CAN ADAPTT

Canadian Smoking Cessation Guideline

camh
Centre for Addiction and Mental Health
Centre de toxicomanie et de santé mentale

Smoking Cessation in Canada: Practice-informed Research Agenda

April 19, 2011

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EXECUTIVE SUMMARY

One of the main objectives of the CAN-ADAPTT project is the development of a research agenda in key areas of smoking cessation with the intent to bridge the gaps between clinical practice and research. Using a practice-informed approach, the research agenda will contribute to both clinical and population-based approaches of smoking cessation in Canada.

This document aims to summarize gaps in knowledge and research, specifically highlighting those identified by CAN-ADAPTT network members and stakeholders as priorities. The five topic areas highlighted as research priorities below are a result of network feedback gained through an online survey conducted in spring, 2010. Respondents were asked to select topic areas they thought were the most significant priorities for further research in Canada from a list of 27 areas. These priorities provide a basis for exploration into how practitioner-initiated research questions can be investigated.

The five prioritized topic areas outlined in the Research Agenda are summarized in Table 1 below, arranged in rank order.

Table 1: *Top Five Priorities Identified by Network Respondents*

Topic Areas	% of Respondents Prioritizing
Combination therapy	42%
People making repeat attempts to quit	40%
Children, adolescents, and youth	35%
Psycho-social treatments/ counselling	35%
Screening, assessment, advice, follow-up	34%

This research agenda is informed by both internal and external sources. Internal sources include communication vehicles available for CAN-ADAPTT network members to identify research questions or gaps in knowledge, such as the member online survey and discussion board. External sources include existing guidelines, reports, and studies identifying significant gaps in research.

The following table broadly summarizes all areas of research or knowledge gaps identified by internal or external sources. The prioritized topics are in boldface. Topic areas are categorized according to five broad themes, which are: provider approaches; organization-level approaches; approaches addressing specific populations; policy and population-level approaches; and “other” topics.

Table 2: *Topic Areas by Broad Theme*

Themes	Topic Areas Where Gaps Have Been Identified
Provider Approaches	Clinical interventions; intensity of interventions; **screening, assessment, advice and follow-up**; **counselling** medication; **combination therapy**.
Specific Populations	HIV positive smokers; hospitalized smokers; LGBTTQ smokers; smokers with medical co-morbidity; older smokers; smokers with psychiatric and/or substance use disorders; **people making repeat attempts to quit**; ethnic groups/new Canadians; Aboriginal peoples; women/sex differences and gender influences; **children, adolescents and youth**; light smokers; non-cigarette tobacco users; pregnant and breastfeeding smokers; weight gain after stopping smoking; military members; contraband tobacco; rural populations.
Organization-level	Clinician type; systems; cost effectiveness.
Policy and Population-Level Approaches	Economics; tobacco industry practices.
Other	Neurological/genetics.
Bolded text indicates one of the top 5 research priorities identified by the survey	

ABOUT CAN-ADAPTT

The Canadian Action Network for the Advancement, Dissemination and Adoption of Practice-informed Tobacco Treatment (CAN-ADAPTT) is a Practice-Based Research Network (PBRN) committed to facilitating research and knowledge exchange among those who are in positions to help smokers in cessation efforts (e.g., practitioners, healthcare/service providers) and researchers in the area of smoking cessation.

CAN-ADAPTT is designed to engage practitioners and health care/service providers in a "bottom-up" process whereby research questions arise from front-line practice, positioning the research to produce results that are clinically- relevant and readily usable to those in a position to help smokers.

Vision:
Our vision is to see a Canada where those who are in positions to help smokers make changes to their behaviour (e.g., practitioners, healthcare/ service providers) have easy access to the tools needed to deliver up-to-date evidence-based smoking cessation interventions, ultimately helping reduce the prevalence of tobacco use and dependence.

Overall Goal:
The overall goal of CAN-ADAPTT is to facilitate research and knowledge exchange among practitioners and health care/service providers and smoking cessation researchers to inform the development of a clinical practice guideline for use in Canada.

Main Objectives

1. ***National Network:*** To create a national network of smoking cessation researchers, policy/decision- makers and practitioners/providers to inform smoking cessation research and practice.
2. ***Research Agenda:*** To develop a practice-informed research agenda in key areas of smoking cessation that bridges the gaps between clinical practice, and research.
3. ***Knowledge Translation:*** To translate research findings into a dynamic evidence-based guideline on smoking cessation.
4. ***Dissemination and Engagement:*** To disseminate findings and engage stakeholders from national and professional organizations to promote the adoption of the clinical practice guideline.
5. ***Collaboration:*** To collaborate with other projects and programs involved in smoking cessation.
6. ***Evaluation:*** To evaluate the system and population impacts of the proposed practice-based research network and the objectives above.

RESEARCH AGENDA DEVELOPMENT PROCESS

An important component to the CAN-ADAPTT project has been the opportunity to learn from network members specifically using the development of a clinical practice guideline as a mechanism to also build a strong consensus for the identification of relevant research gaps in smoking cessation. As a starting point, the review of existing clinical practice guidelines identified initial gaps in evidence or research that formed the beginning of the research agenda.

While executing the activities of CAN-ADAPTT, gaps in smoking cessation research continued to emerge. In an attempt to build from this learning the CAN-ADAPTT team undertook a coordinated approach to the development of a National Research Agenda. What follows is a description of the methods used to develop this research agenda; additional detail is provided in Appendix A.

A range of sources, both internal and external sources, were identified, reviewed and integrated into this final draft version. In many cases reference to a gap was explicitly identified as such "research gap"; in other instances reference was made to "evidence gaps" or "knowledge needs" or "areas of future research. All sources used to inform this research agenda can be found in the References section (page 37).

Internal Sources

Internal sources include any method of communication and/or engagement available for network members to provide feedback especially when explicitly requested to identify gaps in knowledge/areas for future research. This includes communications such as the CAN-ADAPTT discussion board and information shared through surveys and evaluation forms collected at various CAN-ADAPTT events. The complete list of internal sources is listed in (Table 3):

Table 3: *Internal Sources*

Source	Source Description
Online Discussion Board	Provided opportunity for network members to engage and dialogue on various topics related to the CAN-ADAPTT project including the guidelines, research gaps and specific clinical questions.
Seed Grant Applications	24 applications were received by CAN-ADAPTT from researcher/practitioner teams interested in receiving 1 of 12 $5000 seed grants. (refer to appendices)
Annual General Meeting (AGM)	Held annually the AGM agenda included specific discussion of research gaps that was captured by CAN-ADAPTT team members meeting notes and through participant work books that were collected and collated.
Transdisciplinary	Monthly webinar and in-person series provided opportunity for

Source	Source Description
Tobacco Rounds (TTR)	discussion of emerging research and evidence related to smoking cessation in Canada.
Network Member Survey	A survey specifically aiming to illicit feedback on the research agenda was distributed to network members in April 2010.
Teleconferences	Three teleconferences (Eastern Canada, Western Canada and Ontario) were held for network members to provide feedback on the research agenda specifically aiming to identify priorities among the gaps identified.

External Sources

As CAN-ADAPTT's guideline was initially developed from a compilation of existing high quality smoking cessation guidelines, these guidelines were examined for pertinent research questions, identified gaps and recommendations related to smoking cessation.

An academic literature search, web search and organizational specific search was also performed in both English and French to identify additional academic studies or grey literature to be considered. Table 4 lists the types of external sources gathered. The literature search strategies can be found in the Methodology section (Appendix A).

Table 4: *External Sources*

Source	Source Description
Existing Guidelines	The AGREE Instrument was used to evaluate existing clinical practice guidelines in English. Six guidelines were selected to inform the CAN-ADAPTT project. These guidelines were also reviewed to identify research gaps for inclusion in this report
Organizational Reports	Many stakeholder organizations in Canada and beyond have integrated discussion of research gaps in their respective organization level reports (annual reports, supplements, project specific reports etc.). Organizations working in smoking cessation were targeted for a specific web-based search for existing documents relevant to the CAN-ADAPTT Research Agenda.
Grey Literature	Sampling was used through Google searches to identify relevant literature that was not indexed in peer-reviewed journals. This process was not exhaustive. Network members were also encouraged to identify relevant material.
Published Academic Literatures	Review of indexed journals was conducted. Search strategy has been included in Appendix A.

RESEARCH PRIORITIES IDENTIFIED BY CAN-ADAPTT NETWORK

Once research gaps were identified and mapped, the CAN-ADAPTT Network was once again engaged to identify the top 5 priorities from the list of research gaps. In April 2010, an electronic survey was distributed to the CAN-ADAPTT Network Members (n=507) asking for the priority ranking of research areas relevant to Canada (see Appendix B for a copy of the survey). In addition, members were asked to reflect on the impact of research gaps on their own professional practice or professional role working in smoking cessation. Opportunity was also provided for members to identify additional sources of information to be considered in the next draft of the Research Agenda.

Summary of Findings

A total of 111 respondents (response rate 22%), the majority being health practitioners, gave feedback on priority areas of smoking cessation requiring further research.

Of the 27 given topic areas, the five identified research priorities are:

Table 5: *Top Five Priorities Identified by Network Respondents*

Topic Areas	% of Respondents Prioritizing
Combination therapy	42%
People making repeat attempts to quit	40%
Children, adolescents, and youth	35%
Psycho-social treatments/ counselling	35%
Screening, assessment, advice, follow-up	34%

Respondents agreed that lack of knowledge or research in smoking cessation impacts their professional practice. Some of the broad themes under which respondents reported being affected are:

- Advocating for or informing effective treatment programs/interventions;
- Smokers' limited access to affordable cessation medications (e.g. NRT);
- Lack of effective cessation programs for specific populations;
- Lack of practitioners' knowledge of evidence-based smoking cessation interventions.

Other Research Priorities Identified by Respondents

Not all possible topics of smoking cessation requiring further research could be included in the survey. Respondents to the survey identified "other" areas or specific populations requiring further knowledge/research development:

- Youth/young adults
- LGBT young adults
- Rural populations; rural women
- COPD populations
- Smokers with lung health issues
- Smokers with eating disorders
- Smoking among the elderly population
- Individuals with alcohol and other drug addictions in rehabilitation/treatment
- Quitlines' usage and funding/resources
- Suicide risk and Champix (Varenicline)
- Policies supporting cessation

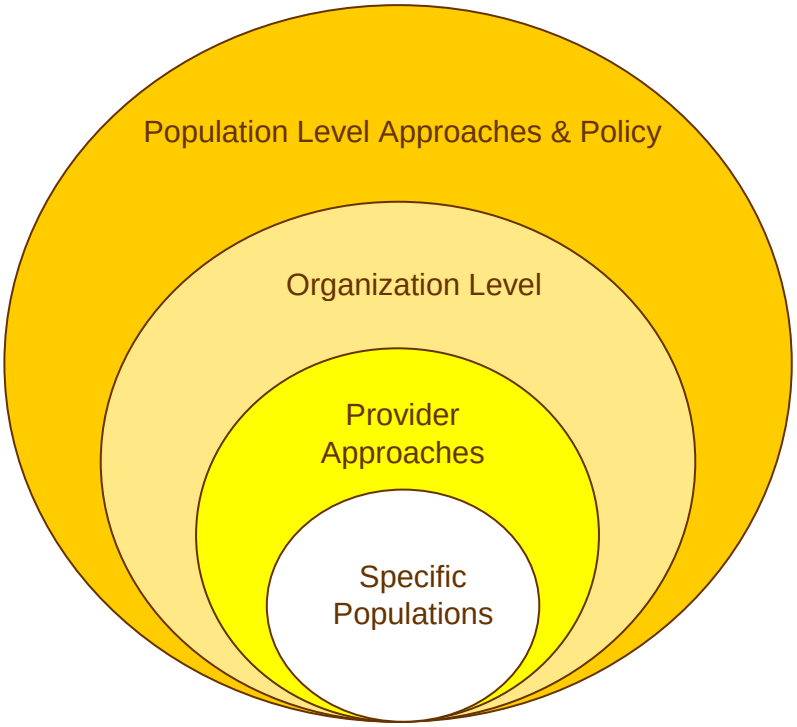
As a follow up to the survey, three teleconferences were hosted by CAN-ADAPTT to provide opportunity for members to discuss the priority areas.

Research Themes

Areas for future research, including those prioritized by network members, have been categorized according to the themes and as illustrated in Figure 1:

- Section 1: Provider approaches;
- Section 2: Approaches that address specific populations;
- Section 3: Organization-level approaches;
- Section 4: Population and policy level approaches.

Figure 1: *Research Agenda Framework*



The Research Agenda has been organized according to these themes. Any topic areas prioritized as a research gap by the network will be highlighted and noted as such, with a list of research questions CAN-ADAPTT has collected.

SECTION 1 – Provider Approaches

In this section, provider-level research questions or gaps that were identified are outline. Providers are in an important and unique position to ensure appropriate support to their patients/clients. Not surprising then, research gaps identified tended to address specific clinical questions related to intervention at the provider level.
Key themes included:

1. Psychosocial Treatment;
2. Screening, Assessment, Advice and Follow up;
3. Combination Therapy;
4. Medication; and
5. General Clinical Interventions

1.1 Priority Area: Psychosocial/Counselling

The sources used to inform the Research Agenda identified a range of research gaps associated with counselling. The US Health Human Services Clinical Practice Guidelines call for further understanding of the mechanisms through which counselling interventions exert their effects. The US CPGs, for example, call for further research on the relative effectiveness of specific counselling interventions, both in general and in terms of specific patient populations. Research is also needed to identify optimal methods of increasing the acceptability, agreement and uptake of different counselling methods. The specific research questions or gaps identified are contained in Table 6.

Table 6: *Priority Area – Psychosocial/Counselling*

Research Questions Identified	Source*
Further understanding of the mechanisms through which counselling interventions exert their effects.	61, 19
Research on the optimal timing, frequency and duration of counselling treatments.	61, 9
Optimal methods to decrease barriers and increase the acceptability, appeal and uptake of different counselling methods.	61
Effectiveness of intensive inpatient treatment programs.	61
Ways to combine face-to-face counselling with telephone follow up to support quit attempts.	19
Research on the social impact of smoking withdrawal (what has been successful in assisting people to maintain their social network?).	11
Efficacy of smoking cessation programs and referrals to programs. Evaluation tools for group counselling.	9, 11, 14
What if your treatment facility is smoke-free and clients are provided NRT; however, some clients have privileges that allow them to leave the premises and go down the street and smoke? How do you prevent these clients from smoking?	9

Research Questions Identified	Source*
Further research on the relative effectiveness of specific counselling interventions (motivational interviewing, cigarette fading, physiological feedback of smoking effects), both in general and in terms of specific patient populations.	61
Research evaluating cognitive behavioural therapy (CBT).	27
What is the impact of motivational interviewing administered via life coaching skills on: smoking cessation; average number of cigarettes smoked per day; self-esteem; and self-efficacy to quit smoking among young adults.	13
When should the topic of smoking be raised if a client is dealing with multiple stressors? When is the optimal time to advise someone to quit and how does a professional recognize this "optimal time"?	9
Effectiveness of specific counselling interventions among various patient populations (those with cancers; chronic obstructive pulmonary disease [COPD]).	61

**Source corresponds to the source number listed in the Reference section.*

1.2 Priority Area: Screening, Assessment, Advice & Follow-up

The research questions listed here pertain to the implementation of screening, assessment, advice and follow-up as part of smoking cessation intervention. These gaps also encompass conceptual underpinnings of clinical interventions, clinical approaches or aspects relating to effectiveness and issues of implementation (e.g. screening methods or intensity of interventions). The specific questions are outlined in Table 7.

Table 7: *Priority Area – Screening, Assessment, Advice, and Follow-up*

Research Questions Identified	Source*
Intensity, frequency or timing of interventions	
Effects of treatment duration, timing, and spacing of sessions (i.e., the number of days or weeks over which treatment is spread). Do front-loading sessions (having the majority of the sessions during the first few weeks of a quit attempt) or spacing sessions throughout the quit attempt yield better long-term abstinence rates?	61
The frequency and timing of health professional interventions when it comes to the effectiveness of brief provider interventions, by more than one type of clinician."	9
Effectiveness of tailoring	61
Relative effectiveness of clinical interventions that encourage reduction of tobacco use, versus those that encourage full cessation.	11, 61, 30
Methods to increase the appeal and utilization of intensive treatments	61
Effectiveness/efficacy of interventions and referrals to programs	14, 11
Effectiveness of brief cessation advice in relation to age, gender, socioeconomic status and ethnicity.	43
Approaches to screening, assessment, and follow-up	
Disparities in screening and assessment in specific populations.	61

Research Questions Identified	Source*
Can treatment adjustment based on specialized assessments improve long-term abstinence rates?	61
How to address the lack of long term follow-up and engagement of smokers.	11
Lack of long term follow-up engagement of smokers.	11
Other screening methods for tobacco addiction other than the Fagerstrom Test and Heavy Smoking Index.	12
Which nicotine withdrawal assessment scales are being used in practices? E.g. Minnesota Nicotine Withdrawal Scale.	9
Whether treatment adjustment based on specialized assessments can improve long-term abstinence rates	61

**Source corresponds to the source number listed in the Reference section.*

1.3 Priority Area: Combination Therapy

The US Health Human Services guideline states that there is evidence to support the effectiveness of both counselling and medication in combination. Other research gaps refer to combination therapy in terms of the use of multiple NRT and/or other medication together. Research questions related to Combination Therapy are outlined in Table 8.

Table 8: *Priority Area – Combination Therapy*

Research Questions Identified	Source*
Effectiveness of counselling or behavioural modification and medication in combination.	***42,46***
Optimal timing and length of counselling and medication interventions (e.g., timing and spacing of post-quit counselling sessions).	61
Effectiveness and acceptability/appeal of different counselling formats and techniques (e.g., computer-based counselling, quit line counselling, motivational interviewing).	61, 10
Strategies to address misconceptions about effective counselling and medication treatments.	61
Relative cost-effectiveness of various treatment combinations.	61
Effectiveness of medication or NRT in combination.	***42, 46***
Lack of awareness among health practitioners that they can recommend multiple types of NRT and other methods of cessation.	12
Hesitancy among health care providers to practice combination therapy as it goes against product labels.	12
Effectiveness of co-treatment of NRT and Champix.	10

**Source corresponds to the source number listed in the Reference section.*

1.4 Other Provider Approaches

Though not selected by the network as one of the top 5 research priorities, other provider-level approaches includes the topic of medication and more general clinical interventions.

Medication

Sources identified research gaps associated with the effectiveness and safety, timing, and accessibility of medication use. Further research is needed on issues such as the relative effectiveness and safety of approved medications, the provision of NRT, off-label use, the optimal timing of medication use, and feasibility and safety of long-term pharmacotherapy.

Table 9: *Priority Area – Medication*

Research Questions Identified	Source*
Medication	
Research into risks and benefits of providing NRT through quit-lines.	2
Interventions: development of new medications and novel behavioural approaches.	40
Development of novel pharmaceutical products.	30
Efficacy	
How much is NRT efficacy attributed to relief of withdrawal?	46
To what extent are NRT products replacing the primary reinforcing effects derived from tobacco use?	46
More research on mechanisms of efficacy for Bupropion and other antidepressants such as Nortriptyline.	46
Developing antagonist or agonist/antagonist drugs that target specific subtypes of nicotinic receptors in the brain that are thought to be primarily responsible for mediating the reinforcing properties of nicotine.	46
Effectiveness and safety	
Examine suicide risks in Champix users.	12
Investigate effectiveness and safety of Cytisine.	22
Research on the optimal timing, frequency and duration of medication interventions.	61, 9
Ideal dosing –examine harm/toxicity as a function of dose.	30
Relative effectiveness and safety of approved medications, in general and specific to certain subpopulations and circumstances:	61, 23
• Among women.	61
• For breastfeeding women.	9
• Adolescents.	61
• Older smokers.	61
• Smokeless tobacco users.	61, 9

• Individuals with psychiatric disorders and substance use disorders.	61, 9
• Risks and contraindications to using NRT post cerebrovascular accidents (CVA)?	9
• Different levels of nicotine dependency.	52
• Feasibility and safety of long-term use of pharmacotherapy (including issues of NRT addiction).	14, 11, 9, 30, 46
• Drug combinations.	61, 11, 9
Research to better understand the potential for use and abuse of nicotine available in products other than tobacco products, e.g., nicotine replacement therapy.	31
Timing	
Further research needed to clarify optimal timing/onset of medication use.	61
Programs should identify when nicotine replacement therapy (NRT) is appropriate.	31
Accessibility	
Off-label use.	11
Research to identify changes associated with OTC availability. What is the appropriateness and frequency of use of OTC products?	61
Recommendation by non-health professionals.	14, 11

**Source corresponds to the source number listed in the Reference section.*

General Clinical Interventions

It was identified that further research was needed into issues and themes relating to clinical interventions, broadly speaking. For example, there was a stated need for inquiry into the relative importance of format versus content of interventions or into ways to increase the appeal of cessation. There was also a stated need for research into specific clinical approaches; those ranging from family systems intervention, to WATIs (web-assisted tobacco intervention), to alternative treatments such as hypnosis or laser treatment.

Table 10: *Priority Area – General Clinical Interventions*

Research Questions Identified	Source*
General Clinical Interventions	
Issues associated with clinical interventions in general	
Relative effectiveness of generalized approaches vs. clinical interventions tailored to specific populations/patients.	61, 14, 11, 23
Relative importance of format vs. content of clinical interventions.	61
Look at ways to increase appeal/attractiveness of cessation → create a demand for cessation services.	21
Research innovative social-ecological approaches to smoking cessation in various settings, including workplaces and community-based organizations. To understand these properties, the research lens must be widened to encompass whole groups of individuals and their interconnections.	56
Addressing social networks as a means of increasing cessation and abstinence (e.g. other household smokers, teaching quitting support, encouraging a smoke-free home). Also, how to apply social network research in practice?	61, 11, 23, 46, 56
Specific clinical approaches	
Effectiveness of computer-delivered interventions as a format vs. the effect of the content of the intervention.	61
Web and technology-assisted interventions more broadly, including fax-to-quit and WATIs. Effectiveness of programs designed to increase Quitline use.	61, 2, 15
Family systems interventions as a means to increase support.	61
Alternative treatments (e.g. hypnosis/cold laser therapy).	14, 9, 55
Using physiological monitoring and biomarker feedback	61,
Research to better understand interactiveness among interventions, with a view to developing guidelines for the best mix of interventions for optimal impact for prevention, cessation, protection, and denormalization.	31
Effectiveness of Allen Carr's method.	39
Analysis of relative efficacy of clinician referral vs self-referral to SC programs (e.g. Quitlines).	2
Effectiveness of triaging/staging cessation advice based on exposure to risk factors.	2

**Source corresponds to the source number listed in the Reference section.*

SECTION 2 – Specific Populations

This section relates to specific populations that, given their physiological, medical, social, or other circumstances, warrant unique treatment considerations with respect to smoking cessation interventions.

Two of these specific populations; "Children, adolescents and Youth" and "People making repeat attempts to quit" were identified as top 5 priority areas, and their corresponding research questions are included here.

Research questions relating to all other specific populations are listed in Table 14 at the end of this section.

2.1 Priority Area: Children, Adolescents and Youth

Regarding children, adolescents and youth, research gaps relate to the effectiveness of therapeutic approaches and medications; specifically interventions, strategies and/or best practices for treating youth within their social environments. The importance of outcome measures for this specific population was also identified as an important area for more research. The table below lists the research questions related to this area (Table 11).

Table 11: *Priority Area – Children, Adolescents, and Youth*

Research Questions Identified	Source*
Effectiveness of interventions	
What intervention combinations, intensity, and duration are the minimum required to reduce youth tobacco use?	57
Effectiveness of using the 5As in paediatric clinics to treat both adolescents and parents	61
Safety and effectiveness of medications in adolescents, including bupropion SR, NRT, Varenicline, and a nicotine vaccine.	61, 14, 6, 15, 21, 62
Effectiveness of counselling interventions designed specifically to motivate youth to stop using tobacco, including quit-lines and web-based interventions.	61, 14, 15, 54, 35
Effectiveness of child-focused versus family-focused or peer-focused interventions as well as interventions accessed or delivered in different settings - internet, quit-lines, and school and college-based programs.	61, 3, 21, 19
Research to develop effective cessation programs for youth.	31, 54, 3, 26
Longitudinal studies to identify the determinants of smoking cessation in youth, which will help in the design of evidence-based cessation interventions.	59
Youth-specific social settings and youth culture	
Bio-behavioural research to understand the socio-cultural, psychological, physiological, and genetic factors that influence the initiation, progression to addiction, and cessation among children and adolescents.	42

Research Questions Identified	Source*
Research the "world" (culture) in which youth live, to understand the multiple and varied factors and influences that contribute to youth uptake of tobacco use.	31
Assess the needs and preferences of youth for cessation interventions, including distinct needs resulting from cultural diversity.	62
Develop and evaluate new methods to deliver cessation support, tailored to the needs of different segments of the population of youth.	62
Best practices and outcome measures	
Tailoring guidelines to acknowledge the range of specific situations encountered by youth.	11
Develop and validate standard cessation outcome measures as they apply to youth.	62
Develop consensus on the criteria for best practices in new interventions. Conduct an analysis and evaluation of current best practices in cessation interventions.	62
Develop standard program evaluation methods; evaluate the efficacy of various types of services, supports, and other interventions.	62, 3
Intervention methods and strategies	
Strategies for increasing the efficacy, appeal, and reach of counselling treatments/behavioural interventions for youth smokers.	61, 14, 15, 3
How to motivate and support teens to quit tobacco use.	14
Determine the effects of required parental or other consent on program enrollment, retention, and success.	62
Design and evaluate procedures for recruiting and retaining youth into cessation programs.	62
Relative effectiveness of youth-targeted interventions delivered in different settings and by different providers.	3
Effects of restrictive smoking policies in the workplace/educational/other institutional settings.	21
Use of smoking cessation aids in teens.	14
Other	
Bio-behavioural research to understand the socio-cultural, psychological, physiological, and genetic factors that influence the initiation, progression to addiction, and cessation among children and adolescents.	42
Evaluation of interventions to limit SHS exposure [Best: especially PC-based interventions].	6, 15
Develop and evaluate a model of predictors for youth cessation.	62
Reasons for medically ill teens to smoke and the unique challenges they face when quitting.	54
Address and improve methodological quality of research directed at youth and tobacco use.	3
Relapse in early adolescents and non-daily smokers.	4

**Source corresponds to the source number listed in the Reference section.*

2.2 Priority Area: People Making Repeat Attempts to Quit

Both external and internal sources identified a need for further evaluation of the effectiveness of interventions targeting relapse – specifically, the optimal format (in person via telephone), content, and timing. Other factors affecting relapse prevention were also flagged for additional research such as social support, quitting history, and the nature of relapse proneness, for example.

The research questions for this topic are outlined in detail in Table 12 below. (Research questions relating to relapse prevention can also be found under the theme of Provider Approaches in the priority topic area of "Screening, Assessment, Advice and Follow-up".)

Table 12: *Priority Area – Making Repeat Attempts to Quit*

Research Questions Identified	Source*
Optimal timing and types of relapse prevention interventions.	61
Effectiveness of various formats for relapse prevention treatments (e.g., effectiveness of telephone contact in reducing the likelihood of relapse after a minimal intervention).	61
Interventions to prevent relapse in individuals who have recently quit smoking.	52
Intra- and extra-treatment social support and problem-solving/relapse prevention and the processes by which they work.	46
Does an individual's previous 'quitting history' affect the success of any subsequent brief intervention?	43
Relapse-prevention strategies that are applicable when strong temptations to smoke become less frequent and the person no longer sees him/herself as needing help.	7
Research the nature of forces influencing relapse proneness - identify the specific relapse forces, develop taxonomies and chronologies of them, and how they work together so that smoking cessation treatment can be appropriately modified.	50
Relieving sleep disturbances and its effect in making quitting easier and preventing relapses.	60

**Source corresponds to the source number listed in the Reference section.*

2.3 Other Specific Populations

Although not specifically identified by the network survey to be in in the top five research priorities, the specific populations listed below were also identified to be research or knowledge gaps.

Table 13: *Other Specific Populations Requiring Additional Research*

Other Specific Populations
Aboriginal Peoples
Contraband Tobacco
Ethnic Groups/ New Canadians
HIV-positive Smokers
Hospitalized Smokers
LGBTTQ
Light Smokers
Medical Co-morbidity
Military Members
Non-Cigarette Tobacco Users
Older Smokers
Pregnant and Breastfeeding Smokers
Psychiatric and/or Substance Use Disorders
Rural Populations
Weight Gain After Stopping Smoking
Women/ Sex Differences and Gender Influences

Sources identified a series of research gaps with regard to specific populations, calling for additional research into population-based disparities in screening, assessment and treatment for tobacco use. Research is also needed to determine which populations stand to benefit from specially targeted interventions, and to determine which strategies are most effective. For such programs that are currently in place, proper evaluation is necessary to ensure that needs are being met.

The gaps reinforce the importance of investigating different variables across populations – the physiological, physical, social, and behavioural variations that influence a range of clinical choices pertaining to tobacco control, including optimal medication type and dosing,

choice of counselling/behavioural intervention, and source and timing of intervention. See Table 14, below, for the research gaps corresponding to specific populations.

Table 14: *Specific Populations*

Areas for Future Research and Corresponding Research Questions	Source*
1. General Considerations	
Research on the treatment of nicotine addiction to find the best ways to tailor tobacco cessation interventions to specific sociocultural, psychological, physiological, and genetic subgroups.	42
Determine which populations benefit from specially-targetted interventions.	11, 20, 23
Determine which tactics and strategies are most effective.	11, 20, 23
Look at prevalence and effects of ETS in special populations.	23
Increase our understanding and knowledge of how social/contextual factors influence smoking-related behaviour.	21, 23
Evaluation and intervention research conducted to determine effective cessation tools and cessation programs for different social/cultural groups (e.g. immigrants, First Nations, Inuit, Métis youth, pregnant women, etc.).	44
At-risk and marginalized groups	
Look at ways of increasing access to smoking cessation programming for at-risk and marginalized populations – what are the possibilities for program integration?	21
Additional research into population-based disparities in screening, assessment and treatment for tobacco use.	52, 61, 11, 55, 23, 38
Research on vulnerable, at risk, and underserved populations. How to engage underserved populations who are more difficult to engage or those who may not have access to Quitlines or other cessation efforts.	40, 33,10
Ethical and unbiased research on the priorities of targeted at-risk groups, with respiratory health as a part of holistic health and well-being.	44
Research on the workplace	
Investigate underlying causes of class/occupational disparities in smoking-related behaviours.	5
Research into effective dissemination of workplace cessation programs.	5
Effectiveness of programs delivered through organized labour.	5
2. HIV-Positive Smokers	
Effectiveness, safety and tolerability of medications and counselling/behavioural interventions, including tailored interventions.	61, 9, 41
Effectiveness of (motivational interviewing (MI) and educational approaches in increasing motivation to quit.	61, 9
Effectiveness of community and social support networks in bolstering quitting motivation and improving treatment outcomes.	61
Lack of clinical guidelines to direct providers' delivery of tobacco cessation care to smokers who are HIV-positive.	9
Look at barriers to access to routine tobacco use screening and SC programming among smokers who are HIV-positive.	41
Programmatic gap: primary care providers may not prioritize smoking cessation when treating patients who are HIV-positive.	9

Areas for Future Research and Corresponding Research Questions	Source*
Test the level of efficacy and generalizability of proven interventions for HIV-infected smokers using controlled clinical trials.	47
Understand the special concerns regarding cessation; this may take a 'bottom-up' approach (e.g. Focus groups).	47
Examine potential benefits of nicotine to HIV-infected persons (e.g. Improving cognitive performance among those who might experience progressive dementia).	47
3. Hospitalized Smokers	
Effectiveness of interventions provided by different hospital personnel, including nurses and respiratory therapists.	61
Effectiveness of counselling and medications	61
Relapse prevention once the patient leaves the hospital.	61
Safety/risks/benefits of NRT use in peri-operative patients.	9
4. LGBTTQ	
Accessibility and acceptability of tobacco dependence interventions.	61
Rates of intervention use and effectiveness of both medications and counselling treatments.	61
Effectiveness of tailored interventions.	61
Targetting young adults and occasional smokers in this population.	12
5. Medical Co-morbidity	
Effectiveness of counselling and cessation medications among individuals with diabetes, asthma and obesity	61, 9
Research on needs and management among those with respiratory disease, COPD, or other lung health issues.	44, 12
Impact and effectiveness of specialized assessment and tailored interventions in this population.	61
Treatment for individuals with eating disorders.	12
Explore the smoking cessation benefits in terms of quality of life but also set up smoking cessation programs and accurately assess their efficacy for cancer patients.	37
6. Older Smokers	
Best practices for smoking cessation in later life and evaluation of these interventions.	51
Best practices that take into account the economic and environmental barriers to smoking cessation among seniors.	51
Explore interventions on second-hand smoke specific to seniors.	51
Effectiveness of tailored as well as general counselling interventions for older smokers in promoting tobacco abstinence.	61, 9
Effectiveness and side-effects of medication.	61, 9
Effective methods to motivate older smokers to make a quit attempt.	61, 9

Areas for Future Research and Corresponding Research Questions	Source*
7. Psychiatric and/or Substance-use Disorders	
Evaluate cognitive– behavioural mood management techniques for smokers at high risk for cessation-induced exacerbation of depressive symptoms.	46
Relative effectiveness of different dependence medications and counselling strategies in patients with psychiatric comorbidities, including depression, and substance use disorders.	61, 11, 8
Additional research into subjective and objective indices of withdrawal among substance-using populations.	8
Research into characteristics that interfere with smoking cessation interventions among substance users.	8
Look at biological and social interactions between MI and tobacco use.	30
Effectiveness and impact of tobacco dependence treatments in combination with other (non-tobacco) chemical dependency treatments.	61, 9s, 8, 19
Importance and effectiveness of specialized assessment and tailored interventions in these populations.	61
Impact of stopping tobacco use on psychiatric disorders and their management.	61
Research on interrelationships among tobacco and other substances and behaviours.	16
Other substance use as possible co-determinant linkages with addiction trajectories.	16
Lack of clinical practice guidelines for this population.	11
Look at motivational enhancement therapy and contingency management as adjuncts to increase readiness to quit, adherence, reduction and abstinence in people with MHA disorders; also, CBT for relapse prevention.	32
Improve methodological quality and replicability of SC research among MHA populations: expand sample sizes, do multisite studies, include detailed descriptions of intervention protocols, better monitoring and reporting, use multiple measures of outcomes.	32
Further research into effectiveness of smoking cessation interventions among different MHA populations (e.g. bipolar, panic disorders).	32
Look at characteristics that predict positive treatment outcomes among MHA populations.	32
Treatment for those with other substance addictions who are in rehabilitation/treatment and how to integrate tobacco use cessation treatment into addictions treatment (as would be used for other substance use disorders).	12
8. Ethnic Groups / New Canadians	
Effectiveness of specific tobacco dependence interventions in these populations/	61, 49
Effectiveness of Quitlines for non-English/Spanish speakers.	2
Effectiveness of culturally-adapted versus generic interventions for different racial and ethnic minority populations.	61
Identification and development of interventions to address the specific barriers or impediments to treatment delivery, use, or success (e.g., SES, inadequate access to medical care, treatment misconceptions, not viewing tobacco use as problematic).	61, 49

Areas for Future Research and Corresponding Research Questions	Source*
Identification of motivators of cessation that are especially effective with members of racial and ethnic minority populations (e.g., fear of illness requiring long-term care and disability).	61, 49
Evaluation of role of health care providers specific to minority population – i.e. do they have more/less influence? Where does race fit in?	49
Behavioural research to test treatment programs and sociocultural studies to elucidate differences in responsiveness to interventions among ethnic and cultural groups.	53
9. Aboriginal Peoples	
Exploration of ways to integrate traditional practices and spirituality into tobacco use interventions.	16
Gather surveillance data at the local/regional levels and with off-reserve, non-status and Métis.	16
Learn more about health service provider practices pertaining to tobacco use.	16
Identify sources of resiliency in the aboriginal context.	16
Evaluate successful programs to identify sources of success and identify factors contributing to effective cessation.	16, 38
Increase biomedical knowledge about Aboriginals and tobacco, e.g. incidence of smoking-related diseases.	16
Research effective dissemination practices.	16
Improve understanding of motivations for smoking and not smoking and how this differs across groups (youth, pregnant women, families, health workers) and locations.	17
Effective and appropriate practices around prompting quit attempts and keeping people quit—including brief interventions, nicotine replacement therapies (NRTs) and alternatives, and population-based initiatives such as media campaigns, smoke-free policies. How does this differ across groups (youth, pregnant women, families, health workers) and locations? How best should interventions be delivered (effective community-based models; effectiveness of using champions or role models)?	17
How can mainstream practices, or practices in other sectors (such as drug and alcohol) be best adapted to Indigenous tobacco use cessation contexts?	17
10. Women/Sex Differences and Gender Influences	
Investigate differences in the effectiveness of tobacco dependence treatments, including counselling and the effectiveness of Varenicline and combination medications.	61
Impact of gender-specific motives that may increase quit attempts and success (e.g., quitting to improve fertility and reproductive health, pregnancy outcomes, physical appearance, and osteoporosis).	61
Explore:	
• Gender differentials in tobacco use onset, maintenance, and cessation. • Gender and addiction processes. • Gender differences and effects of tobacco exposure. • Gender differences and disease processes.	16
• Differential effects of social context and tobacco use.	

Areas for Future Research and Corresponding Research Questions	Source*
• Differential effects of NRT and pharmacologic agents. • Research on dissemination of gender-specific information to clinicians. • Research effective ways to integrate tobacco control in perinatal care. • Evaluation of effects of taxation and pricing on tobacco use, with attention to gender differences. • Development of sex and gender-sensitive indicators for population and systems level analysis. • Developing an improved understanding of gendered approaches to: harm reduction, marketing (by tobacco companies), and occupational and other sources of ETS.	
Research on sex-differentiated (biological) effects of tobacco use on girls • How does smoking interfere with nutrition/food uptake in girls? How can nutritional supplements be used as a smoking harm reduction tool with girls? • What are the combined health impacts of cigarette smoke and other substances (e.g., alcohol, cocaine, marijuana, Prozac) in girls? • What are the interactions between contraceptives and smoking in girls? • How does smoking and ETS affect breast development in girls? • What are the health effects of nicotine replacement therapies on pregnant women and adolescents? • How can short-term health consequences (e.g., delayed lung growth, yellow teeth, wrinkles) be used appropriately in cessation tools with girls? • What are the endocrine effects of smoking in girls? • What is the evolution of nicotine dependence in teenagers and how is it sex-specific and/or gendered? • How is nicotine dependence defined and measured in girls?	18
Integration and consideration of the social context in the study of smoking in girls • What are the perceived benefits of smoking for girls? (i.e., what motivates girls to smoke and keep smoking?) What activities would provide an alternative to smoking for girls (e.g., physical activity)? • How can a girl successfully quit smoking if her parents smoke at home and/or her partner and friends also smoke? • How are smoking and smoking patterns defined and measured in adolescents and what are the sex and gender differences in smoking patterns? • How do power relations (between girls, boys, policy makers, researchers, etc.) affect smoking in girls? • How can the tobacco control movement appeal to girls? • How can lessons from the tobacco companies' gendered approaches be utilized in understanding and tapping into girls' culture.	18
Research focusing on non-smokers • What are the protective factors for maintaining non-smoking status? • Where do non-smokers currently get reinforcement for their behaviour? How can non-smoking behaviour be reinforced in girls? How can non-smoking be marketed as "cool" in girls? • What kind of activities in a community will support non-smokers?	18

Areas for Future Research and Corresponding Research Questions	Source*
Research on the effects of tobacco policies on girls • How are tobacco control policies experienced by girls? What relationship is there between policy changes and prevalence in girls? • How do girls experience tobacco control policies differently than boys? What are the gender differences in reactions to anti-smoking tobacco advertisements? How effective are "fear campaigns" by the government in preventing smoking in girls? What are the gender differences in the perceptions of "healthier" cigarettes (e.g., "mild") and brand selection? • How do smoke-free areas contribute to social exclusion in girls?	18
11. Light Smokers	
Investigate the effectiveness of counselling and medication interventions specifically targeted at lighter smokers.	61
Evaluate the effectiveness of generalized counselling and medication interventions among lighter smokers.	61
12. Non-Cigarette Tobacco Users	
Evaluation of treatment effectiveness among users of non-cigarette tobacco products, especially among users of pipes, cigars, and hookahs. • Advice and counselling treatments. • Medication. • Medication combined with counselling and behavioural therapies.	61, 14, 9
Effectiveness of medication and counselling interventions with individuals who both smoke cigarettes and use non-cigarette tobacco products.	61
To what degree is the public aware of the relative level of health risk associated with smokeless tobacco? • Examining the degree to which those who are aware of harm reduction believe that smokeless tobacco is safer is also a question of interest. If the public were aware of the relative level of health risk associated with smokeless tobacco versus cigarettes, would it make a difference in consumption intentions and behaviours? • Does the public believe that it has a right to know the best available information on the relative risk of products? • How can harm reduction information be effectively disseminated? • Would better dissemination of information on the risk level of smokeless tobacco contribute positively to public health?	58
13. Pregnant and Breastfeeding Smokers	
Effectiveness of different types of counselling, behavioural therapies, and motivational interventions for pregnant women in general and in high prevalence/at-risk populations (including young mothers).	61, 24, 29, 36
Gain a better understanding of factors affecting smoking choices pre-conception, during pregnancy, postpartum, in general and among high-prevalence and at-risk populations.	24, 36
Evaluation of the safety and effectiveness of medication during pregnancy, breastfeeding.	61, 34
Relapse prevention with pregnant women and women who have recently given birth.	61, 24
Development of strategies for linking preconception, pregnancy and postpartum interventions.	61, 24

Areas for Future Research and Corresponding Research Questions	Source*
Look at efficacy of including smoking cessation content in postpartum/well baby care.	24, 29
Effects of smoking during fertility treatment and the effects and effectiveness of cessation interventions on the infertile population, both men and women.	61
Explore effectiveness of interventions that involve the woman's partner and social support networks.	24, 29
Additional research on pre- and post-natal exposure and impacts. • Differential effects on males and females, e.g., cognition, growth, MAI outcomes. • Impact on offspring in their likelihood of smoking and genetic effects.	16
14. Weight Gain after Stopping Smoking	
Evaluate the effectiveness of weight control measures during quit attempts and the effect on tobacco abstinence and weight.	61
Optimal "dose" and timing of exercise to minimize weight gain and treatment outcomes.	61
Evaluate the effectiveness of medications to control weight gain during quit attempts.	61
Evaluate impact of weight gain concerns on specific populations, including adolescents who smoke and ethnic/minority women.	61
Evaluate strategies to increase adherence to exercise as part of cessation interventions that include efforts to decrease weight gain.	61
15. Military Members	
Identify the variables that have the greatest impact on smoking uptake and cessation among military members.	13, 45
Improve methodological quality of research on tobacco use among military members.	45
Look at effects of institutional level policies, bans.	45
Look at relationships among tobacco use and other risky behaviours among military members.	45, 10
How to target various subgroups among the military population (older smokers making repeat attempts; deployed military members).	10
16. Contraband Tobacco	
Evaluate the prevalence of contraband tobacco use among inpatients in substance abuse programs.	13
Evaluate the relative probability that contraband smokers will attempt to quit.	13
Explore the determinants, process and impact of illegal trafficking, and the influence of smuggling on tobacco use.	53
17. Rural Populations	
How to provide effective education and intervention to rural populations where there is a higher rate of smoking.	12
How to target women in rural areas.	12

**Source corresponds to the source number listed in the Reference section.*

SECTION 3 – Organization-Level

A brief summary of organizational topic areas is included below to provide a comprehensive context of research needs for smoking cessation in Canada. All research questions relating to organization-level approaches can be found in Table 15.

3.1 Clinician Type

Sources identified a need for further research on the relative effectiveness of interventions led by different types of clinicians, with the type and intensity of intervention held constant. Research questions on this topic can be found below.

Table 15: Clinician-Level Approaches

Areas for Future Research and Corresponding Research Questions	Source*
1. Clinician Type	
Further research on the relative effectiveness of interventions led by different types of clinicians.	61, 55, 43
Evaluate most effective allocation of roles and responsibilities among different professions.	61
Development of an algorithm delineating responsibilities.	9
Further research on appropriateness of non-clinician recommendations re: NRT use.	14, 11
Additive and/or multiplicative effects of interventions delivered by two or more health professionals.	19

3.2 Systems

Sources suggested a need for further evaluation on the effectiveness of training programs – specifically, the relative merit of different formats and content of training (e.g. continuing education, interactive learning) and the relative merits of training clinicians from different disciplines (e.g. nursing, psychology, dentistry, pharmacy and social work).

Sources also suggest a need for further research into systems-level innovations designed to increase or improve provider use of tobacco interventions. These include research on strategies and policies to increase health care provider uptake, dissemination of interventions, and measures that would facilitate delivery of effective treatment.

A programmatic gap identified was the need for further education about addiction among primary care providers. One source suggested possibly expanding practitioners' job descriptions to include smoking cessation as an integral part of practice. Research questions on systems issues can be found in Table 16.

Table 16: *Systems-Level Approaches*

Areas for Future Research and Corresponding Research Questions	Source*
Systems	
Dissemination and diffusion trials are needed to evaluate the optimal methods for applying treatments within entire health care systems and at other levels.	42
Determine the optimal settings and mechanisms to deliver effective tobacco cessation treatments to culturally diverse and high-risk populations.	42
Research on strategies and policies to increase dissemination of proven treatment interventions; provision of quit assistance and follow-up; or promote knowledge sharing between healthcare providers.	42, 25, 12
Evaluation of new pharmaceutical interventions and delivery mechanisms, their cost-effectiveness, and their impact in diverse sociocultural, physiological and genetic subgroups.	53
Investigate effectiveness of efforts to increase consumer knowledge and use of tobacco control interventions.	11, 9, 13, 23
Investigate patterns and ways to redress occupational disparities in tobacco exposure and tobacco use.	5
Investigate ways to encourage and incentivize holistic workplace health interventions.	5
Programmatic gap: Provide further education to primary care providers; expand practitioners' job descriptions to include tobacco use cessation as an integral part of practice; development of knowledge translation and implementation tools.	14, 11
Organizational procedures and policy	
How can population-based treatments such as Quitlines or web-based cessation services be integrated into clinical systems, ensure that they are utilized to maximum benefit and that necessary resources are put toward them?	25, 12
Protocols and systems are missing (on the priorities outlined by the CAN-ADAPTT network) to deal with a changing population.	10
What are the most and least effective combinations of services in multi-component interventions?	25
How can different types of tobacco-cessation interventions be most effectively integrated in managed care organizations?	25
How does the base rate of tobacco use in a managed care organization affect implementation of systems-level changes and outcomes?	25
The effect of smoking/non-smoking policies in hospitals.	12
Organization policy issue: there is a need for more support and resources at an administrative, management, organizational, or systemic level.	10
Cost-benefit to organizations	
What are the costs, cost-benefit, and return on investment of system-level interventions?	25

Areas for Future Research and Corresponding Research Questions	Source*
How effective are the HEDIS and JCAHO measures in improving patient receipt of evidence-based treatment for smoking cessation and patient tobacco use cessation? What would be the impact of a JCAHO requirement mandating that tobacco use be addressed for all hospital admissions?	25
Evaluation of training programs' effectiveness.	***61, 57, 55***
Which disciplines should be targeted?	61
Content and format of program.	61, 11
Further evaluation of innovations to increase/improve health care providers' use of tobacco use interventions.	
Audit and feedback.	57, 61
Reminder systems.	61
Financial incentives.	61
How can technologies such as patient registries and electronic medical records be used to facilitate delivery of evidence-based tobacco-dependence treatment?	25
Recruitment of opinion leaders.	61
Other ways to increase buy-in, address barriers to effective clinician action.	11, 57
Contributions of behavioural research to provider use.	35
Evaluate relationship between provider attitudes and smoking cessation recommendations.	52, 35

3.3 Cost Effectiveness

Sources identified a need for further research into the relative cost-benefit and cost-effectiveness of different tobacco and/or smoking cessation use interventions. Also required is research on the relationship between the cost (to user) of different treatment options (e.g. NRT) and the use and success of these treatments.

Some survey respondents also noted the need for medical coverage or funding for smokers to access NRT and smoking cessation medication. Research questions on this topic can be found in Table 17.

Table 17: *Cost-Effectiveness Approaches*

Areas for Future Research and Corresponding Research Questions	Source*
Cost-Effectiveness	
Further research into the relative cost-benefit and cost-effectiveness of different tobacco use interventions.	61, 55, 23
Research on the relationship between cost (to user) and use and success of different treatment options (e.g. NRT).	52

Areas for Future Research and Corresponding Research Questions	Source*
Further research into cost-effectiveness of dosing recommendations provided by Quitlines.	2
Cost effectiveness of treatment per disability and quality of adjusted life years saved in teen smoking cessation studies.	19

**Source corresponds to the source number listed in the Reference section.*

SECTION 4 – Population-Level Approaches & Policy

A brief summary of topics related to population level approaches is included here. A complete list of research questions related to population-level approaches can be found in Table 18, at the end of this section.

Sources identified a lack of knowledge about the effectiveness of tobacco use initiatives implemented at a population level, specifically:

- Cessation series/contests;
- Education and awareness campaigns about exposure to secondhand smoke (SHS)/environmental tobacco smoke (ETS) in workplace;
- Interventions that promote healthy lifestyles (such as healthy eating/active living campaigns and activities).

Further research is also needed to apply our understanding of the determinants of health to a number of population-level factors associated with tobacco use. Potential research questions can be found in Table 18.

The CTCRI's Canadian Tobacco Control Research Summit Report cited the need for further research into factors that are possibly protective against tobacco use – in particular, for research at the population level to identify and define social and genetic sources of resilience.

Participants in the CAN-ADAPTT discussion board and Transdisciplinary Tobacco Rounds identified a need for further research into the availability of contraband tobacco products and tobacco use at the population level.

Programmatic gaps also identified population level education/awareness campaigns addressing misconceptions about effective counselling and medication treatments.

Table 18: *Population-level Approaches & Policy*

Areas for Future Research and Corresponding Research Questions	Source*
Population-Level Cessation	
Bioinformatics and health informatics: development of standardized measures of exposure.	40
Gather data on effectiveness of initiatives implemented at a population level.	16
• Cessation series/contests.	57, 39
• Education and awareness campaigns about exposure to SHS/ETS in workplace.	57, 61, 39
• Interventions that promote healthy lifestyles.	16
Apply understanding of the determinants of health to population-level factors associated with tobacco use. • How should the determinants of health model shape the development and implementation of tobacco use interventions? • How do the determinants of health affect tobacco use interventions? • How are the determinants of health related to tobacco use onset patterns?	16, 23, 30, 31
Acquire a better understanding of the basic biological processes associated with tobacco use.	23, 30
Further research into factors that are protective against tobacco use (e.g. social and genetic sources of resilience).	16
Look at relationship of interventions to target tobacco use to interventions for other health risks (e.g. obesity).	55
Evidence to better understand the reality of how programs and interventions are actually used in different communities – and the impact of various interventions.	44
Programmatic gaps identified: population level education/ awareness campaigns addressing misconceptions about effective counselling and medication treatments.	61
Understand the impact of tobacco policies, including taxation and pricing, clean indoor air policies, marketing restrictions, youth access restrictions, and tobacco product and nicotine replacement regulation.	42
Expand surveillance regarding use behaviours and interventions (over time, for example, to assess population trends).	42
Exploration of the characteristics and processes of proactive telephone counselling and participant characteristics.	19
What kind of systems approaches to intervention and policy will maximize impact on reducing the population prevalence of smoking?	1

**Source corresponds to the source number listed in the Reference section.*

4.1 Economics

The CTCRI Summit Report identified a need for further modelling of the economic implications of tobacco use – in particular, longitudinal analysis of the direct and indirect costs of tobacco consumption, on the one hand, and tobacco control policies, on the other hand. Other economic issues requiring further research include:

- Demand-side
  - Price elasticity patterns specific to subgroups of the population, such as youth/low income individuals/women.
  - Evaluation of the comprehensive impact of taxation.
- Supply-side
  - Market organization of tobacco production and marketing.
  - Effectiveness of financial incentives to suppliers and retailers.
  - Issues of regulatory capture, e.g., tobacco industry response to tobacco control.
  - Issues of information control, e.g., tobacco industry response to research (academic capture) and information dissemination (advertising, publishing)
  - International economic impacts of tobacco industry

Table 19: *Cost-Effectiveness Approaches*

Areas for Future Research and Corresponding Research Questions	Source*
Economics	
Evaluate the effects of indoor air quality laws.	6, 23
Longitudinal modelling of the direct and indirect costs of tobacco consumption.	16, 23
Longitudinal modelling of the costs of tobacco control policies.	16, 30
Conduct cost-benefit studies on what gains could be made in the future by acting on respiratory health issues today (i.e. projection analysis).	44
Do cost-benefit calculations for PREPS.	30
Explore demand-side and supply-side implications of tobacco use.	16, 14
Demand: • Research price elasticity patterns specific to subgroups of the population (e.g. youth, low-income individuals, women).	16
• Evaluate the effects of price-tax controls and the comprehensive impact of taxation.	6, 53, 16

Areas for Future Research and Corresponding Research Questions	Source*
Supply: • Market organization of tobacco production and marketing. • Effectiveness of financial incentives to suppliers and retailers. • Issues of regulatory capture, e.g., tobacco industry to tobacco control. • Issues of information control, e.g., tobacco industry response to research (academic capture) and information dissemination (advertising, publishing). • International economic impacts of tobacco industry.	16
Research on the availability of contraband tobacco products at the population level.	14, 9

**Source corresponds to the source number listed in the Reference section.*

4.2 Tobacco Industry Practices

The CTCRI Summit report identified a need for research on strategies and tactics relating to a number of tobacco industry practices, including:

- Product modification and measures taken by companies to increase the toxicity, palatability, and appeal of tobacco products, as well as novel sources of addictions (e.g. Nicotine lollipops).
- Labelling practices: This topic was also invoked by a discussion board participant, who pointed out that the nicotine content posted on the cigarette package is misleading, as cigarettes are designed to be "elastic" in that the way a cigarette is smoked can titrate nicotine delivery.
- Companies' legal tactics and cost recovery practices.

The CTCRI Summit Report emphasized the importance of drawing on a range of analytical perspectives to inform the analysis of tobacco industry tactics. Political science, economics, public relations, natural sciences, and marketing were cited as specific disciplines to engage in future research activities. The report also suggested taking a global perspective on tobacco industry practices, and examining the impact of international trade and treaties, as well as flows of advertising and goods across borders.

Another area of research suggested by the CTCRI Summit Report is the development of tactics used to reorient the tobacco industry towards alternative profit streams and engaging industry in the promotion of population health goals.

Table 20: *Tobacco Industry Practices*

Areas for Future Research and Corresponding Research Questions	Source*
Tobacco Industry Practices	
Expand understanding of tobacco industry strategies and tactics.	16, 23, 30
• Product modification practices used to increase the toxicity, palatability and appeal of tobacco products.	16, 30
• Labeling practices; effects of alternative labeling.	16, 53, 9
• Legal tactics and cost recovery practices.	16
Draw on a range of disciplines and analytical perspectives to inform analysis of tobacco industry strategies and tactics (e.g. impact of international trade and treaties).	16, 55
Research how product modification (in nicotine/tar, content, delivery systems, additives, taste, size, etc.), including the examination of unintended negative effects, can change use patterns and reduce addiction and disease.	31, 23, 30
Further research impact of health warning messages and plain packaging.	44
What are population knowledge, attitudes and behaviours concerning tobacco product ingredients and emissions? What do researchers and policy makers know about ingredients and emissions and what information is needed for regulations?	49
How can the activities of the tobacco industry be monitored and influenced?	49, 23
What regulations of ingredients and emissions are needed that will result in changes in smoking behaviour and ultimately in population health? What types of health communication messages are necessary to inform tobacco product users about the regulations and modifications?	49
What are the impacts of changes to tobacco product ingredients and emissions on health?	49
Explore possible strategies to steer the tobacco industry towards alternative profits streams; engage industry in the promotion of population health goals.	16, 23
Look at possibilities associated with PREPS.	30
Effect of product modification on the public's expectations about tobacco products and peoples' behaviour with respect to new products; and as a basis for future decisions about nicotine and tar content derived from public health findings.	53
Tobacco industry relationships with governments.	53
Tobacco industry advertising, marketing and promotion efforts (particularly with respect to women, youth and other high-risk groups.	53

**Source corresponds to the source number listed in the Reference section.*

SECTION 5 – Other

Mention of research questions not already encompassed by Provider Approaches, Special Populations section, Organization-level, or Population-level approaches, are included here. They can generally be grouped under neurological/genetic research questions. This topic was not included as a potential priority topic in the research agenda survey.

5.1 Neurological/Genetic

Sources identified the need for a better understanding of neurological and genetic factors that influence tobacco use. The CTCRI Summit Report in particular called for renewed emphasis on the search for genes, starting with better and more expansive phenotyping of smokers.

It was also suggested (by an internal source) that healthcare providers require a better understanding of the brain mechanisms related to tobacco use, for the purposes of helping the brain remodel.

The specific research questions relating to neurological or genetic factors can be found in Table 21.

Table 21: *Neurological/Genetic*

Areas for Future Research and Corresponding Research Questions	Source*
Neurological/Genetic	
Immunologically mediated approaches to reductions in self-administration of nicotine-containing products.	46
Develop standard biomarkers, predictors of exposure.	30, 42, 46
Improve understanding of biological, neurological and genetic factors that influence tobacco use.	16, 23, 30
Renew emphasis on search for genes - more phenotyping of smokers, attention to biological ramifications of racial/ethnic variation.	16, 23
Provide clinicians with actionable information on helping the brain remodel.	14
Genetics and gene-environment interactions influencing tobacco use and cessation. Methodology and measurement: refinement of smoking phenotypes and increase research on effectiveness of treatments Team science: expansion of interdisciplinary and transdisciplinary research.	40, 38
Greater understanding from medical/physiological points of view of impacts of smoking with other issues (e.g. radon, other air-environmental issues).	44
Look at feasibility, effectiveness and cost-effectiveness and ethical and policy issues raised in using information on genetic risks of nicotine dependence and tobacco-related disease to increase smoking cessation or reduce tobacco-related disease.	38
Further exploration of new genetic and immunological biotechnologies in tobacco-use prevention (e.g. vaccines) and cessation therapy.	38

**Source corresponds to the source number listed in the Reference section.*

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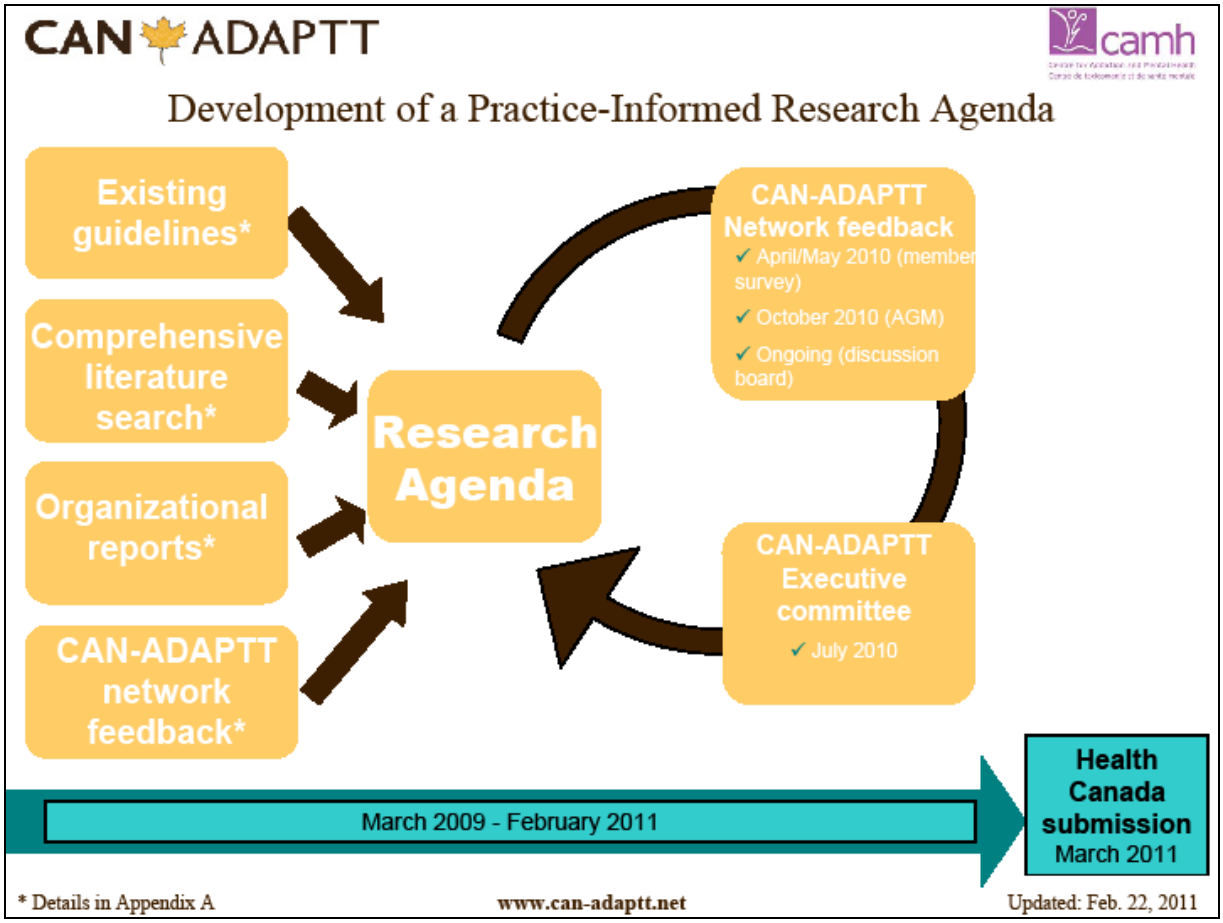
APPENDIX A – Methodology

Figure 2: *Development of a Practice-Informed Research Agenda*



OVERVIEW OF METHODOLOGY

To ensure the CAN-ADAPTT research agenda captures/identifies the key priorities and is reflective of the Canadian experience in the provision of smoking cessation programs and resources, the CAN-ADAPTT team has integrated a number of different sources of information (as shown in Figure 2).

This comprehensive approach is intended to integrate the following: current gaps identified in the existing clinical practice guidelines reviewed by CAN-ADAPTT; the experience of the CAN-ADAPTT network and partners; results from recent literature and online searches; and input from the CAN-ADAPTT Executive Advisory Committee.

All sources from which research question were collected, are listed in the References section of this document.

EXISTING GUIDELINES

Existing guidelines, which were included in the development of CAN-ADAPTT's guideline, were examined for pertinent research questions, explicitly identified gaps and recommendations related to tobacco control. These guidelines are as follows:

- U.S. Department of Health and Human Services Public Health Service. (2008, May). Clinical practice guideline: Treating tobacco use and dependence: 2008 update.
- Ministry of Health. (2007, August). New Zealand smoking cessation guidelines. Wellington: Ministry of Health.
- Registered Nurses Association of Ontario (RNAO). (2007, March). Integrating smoking cessation into daily nursing practice.
- Institute for Clinical Systems Improvement (ICSI). (2004, June). Tobacco use prevention and cessation for infants, children and adolescents.
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COMPREHENSIVE LITERATURE SEARCH

English Search

In March 2010, a literature search was conducted through Ovid Medline using a series of relevant search terms to identify research gaps discussed in the published research literature. No date limits were used in the initial phases of the literature search. The Medical Subject Heading (MeSH) term "tobacco use cessation" was combined with a series of broad key words: "research agenda", "research gaps", "future areas of research", "future research", "more research", "implications for research" or "studies are needed". Careful review of the terms and the indexing was conducted to ensure the search strategy would capture appropriate results. The search was limited to English language literature.

The initial literature search using the terms described above yielded a total of 131 results. The abstracts of these 131 articles were reviewed separately by two individuals to identify sources of particular interest, which would then be retrieved for full-text review. Of the 38 articles selected for full-text review, 25 were available in local academic libraries. Of the 25 articles retrieved, three were ultimately eliminated for being non-relevant or non-timely. Findings from a total of 22 articles were incorporated into this research agenda.

Search Information	
Search term:	"research agenda"[text words] OR "research gaps"[text words] OR "future areas of research"[text words] OR "future research" [text words] OR "more research" [text words] OR "implications for research" [text words] OR "studies are needed" [text words] AND tobacco use cessation [Mesh]
Date of search:	March, 2010
Number of results:	131
Number of articles identified for retrieval:	38
Number retrieved:	25
Number deemed relevant	22

French-language Search

In January 2011, a literature search for French-language articles was conducted using the PubMed search database. The same combination of key words listed above where used, limited to French language literature. This literature search yielded a total of 16 results. As per the English language search, the abstracts of these 16 articles were reviewed separately by two individuals to identify sources of particular interest. Findings from five articles were incorporated into this research agenda.

Organizational Reports

A targeted search was performed for relevant, existing reports within Canadian government, advocacy groups and other organizations as listed below. These sources were reviewed and incorporated into the research agenda.

- Health Canada
- Provincial/Territorial Ministries of Health
    - Alberta: Health and Wellness
    - British Columbia: Ministry of Health Services
    - Manitoba: Manitoba Health
    - New Brunswick: Department of Health
    - Newfoundland and Labrador: Health and Community Services
    - Northwest Territories: Department of Health and Social Services
    - Nova Scotia: Department of Health
    - Nunavut: Department of Health and Social Services
    - Ontario: Ministry of Health and Long-Term Care
    - Prince Edward Island: Department of Health
    - Québec: Ministère de la Santé et des Services sociaux
    - Saskatchewan: Saskatchewan Health
    - Yukon: Department of Health and Social Services

- Canadian Institutes of Health Research
- Public Health Agency of Canada
- Youth Tobacco Cessation Collaborative
- Canadian Lung Association
- Canadian Council for Tobacco Control
- Heart and Stroke Foundation
- Canadian Cancer Society
- Physicians for a Smoke Free Canada
- Action on Smoking and Health
- Non-smokers' Rights Association

Online Search

A targeted search was conducted in English and French, online to gather "grey literature" – that is, meeting proceedings, white papers, etc. This search also yielded organizational reports, and academic literature.

Google and *Google Scholar* web searches were conducted using the following English terms:

- tobacco control research agenda;
- smoking cessation research agenda;
- knowledge gaps tobacco;
- research gaps tobacco.

A similar search was done in French using the following terms:

- abandon du tabac OR renoncement au tabac AND:
- programme de recherche OR ;
- lacunes en recherche OR;
- davantage de recherche OR;
- études supplémentaires.

This search of French-language material was meant to complement the English search. Documents produced in both languages (e.g. Health Canada publications) were not taken into account. Of all French-only documents found, 13 were reviewed and one article was incorporated into the research agenda.

CAN-ADAPTT NETWORK FEEDBACK ("INTERNAL SOURCES")

Below is a list of the range of internal sources used to gather input on research gaps from the CAN-ADAPTT network.

- CAN-ADAPTT's guideline discussion board; a practice-informed on-line forum. Accessible at: http://www.can-adaptt.net/English/Documents/Discussion%20Board%20Archives.pdf
- Annual General meeting/Guideline Review Meeting (November 1st, 2009, Montreal); participant evaluation/feedback forms
    - *"Based on your own clinical/professional experiences, what are the gaps in smoking cessation research and/or current clinical practice guidelines that are of highest priority? (Please describe)"*
- Transdisciplinary Tobacco Rounds; participant evaluation/feedback forms (January 2009 – December 2010).
    - *"Based on your own clinical/professional experiences, what are the gaps in smoking cessation research and/or current clinical practice guidelines that need to be addressed? (Please describe)"*
- Successful CAN-ADAPTT seed grant applications;
    - Arbour, K.P.A. Translating research into practice: Lessons on integrating physical activity into smoking cessation counselling in women with severe mental illness. Submitted 2008.
    - Barrett, S.P. The effects of tobacco and nicotine on cigarette craving and withdrawal in psychotic and non-psychotic smokers. Submitted June 2009.
    - Brule, J. Smoking cessation counselling practices among Quebec optometrists: a survey on their beliefs, practices and needs in terms of training and educational tools. Submitted June 2009.
    - Callaghan, R. Contraband Tobacco and Smoking Cessation Outcomes in Substance-Abuse Treatment. Submitted December 2009.
    - DeVillaer, M.R. Survey of Ontario Addiction Treatment Programs. Submitted June 2009.
    - Els, C. Fundamentals of Tobacco Control for Canadian Students in the Health Disciplines: a Publication Proposal. Submitted December 2009.
    - Garcia, J.M. Practice-based evidence for evidence-informed smoking cessation interventions: A community-based approach to theory building, evaluation and capacity building. Submitted June 2009.
    - Irwin, J.D. A Pilot Project Assessing Motivational Interviewing via Co-Active Life Coaching as an Intervention for Smoking Cessation. Submitted December 2009.
    - Kennedy, R.D. Smoking Cessation Referrals and Optometrists – Assessing Practices and Opportunities in Canada. Submitted 2008.
    - Khara, M. Promoting smoking cessation among surgery patients: A pilot trial. Submitted 2008.
    - Murray, C.L. and Small, S.P. The Experience of Smoking or Quitting Smoking for Pregnant Women. Submitted 2008.

  - Nelson, C. An Analysis of Smoking Patterns and Cessation Efforts Among Canadian Forces Veterans: An Exploration of the Transtheoretical Model. Submitted December 2009.
- Research agenda survey of the CAN-ADAPTT network, online April 14 – May 17, 2010 (See Appendix B)
- Teleconference/web-conferences held June 14th and 22nd, 2010. These tele/web-conferences were open to network members following the results of the Research Agenda Online Survey.
- Discussion Board entries describing research gaps (approximately summer, 2009 to February, 2011.
- CAN-ADAPTT Executive Advisory Committee (Members: Tupper Bean, Rosa Dragonetti, Charl Els, Roberta Ferrence, Cameron Norman, Paul MacDonald, Peter Selby, Michele Tremblay, Laurie Zawertailo). Consultation on pertinent resources. March 2008 to 2011.

APPENDIX B – CAN-ADAPTT Network Member Survey (April 2010)

The following is a copy of the research agenda survey distributed to the CAN-ADAPTT Network in April 2010.

CAN-ADAPTT invites your input to identify areas in tobacco use cessation that lack sufficient knowledge and/or evidence.

Your feedback is very important to us. We will integrate the results of this survey into the CAN-ADAPTT Research Agenda on tobacco use cessation in Canada for submission to Health Canada and for circulation to the network.

Please read through and answer the following five questions.

1. Regarding tobacco use cessation, would you say you are predominantly a…

- ◯ Health/medical practitioner;
- ◯ Researcher; or
- ◯ Policy maker/advocate?

2. Please identify what you think should be priority research areas for tobacco use cessation in Canada. Please select your top 5 choices.

Clinical Management

- ☐ Screening/assessment/advice/follow-up
- ☐ Psychosocial treatments/counselling
- ☐ NRT
- ☐ Intensity of interventions
- ☐ Medications
- ☐ Combination therapy

Health Systems

- ☐ Clinician types/Clinician reminders
- ☐ Cost-effectiveness of interventions
- ☐ Health insurance coverage

Specific Populations

- ☐ Children and adolescents
- ☐ Light smokers
- ☐ Non-cigarette tobacco users
- ☐ Pregnant/breastfeeding smokers
- ☐ Aboriginal groups
- ☐ Ethnocultural groups and new Canadians
- ☐ Hospitalized patients
- ☐ Patients with cardiovascular disease
- ☐ Those using mental health services
- ☐ People making repeat attempts to quit

Prevention & Population-level Approaches

- ☐ Provincial and community-level programs
- ☐ Surveillance/evaluation of programs
- ☐ Health communication/counter-marketing
- ☐ Tobacco-related disparities
- ☐ Contraband tobacco
- ☐ Price
- ☐ Access to tobacco products
- ☐ Environmental tobacco smoke (eg. smoking bans)

Other (please specify):

3. In your professional experience, how does lack of research in these areas pose a barrier to the delivery of effective tobacco use cessation (i.e. in your practice; in your policy setting; or in your research)?

4. Do you know of any sources of information we should be made aware of, regarding knowledge gaps in tobacco use cessation?
For example:
- research agendas developed in the past;
- reports, policy papers or other documents identifying gaps;
- upcoming research that would inform a gap.

5. Would you like to be contacted in the future by CAN-ADAPTT staff, regarding the knowledge gap(s) you identified?

◯ Yes, please.

◯ No, thank you.

6. Please provide your contact information below.

Name:	
Company:	
Address:	
Address 2:	
City/Town:	
State:	
ZIP/Postal Code:	
Country:	
Email Address:	
Phone Number:	

You've reached the end of the survey. Thank you for your feedback!

APPENDIX C – CAN-ADAPTT Network Member Survey Results

SUMMARY OF FINDINGS

A total of 111 respondents, the majority being health practitioners, gave feedback on priority areas of smoking cessation requiring further research.

Of the 27 given topic areas, the three most often identified research priorities are: "Combination therapy", being selected by 42% of respondents; followed by "People making repeat attempts to quit" (40%); "children/adolescents" and "psycho-social treatments/counselling" (each at 35%); and "Screening, assessment, advice, follow-up" (34%).

The lack of knowledge or research in smoking cessation impacted respondents' professional practice. Some of the broad themes under which respondents reported being affected are: advocating for or informing effective treatment programs/interventions; Smokers' limited access to affordable cessation medications (e.g. NRT); lack of effective cessation programs for specific populations; and lack of practitioners' knowledge on evidence-based smoking cessation interventions.

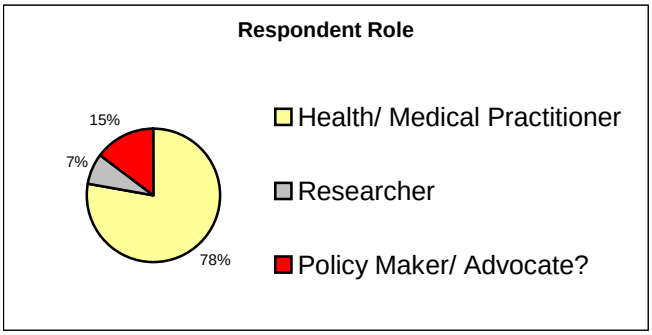
Introduction

The development of a practice-informed research agenda is one of five main objectives of the CAN-ADAPTT project and in order to meet this objective, CAN-ADAPTT network members were invited to complete an online survey determining main areas of research priority. There were 111 respondents (or about 20% of members, at the time) who provided feedback on key areas of smoking cessation. Survey data were collected from April 14th to May 17th, 2010.

Findings from this survey will contribute to the completion of CAN-ADAPTT's research agenda. This research agenda will include clinical and population-based approaches for smoking cessation in Canada and will be informed by other internal as well as external sources. The final research agenda will be shared with Health Canada to help inform research priorities and will also be disseminated online via the CAN-ADAPTT network.

Respondent Composition

The majority (78%) of the 129 respondents to this question self-identified as healthcare or medical practitioners.



Q1.Regarding tobacco use cessation, would you say you are predominantly a… (n=129)

The Priority Research Areas

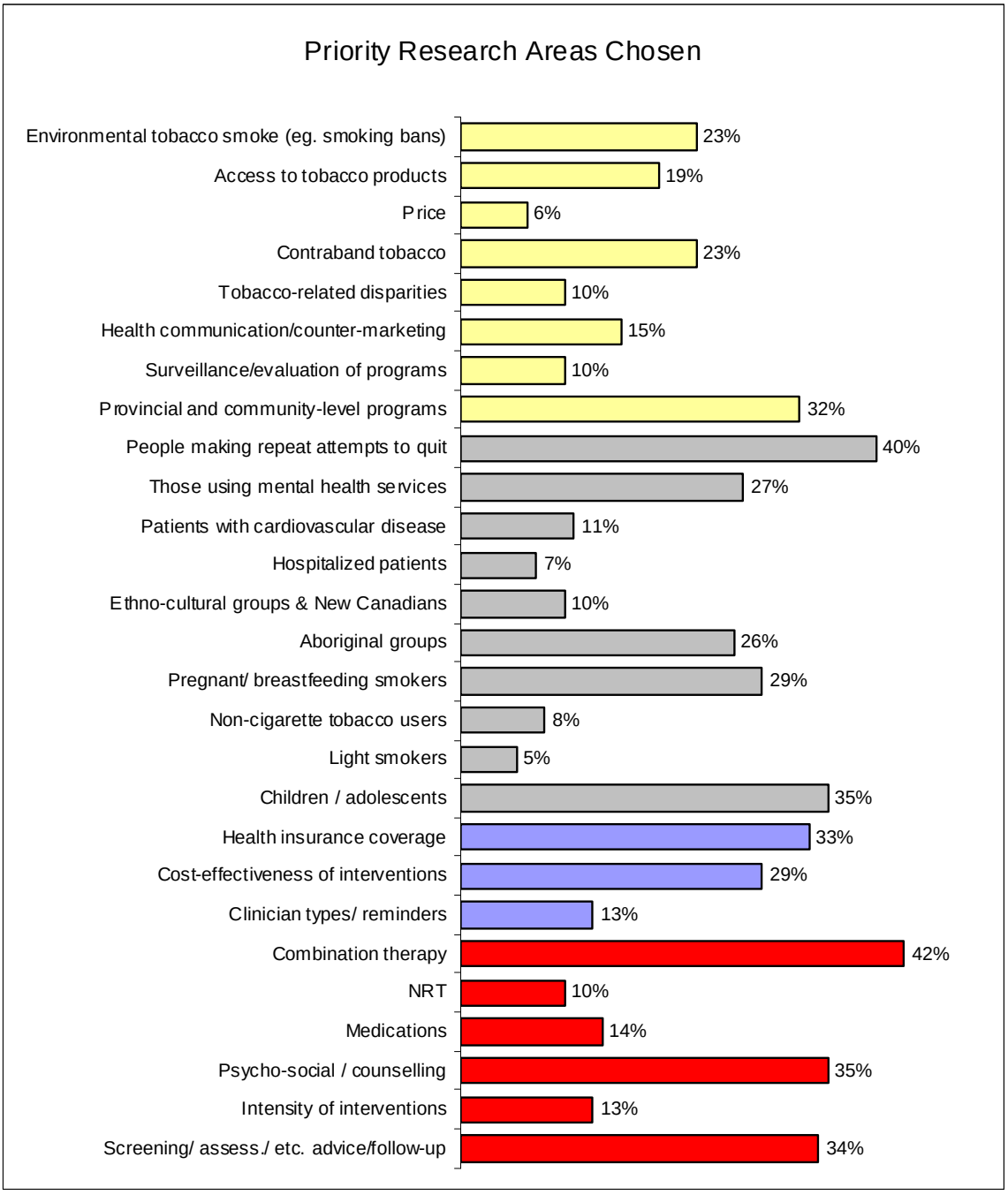
The topic areas most often identified as being a priority area of research were: combination therapy; people making repeat attempts to quit; children/adolescents; and psychosocial treatments/counselling, with approximately four in ten respondents choosing these topics.

Top Ten Priority Areas Chosen by Respondents

Priority Area	% of Respondents	Total Count
Combination therapy	42%	47
People making repeat attempts to quit	40%	44
Children and adolescents	35%	39
Psycho-social treatments/ counselling	35%	39
Screening, assessment, advice, follow-up	34%	38
Health insurance coverage	33%	37
Cost-effectiveness of interventions	29%	32
Pregnant/ breastfeeding smokers	29%	32
Those using mental health services	27%	30
Aboriginal groups	26%	29

Q2. Please identify what you think should be priority research areas for tobacco use cessation in Canada. Please select your top 5 choices. (n=111)

The 27 research areas listed in the survey spanned across broad topics of: prevention/ population-level approaches, specific populations, health systems, and clinical management, as grouped in the graph below with the corresponding proportion of respondents choosing that topic area.



Q2. Please identify what you think should be priority research areas for tobacco use cessation in Canada. Please select your top 5 choices. (n=111)

Other Research Priorities Identified by Respondents

Not all possible topics of smoking cessation requiring further research could be included in the survey. Respondents to the survey identified "other" areas or specific populations requiring further knowledge/research development:

- Youth/young adults
- LGBT young adults
- Rural populations; rural women
- COPD populations
- Smokers with lung health issues
- Smokers with eating disorders
- Smoking among the elderly population
- Individuals with alcohol and other drug addictions in rehabilitation/treatment
- Quitlines' usage and funding/resources
- Suicide risk and Champix
- Policies supporting cessation

Lack of Research Affecting Delivery of Services

The lack of research or knowledge in areas of smoking cessation affects professionals in their work in various ways, ranging from access to funding for programs to finding effective cessation programming for certain populations. Some comments grouped under key themes are summarized below.

Key Themes: How Lack of Research Affects your Professional Practice
Challenges in advocating for/informing the development of effective strategies/programs/interventions • "Without evidence-based research, decision-makers will not accept or approve new practices for implementation". • "Need data to support changes in professional practice".
Smokers' limited access to affordable cessation medications (e.g. NRT) • "If we give them counselling and they can't afford the meds then we are not setting them up to be successful". • "Patients often know more about contraband tobacco than clinicians".
Lack of cessation services available to smokers (general) • "Lack of psychosocial treatment and support available to patients".
Lack of effective cessation programs for specific populations • "It is challenging to plan and implement programs for young adults when there is not a lot out there to point me in the right direction".
No sufficient evidence for providing cessation medication to specific populations • "…what works and doesn't work with young adults, LGBT community, Aboriginal and ethnic populations, and those using mental health services".
Lack of practitioners' knowledge on evidence-based smoking cessation interventions • "…the barrier is the transmission of the research findings to the practice sites".

Q3. In your professional experience, how does lack of research in these areas pose a barrier to the delivery of effective tobacco use cessation (i.e. in your practice; in your policy setting; or in your research)? (n=57)