to reach young smokers through other channels such as social media (e.g., posters, website) • There may be future considerations for work with other populations (e.g., women who might quit before or during pregnancy but have family members who continue to smoke).

Proposed Direction (after considering the above factors):

The following draft recommendations were accepted:

- PPH should not provide direct smoking-cessation services (e.g., counselling, delivery of multi-component programs) in Peel workplaces.
- PPH should support and engage Peel employers and organizational leaders by:

- Providing them with a business case for investing in employee health and well-being through smoking-cessation support.
- Communicating the resources (e.g., health professionals, community-based cessation services) that are available in Peel for smoking adults (i.e., for employers to publicize to their employees).
- Providing additional tools and resources necessary to support their employees in tobacco cessation (e.g., campaign to increase awareness, information on policy development); organizational size and capacity should be taken into account.

An additional recommendation was added:

- That PPH create an integrated plan across the Workplace Health, Tobacco Prevention and Tobacco Enforcement Teams so that a comprehensive approach for workplace smoking-cessation is developed. Key components of the plan may include:
 - Employer education and awareness-building
 - Enforcement
 - Identification and referral to community resources (e.g., family physicians, Smokers' helpline, hospital programs)

Form Completed by: Catherine Shea

Worksheet adapted from: Buffet C., Ciliska D., and Thomas H. National Collaborating Centre for Methods and Tools. November 2007. *Can I Use this Evidence in my Program Decision? - Assessing Applicability and Transferability of Evidence.*