NATIONAL LUNG HEALTH FRAMEWORK
LEADING. ACTING. TOGETHER.

October 2008
# TABLE OF CONTENTS

ACKNOWLEDGEMENTS .................................................................................................................. 5
EXECUTIVE SUMMARY ............................................................................................................... 7
VISION, MISSION AND GUIDING PRINCIPLES ............................................................................. 13
THE TIME IS NOW ......................................................................................................................... 15

1. WHY A NATIONAL LUNG HEALTH FRAMEWORK? ................................................................. 17
   1.1 A Call for Action .................................................................................................................. 18
   1.2 Alignment and Collaboration with other Health Strategies and Frameworks .................. 19

2. THE ECONOMIC BURDEN OF RESPIRATORY DISEASE ..................................................... 21
   2.1 Quality-Adjusted Life Years (QALYs) .............................................................................. 21
   2.2 Investments to Date in Respiratory Research ................................................................. 22
   2.3 Individual and collective hospital costs, physician and emergency department visits ...... 22

3. THE CURRENT STATE OF RESPIRATORY HEALTH IN CANADA ........................................ 25
   3.1 Respiratory Health: Everybody’s Business ....................................................................... 25
      A. Who is Affected by Respiratory Disease? ....................................................................... 25
      B. Quality of Life ................................................................................................................. 26
      C. Determinants of Respiratory Health ............................................................................. 26
      D. Canada’s Stakeholders in Respiratory Health ................................................................. 29
   3.2 Preventable or Modifiable Risk Factors for Respiratory Disease .................................... 29
      A. Smoking .......................................................................................................................... 30
      B. Outdoor Air Quality ...................................................................................................... 31
      C. Indoor Air Quality ......................................................................................................... 32
      D. Occupational Exposure ............................................................................................... 32
   3.3 Chronic and Infectious Respiratory Diseases ................................................................. 33
      A. New Trends ..................................................................................................................... 33
      B. Models of Care .............................................................................................................. 34
      C. Orphan Diseases and Lung Transplants ...................................................................... 34
      D. Incidence and Prevalence of Respiratory Diseases in Canada ....................................... 35
   3.4 Opportunities and Challenges ......................................................................................... 37

4. GOALS AND STRATEGIC AREAS FOR ACTION .................................................................. 41
   4.1 Health Promotion, Awareness and Disease Prevention .................................................... 42
      Key Strategies and Associated Activities ........................................................................... 44
   4.2 Disease Detection and Management ................................................................................ 46
      Key Strategies and Associated Activities ........................................................................... 49
   4.3 Policy, Partnerships, and Community/Systems Support .................................................... 50
      Key Strategies and Associated Activities ........................................................................... 53
   4.4 Research, Surveillance and Knowledge Translation .......................................................... 55
      Key Strategies and Associated Activities ........................................................................... 57
5. CONCLUSION .....................................................................................................................................................61
  5.1 "We'll know we have it right, when..." .....................................................................................................61
  5.2 Closing Comments...........................................................................................................................................62

APPENDIX 1: PREVENTABLE OR MODIFIABLE RISK FACTORS..............................................................65
  1.1 Indoor Air Quality .........................................................................................................................................65
  1.2 Outdoor Air Quality .....................................................................................................................................65
  1.3 Occupational Exposure ................................................................................................................................67

APPENDIX 2: CHRONIC AND INFECTIOUS RESPIRATORY DISEASES ......................................................69
  2.1 Chronic Diseases.........................................................................................................................................69
  2.2 Infectious Diseases.......................................................................................................................................73
  2.3 Other Respiratory Diseases and Disorders .............................................................................................75

APPENDIX 3: CANADA’S STAKEHOLDERS IN RESPIRATORY HEALTH .......................................................79

APPENDIX 4: RESPIRATORY HEALTH AMONG FIRST NATIONS INUIT AND MÉTIS PEOPLES .....................83
  4.1 The Aboriginal Peoples of Canada .............................................................................................................83
  4.2 Aboriginal Health in Canada .....................................................................................................................85
  4.3 The Toll of Respiratory Diseases on Aboriginal Peoples .............................................................................87
  4.4 Summary ......................................................................................................................................................88

APPENDIX 5: GLOSSARY .....................................................................................................................................89

APPENDIX 6: THE FRAMEWORK TIMELINE ..................................................................................................93

APPENDIX 7: STAKEHOLDERS IN THE FRAMEWORK’S DEVELOPMENT .....................................................95

APPENDIX 8: REFERENCES ..............................................................................................................................113

REVISIONS AND UPDATES (Added October 2008)
  Respiratory Health: Everybody’s Business, Quality of Life section .....................................................................26
  Additional statistics added to Chronic and Infectious Respiratory Diseases .....................................................33
  Additional statistics added to Appendix 2: Chronic Diseases, Asthma .............................................................69
Members of the following groups and organizations have each invested hundreds of hours of volunteer time in the belief that by working collectively on this initiative, we can make a significant difference in the respiratory health of all people living in Canada. Without their personal dedication and commitment, development of this National Lung Health Framework would not have been possible:

- The National Lung Health Interim Steering Committee (see Appendix 7)

- The National Lung Health Framework Working Groups: Chronic Disease; Infectious Disease; the Environment; and Tobacco Control (see Appendix 7)

- The National Lung Health Framework Advisory Committees: Aboriginal, Health Promotion, Awareness and Disease Prevention; Disease Detection and Awareness; Policy, Partnerships, and Community/Systems Support (Infrastructure); Research, Surveillance and Knowledge Translation and Industry (see Appendix 7)

- The Canadian Thoracic Society

- The Canadian Respiratory Health Professionals

- The Lung Association Board and Partnership Council

Thanks as well to those that have contributed funding/financial support to this initiative:

- The Public Health Agency of Canada (PHAC)
- Health Canada
- The Lung Association
- Corporate supporters of the April 2006 Breathing Matters Workshop

For more information or to download this and other reports produced during the development of the National Lung Health Framework, please visit: www.lunghealthframework.ca

Document drafted by: Consult Ink Ltd.
EXECUTIVE SUMMARY

Respiratory diseases have a major effect on millions of people living in Canada and affect all ages – from before birth through to the end of life.

Despite progress over the years in both prevention and treatment, respiratory diseases continue to have a devastating impact on both the physical and economic health of people living in Canada, taking a huge toll in lost lives, lost economic productivity, and costs to our health care system. But perhaps the most significant impact is on the long-term quality of life for individuals and families who face a respiratory illness.

For the year 2007, the estimated total economic burden of direct and indirect costs of respiratory diseases in Canada totaled $154 billion. This represents almost $5,000 per person, fully one-fifth of the median income per individual.

Individually and collectively, everyone living in Canada is at some level of risk for respiratory disease, making respiratory health everybody’s business.

At the most basic level, anything that is inhaled into the lungs can put people at risk, whether it is an air pollutant, tobacco smoke, marijuana smoke, solvent fumes, or other inhaled drug or substance. The two most understood, preventable or modifiable risk factors for respiratory disease are tobacco smoke (through personal smoking and exposure to second-hand smoke) and air quality (indoor and outdoor). Occupational exposure represents an avenue of important focus where exposure to irritating or toxic substances may cause a number of acute or chronic respiratory ailments.

Traditionally, the most common respiratory diseases include asthma, chronic obstructive pulmonary disease (COPD), lung cancer, tuberculosis, sleep disordered breathing (sleep apnea), and influenza. However, with changing demographics in Canada we are seeing new trends and shifts in disease. Since many of these trends can be tied to an aging population, the number of people affected can be expected to increase. The corresponding increase in demand for services will pose a significant challenge for the health care system.

When dealing with respiratory health issues, one size does not always fit all. Many individuals, families and communities encounter barriers as they seek information about, and take action towards, improving their health and quality of life. These barriers are often at the root of why, in communities and regions throughout Canada, some population groups are disproportionately affected by respiratory disease. For instance, certain segments of people living in Canada are at heightened risk for respiratory illness because of the social, economic, environmental and/or cultural conditions in which they live. First Nations, Inuit and Métis were communities most often cited by stakeholders as bearing the largest burden in this regard.

The National Lung Health Framework represents Canada’s coordinated strategic response to these issues. As with all effective health strategies in Canada and around the world, this Framework was developed collaboratively. A vast array of respiratory health stakeholders from all sectors and all regions of the country heeded the urgency of the situation and banded together to help develop this Framework, under the guidance of a volunteer Interim Steering Committee and with the support of the Lung Association and the Government of Canada.

The goal of this collaboration was to deliver a plan that would serve as a catalyst for change – building partnerships, sharing best practices and identifying gaps and opportunities in the respiratory health community – all the while supporting initiatives for advocacy and policy development. The result is a uniquely “Made in
Canada” action plan: grounded in provincial and territorial health strategies, addressing barriers to access for at-risk populations, and recognizing the importance of the environment to respiratory health – yet also fully informed by international efforts in the field of respiratory health.

Indeed, in order to be successful, the National Lung Health Framework must align, coordinate, and collaborate with existing international, national, and provincial/territorial health strategies. We have been working closely with other national initiatives to ensure a cooperative approach to issues such as common risk factors and co-morbidity, and this will continue throughout the implementation stage.

Thanks to our stakeholders’ clear, consensus-based vision of the destination and their enthusiastic participation in the process, the Framework presents the collective view of what is needed for the future, addressing the fundamental gaps that exist between the current and desired state of respiratory health in Canada.

Many stakeholders commented during the development process that a National Lung Health Framework was long overdue...the time for action is now, and the window of opportunity unprecedented.

A Vision for Lung Health in Canada

Excellent respiratory health for all in Canada

The National Lung Health Framework Mission

To advance the respiratory health of all people living in Canada through collaborative and equitable patient care, policy, programming, research and leadership

Guiding Principles for the National Lung Health Framework

The National Lung Health Framework is grounded in several important guiding principles – fundamental values that provide direction, set standards and underpin all the respiratory health decisions we collectively make going forward. Any goal set, and any strategy or activity proposed by the Framework, was developed within the following context:

• Efforts at improving respiratory health and overall wellness must be based on the needs of individuals, families, and communities, and with their participation.

• For all people living in Canada to attain equitable access to the benefits of respiratory health, we must eliminate barriers to prevention, management, and care by addressing the social, economic, environmental and cultural determinants of health.

• A key element of respiratory health is to improve quality of life at all stages throughout the continuum of care – from before birth through to the end of life.

• Respiratory health initiatives and programs must be culturally sensitive and respectful, building on existing strengths and values.

• Advocacy plays a crucial role in influencing policy and related behavior change.

• Progress can be maximized through collaboration with other health frameworks, strategies, initiatives, and programs, allowing health sectors, disciplines and jurisdictions to come together and build partnerships, share best practices, and encourage development of policy initiatives.

Two additional principles will guide the Framework’s ongoing development and implementation process:

• The Framework will be developed and implemented with the cooperation, collaboration, and participation of stakeholders and all levels of government.

• This is a “living process,” flexible and responsive to evolving needs, research, and knowledge, and moving forward in the context of continuous evaluation and quality improvement.
Goals and Strategic Areas for Action

Stakeholders broadly agree that this National Lung Health Framework initiative can be implemented with success by targeting the following set of common goals:

Goal 1: To prevent, and moderate the impact of, respiratory illnesses through the development and implementation of effective, coordinated: health promotion, awareness, exposure reduction, and smoking prevention/cessation activities.

Goal 2: Improve the health outcomes and quality of life for everyone in Canada through early detection and better management of respiratory diseases.

Goal 3: Develop, implement and strengthen the support structures essential to an effective respiratory health management strategy for all sectors, including policy and legislation, partnerships, community supports, and health care system design and delivery.

Goal 4: Drive effective prevention and management of respiratory disease and its risk factors, through enhanced, coordinated research and surveillance efforts that are then translated into both improved health outcomes and economic benefits.

To respond to these goals, the Framework has been organized into four broad Strategic Areas for Action:

1. Health Promotion, Awareness and Disease Prevention
2. Disease Detection and Management
3. Policy, Partnerships, and Community/Systems Support
4. Research, Surveillance and Knowledge Translation

Key Strategies

Through extensive stakeholder consultations and feedback, key strategies and activities have been identified within each of the Strategic Areas that serve to frame collective efforts towards achieving the four goals.

Stakeholders acknowledge that the Framework’s strategies and activities, applied in the context of addressing First Nations, Inuit and Métis health issues, must not only aim to improve overall health outcomes, but to reduce the disparity between Aboriginal Peoples and non-Aboriginal people living in Canada in terms of prevalence of respiratory disease and quality of life.

1. Health Promotion, Awareness and Disease Prevention

Goal: To prevent, and moderate the impact of, respiratory illnesses through the development and implementation of effective, coordinated: health promotion, awareness, exposure reduction, and smoking prevention/cessation activities.

Strategies identified to meet this goal:

• Make the prevention of chronic and infectious respiratory disease a national priority within health care reform;

• Increase awareness, knowledge, and understanding of – and active engagement with – respiratory health issues by the public and all stakeholders;

• Increase awareness of the impact of environmental issues on respiratory health – at work, at home, at school, and at play;

• Reduce exposure to environmental air contaminants by influencing people to avoid exposures and to reduce their own contribution to indoor/outdoor air contaminants;

• Assist people living in Canada to avoid taking up smoking and to stop smoking, and counter or “denormalize” tobacco industry promotional efforts (leveraging and coordinating with other tobacco strategies and initiatives);

• Collaborate with other strategies and initiatives relevant to respiratory health.
2. Disease Detection and Management

**Goal:** Improve the health outcomes and quality of life for everyone in Canada through early detection and better management of respiratory diseases.

**Strategies identified to meet this goal:**

- Implement earlier detection;
- Promote a system of inter-disciplinary health care teams for the management of respiratory diseases;
- Promote patient empowerment and self-management;
- Improve treatment, rehabilitation and supportive care in the full continuum from detection through to palliative care;
- Implement, and increase use of, standards, guidelines and best practices;
- Collaborate and coordinate efforts with other chronic and infectious disease strategies and initiatives.

3. Policy, Partnerships, and Community/Systems Support

**Goal:** Develop, implement and strengthen the support structures essential to an effective respiratory health management strategy for all sectors, including policy and legislation, partnerships, community supports, and health care system delivery and design.

**Strategies identified to meet this goal:**

- Advocate for healthy public policies and enforcement resources to prevent respiratory disease and improve respiratory health;
- Build and enhance strategic partnerships that cut across jurisdictions, disciplines, and sectors;
- Increase availability of, and access to, programs throughout the community across the continuum of care;
- Improve education and training for health care providers;
- Create widely accessible knowledge exchange structures for respiratory health stakeholders;
- Identify and address remaining support structure gaps, needs and priorities in the respiratory health community.

4. Research, Surveillance and Knowledge Translation

**Goal:** Drive effective prevention and management of respiratory disease and its risk factors, through enhanced, coordinated research and surveillance efforts that are then translated into both improved health outcomes and economic benefits.

**Strategies identified to meet this goal:**

- Increase funding for respiratory health research and knowledge translation towards disease prevention, detection, management, and cure;
- Increase respiratory research capacity;
- Improve surveillance of respiratory health and measurement of health outcomes as part of a broader, comprehensive disease surveillance system;
- Effectively translate respiratory health research findings into knowledge, best practices, policies and programs for a range of audiences, including the public, industry, healthcare providers, policy-makers and funders;
- Expand the research that examines relationships between respiratory health and the needs of at-risk populations.

The Framework’s vision, mission and principles embody Canada’s respiratory stakeholders’ collective direction for a coordinated response to addressing respiratory disease in Canada. The
goals, strategies and associated activities identify their collective priorities for implementing this response. Built by stakeholders for stakeholders, the Framework serves as a tool for each to develop and implement their own strategic plans, budgets and programs.

This unprecedented collaborative effort is already facilitating the creation and support of new partnerships, networks and knowledge sharing among the many pockets of excellence in respiratory health across the country, and will continue to do so as more strategies and activities are implemented at all jurisdictional and community levels.

As a living process, the Framework will continue to be responsive to the evolving needs, research, and knowledge of respiratory health stakeholders in Canada, moving forward in the context of continuous evaluation and quality improvement.

Canada’s respiratory health stakeholders are both the owners of the National Lung Health Framework, and its beneficiaries. Ultimately however, the advantages belong to all people living in Canada.

By working together to step up prevention, diagnosis, care, treatment, support structures and research, and to achieve the vision set out in this Framework, we can prevent thousands of new respiratory infections, save many lives, and improve the quality of life for people suffering from respiratory disease.

By acting now, our society will reap the enormous economic, social and personal benefits of their productivity and creativity.
VISION, MISSION AND GUIDING PRINCIPLES

A Vision for Lung Health in Canada
Excellent respiratory health for all in Canada

The National Lung Health Framework Mission
To advance the respiratory health of all people living in Canada through collaborative and equitable patient care, policy, programming, research and leadership

Guiding Principles for the National Lung Health Framework

The National Lung Health Framework is grounded in several important guiding principles – fundamental values that provide direction, set standards and underpin all the respiratory health decisions we collectively make going forward. Any goal set, and any strategy or activity proposed by the Framework, was developed within the following context:

• Efforts at improving respiratory health and overall wellness must be based on the needs of individuals, families, and communities, and with their participation.

• For all people living in Canada to attain equitable access to the benefits of respiratory health, we must eliminate barriers to prevention, management, and care by addressing the social, economic, environmental and cultural determinants of health.

• A key element of respiratory health is to improve quality of life at all stages throughout the continuum of care – from before birth through to the end of life.

• Respiratory health initiatives and programs must be culturally sensitive and respectful, building on existing strengths and values.

• Advocacy plays a crucial role in influencing policy and related behavior change.

• Progress can be maximized through collaboration with other health frameworks, strategies, initiatives, and programs, allowing health sectors, disciplines and jurisdictions to come together and build partnerships, share best practices, and encourage development of policy initiatives.

Two additional principles will guide the Framework’s ongoing development and implementation process:

• The Framework will be developed and implemented with the cooperation, collaboration, and participation of stakeholders and all levels of government.

• This is a “living process,” flexible and responsive to evolving needs, research, and knowledge, and moving forward in the context of continuous evaluation and quality improvement.
We are on the cusp of a significant forward shift for respiratory health in Canada. Under the guidance of a volunteer Interim Steering Committee and with the support of the Lung Association and the Government of Canada, respiratory health stakeholders representing all sectors and regions have contributed their talents and expertise to produce the National Lung Health Framework.

The goal of this collaboration was to deliver a plan that would serve as a catalyst for change – building partnerships, sharing best practices and identifying gaps and opportunities in the respiratory health community – all the while supporting initiatives for advocacy and policy development. The result is a uniquely “Made in Canada” action plan, grounded in provincial and territorial health strategies, addressing barriers to access for at-risk populations – including First Nations, Inuit and Métis communities – yet fully informed by international efforts in the field of respiratory health.

Canada already has significant pockets of dedicated people and organizations involved in advocacy, policy development, prevention, care, treatment, support and research in respiratory health. But to continue raising the bar and closing gaps for respiratory health across the country, we need to better coordinate our collective knowledge, skills, resources and structures. Doing this will allow us to raise awareness; address the social, economic, environmental and cultural factors underlying respiratory health issues; step up prevention efforts; and strengthen diagnosis, care, treatment and support of those suffering from respiratory disease.

It is this coordinated approach – providing all stakeholders an opportunity to align their work within a larger plan – that will deliver the most significant positive effect on the future state of respiratory health in Canada. Our intent is to inspire action on all fronts. Our belief is that – together – we can not only do more, but also do it more effectively.

In order to remain vital, the Framework will become a “living” process, looking forward and evolving over time to respond to changes in the field of respiratory health. Already, changing demographics are bringing about new trends and shifts in respiratory disease. Our response requires new tools, new strategies, and new ways of approaching these conditions. Considering Canada’s aging population, action taken now will pay off with huge health, economic, and quality of life dividends down the road.

Stakeholders who took part in the Framework’s development told us that the process has motivated, energized, and stimulated them to think differently about respiratory health in Canada. They wanted the Framework to create an “enabling
environment” for effective disease prevention and management, and the Framework development and implementation process reflects this.

The time for action is now, and the window of opportunity unprecedented. We can only hope that the National Lung Health Framework will inspire the same sense of excitement and purpose within you, and we look forward to you joining us in this journey towards improved respiratory health for all people living in Canada.

The Framework presents our collective view of what is needed for the future.
1. WHY A NATIONAL LUNG FRAMEWORK?

For many years, the respiratory health community had been seeking ways to work together and develop an integrated response to improve respiratory health in Canada. They wanted a strategic plan that could be used by diverse stakeholders – one that would facilitate the creation and support of new partnerships, networks, and open lines of communication and knowledge sharing among the pockets of excellence across the country.

The National Lung Health Framework responds to our nation’s need for this common strategic action plan – one that paves the way for the respiratory health community, stakeholders and governments to best apply critical resources to improve the respiratory health of all people living in Canada.

Because respiratory disease is a complex web of illnesses and risk factors, attempts to mitigate the impact require the marshalling of many different levels of government, agencies, industry players, and other stakeholders. Only a coordinated effort, encompassing a challenging range of approaches and strategies, can succeed.

As with all effective health strategies in Canada and around the world, this Framework was developed collaboratively. A vast array of respiratory health stakeholders from all sectors and all regions of the country heeded the urgency of the situation and banded together to help develop this Framework, under the guidance of a volunteer Interim Steering Committee and with the support of the Lung Association and the Government of Canada. Representing many communities, perspectives, and areas of expertise, stakeholders who contributed their talents and expertise included:

- Consumer and patient groups;
- First Nations, Inuit and Métis communities;
- Medical professionals and other health care providers;

MAKING A DIFFERENCE

- Respiratory illnesses currently cost Canadians an estimated $154 billion per year in direct and indirect costs. According to the World Health Organization, lung diseases will soon be the third leading cause of death in the world;
- One in five Canadians has lung disease, but we know that serious diseases like COPD are at least 50% undiagnosed. We know that rates of asthma in Canada are among the highest in the world;
- Some populations (for example, First Nations, Inuit and Métis) are disproportionately affected by respiratory disease and do not benefit from equal access to care;
- Lack of awareness of the scope and nature of lung disease by both health consumers and family physicians can lead to poor management;
- Even when resources like guidelines or management plans are available, they are not always used or, in some cases, provide contradictory information, confusing patients and health professionals;
- Poor management leads to costly interventions (emergency room visits, extra visits to family physicians) and poor health outcomes;
- Prevention (dealing with air quality issues and lifestyle issues like smoking) also requires awareness and accountability;
- Respiratory research is not keeping pace with the burden of disease – the current federal government investment is just 3.9% of total research dollars.
• Non-Governmental Organizations (NGOs);
• Private Sector/Health Industry;
• Researchers and Clinicians;
• Federal/Provincial/Territorial government departments and agencies.

The National Lung Health Framework is the result of this comprehensive multi-stage process involving extensive review, collaboration and input by over 500 volunteers and participants. Built by stakeholders for stakeholders, they are both its owners and its beneficiaries. Ultimately, the advantage belongs to all people living in Canada.

1.1 A Call for Action

Despite progress over the years in both prevention and treatment, respiratory diseases continue to have a devastating impact both the physical and economic health of people living in Canada. While excellent work is being done on respiratory health throughout the country, it is not always well coordinated. Rather than continue the good fight in isolation within their own jurisdictions and areas of expertise, Canada’s respiratory health stakeholders (see Appendix 7) have taken the bold step to join forces and move forward collectively.

Thanks to these stakeholders’ clear, consensus-based vision of the destination and their enthusiastic participation in the process, the Framework presents the collective view of what is needed for the future, addressing the fundamental gaps that exist between the current and desired state of respiratory health in Canada.1

By developing coordinating mechanisms and protocols that function at a pan-Canadian level, we can ensure that the many significant “pockets of excellence” that exist for respiratory health do not become “silos” where the exchange of information, knowledge and resources is stifled. By connecting and supporting these pockets of excellence, the Framework is converting these gaps into timely opportunities.

THE FRAMEWORK ENCOURAGES RESPIRATORY HEALTH STAKEHOLDERS TO:

• Make strategic decisions about how to use our resources and cooperate to address the burden of responding to respiratory health challenges;

• Identify priorities and actions that will have the greatest impact (some stakeholders may see themselves acting in all or most aspects of the Framework; some may find a role in only one specific strategy or activity; others may choose to focus on a few priorities that fit within their mandate and resources);

• Use the Framework to build better working relationships with other organizations within the health community that share common goals;

• Ensure that the Framework continues to reflect the optimal state of respiratory health in Canada, given that the plan will need to evolve over time.

The National Lung Health Framework is a living process, intended to inspire action on all fronts so that – together – we can all do more and do it better.

This world-class Framework paves the way for an ambitious, coordinated nationwide approach to tackling respiratory disease. It encourages effective partnerships between jurisdictions, within the health care system and with other sectors beyond health that have an impact on our respiratory well-being.

For all stakeholders interested in improving the respiratory health of people living in Canada, and for governments at all levels, including local health regions and municipalities, the Framework is a tool designed to:

• Inform strategic planning processes;

• Inform investment strategies;

• Identify opportunities for partnerships, networks, and collaborations.

1 For more information on the process to develop the Framework, see Appendix 6: The Framework Timeline and Appendix 7: Stakeholders in the Framework’s Development
By acting strategically, working collaboratively and sharing our knowledge, skills and resources, all within a common Framework, we will become more effective. By building on past successes, adopting and adapting proven best practices, and leveraging the considerable good-will towards this initiative, we will come closer, faster, to achieving our common goals. Together, we have the potential to make a significant difference in the health and quality of life of everyone in Canada.

Many stakeholders commented during the development process that a National Lung Health Framework was long overdue… the time for action is now, and the window of opportunity unprecedented.

1.2 Alignment and Collaboration with other Health Strategies and Frameworks

In order to be successful, the National Lung Health Framework must align, coordinate, and collaborate with existing international, national, and provincial/territorial health strategies. This key principle, which guided development of the Framework from the onset, seeks to maximize synergies and minimize duplication of efforts as we work collectively to improve overall health and quality of life for everyone in Canada.

The approach ensures that our uniquely “Made in Canada” action plan is grounded in provincial/territorial and other national health strategies, while being fully informed by international efforts in the field of respiratory health.

This Framework sets the stage for Canada to play leading international roles in both respiratory research and practice. We are learning from the best practices and innovations that are taking place elsewhere, while making our own important contributions to global knowledge about respiratory health. A successful National Lung Health Framework will have an impact on respiratory health both here, and internationally.

At the same time, we have been working closely with other national health strategies to ensure a cooperative approach to issues such as common risk factors and co-morbidity, and this will continue throughout the implementation stage. Examples that offer excellent opportunities for ongoing collaboration include The Canadian Heart Health Strategy and Action Plan, The Canadian Strategy for Cancer Control, The Federal Tobacco Control Strategy, and the Integrated Strategy on Healthy Living and Chronic Disease.

While each of these strategies works towards its own stakeholder-defined priorities, there are clear opportunities for common messaging, initiatives and activities to address prevention, disease management, and research. By working together, we stand to maximize use of resources and a wide range of positive health outcomes at all jurisdictional levels which will benefit everyone living in Canada.

The vision, goals and activities of a national plan must also be complementary, supportive and reflective of the work being done at the provincial and territorial level. The National Lung Health Framework has been working with provincial and territorial stakeholders throughout the entire process. This includes involvement via the Interim Steering Committee, advisory committees, workshops, focus groups, and as expert advisors and reviewers (see Appendix 7).
2. THE ECONOMIC BURDEN OF RESPIRATORY DISEASE

Respiratory diseases exert a significant impact on the Canadian economy and health care system.

For the year 2007, the estimated total economic burden of direct and indirect costs of respiratory diseases in Canada totaled $154 billion\(^2\). This represents almost $5,000 per person, fully one-fifth of the median income per individual.

This figure is based on statistics for prevalence (6 million people living in Canada) of respiratory disease cited in the Public Health Agency of Canada’s *Life and Breath* report (2007) and on economic burden data cited in *Respiratory Disease in Canada* (2001) – a collaborative effort of the Canadian Lung Association, Health Canada, Statistics Canada, and the Canadian Institute for Health Information (CIHI).

2.1 Quality-Adjusted Life Years (QALYs)

Indirect costs of respiratory disease on the health care system are based on Quality-Adjusted Life Years calculations (QALYs), which use WHO models of disability weights to assess and then aggregate various aspects of an individual’s health such as mobility, anxiety and pain over a 50 year life-span, combined with time lost due to premature death.

Even though these numbers demonstrate the destructive impact of respiratory disease on both the health of individuals and of the Canadian economy, *Life and Breath* and other CIHI data sources confirm that information on prevalence and incidence of many respiratory diseases is not well documented and that the numbers used likely represent only a portion of the actual burden.

For instance, we know from international research that reported incidence of COPD does not reflect the real and potentially devastating nature of the disease. *World COPD Day 2007 Project*, a recent report based on research conducted by The Lung Association, suggests that up to 3 million people are potentially at risk from COPD alone (over 3 times the number used in calculating the burden of disease by *Life and Breath*).

<table>
<thead>
<tr>
<th>TOTAL ECONOMIC BURDEN IN YEAR 2007 ESTIMATED AT $154 BILLION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(direct and indirect costs over a 50 year life)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>• Benefits/value were assessed in four key areas:</td>
</tr>
<tr>
<td>o Public health effectiveness</td>
</tr>
<tr>
<td>o Public health value for money</td>
</tr>
<tr>
<td>o Cost effectiveness</td>
</tr>
<tr>
<td>o Quick wins/early opportunities</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>• Based on preliminary results, “packages” of actions and strategies (including research) addressing the following three indicators, translated to reduced healthcare system costs and improvement of QALYs over the 50 year life-span, would result in the following gross benefits:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Disease Detection – for each $10 million invested: $20.27 million in gross benefits</td>
</tr>
<tr>
<td>Disease Management – for $10 million invested: $154.52 million in gross benefits</td>
</tr>
<tr>
<td>Indoor Air Quality – for each $10 million invested: $65.96 million in gross benefits</td>
</tr>
</tbody>
</table>

---

Based on what we know to be only a partial picture, the annual cost (direct and indirect) of respiratory disease could climb to $170.2 billion by 2020, and to $201.1 billion by 2057, in the absence of major new investments and initiatives. If Canada is to stem this impending crisis, it needs to implement a comprehensive and coordinated national plan to manage the social, economic and health implications of these deadly and crippling ailments.

Preliminary cost/benefit analysis work conducted by the Lung Association in the early stages of the Framework’s development already indicates the high value of increasing investments in respiratory health.

2.2 Investments to Date in Respiratory Research

The Canadian Institute of Health Research (CIHR) is the Government of Canada’s health research funding agency, supporting the work of more than 11,000 researchers and trainees in universities, teaching hospitals, and research institutes across Canada.

Research into lung disease – a vital tool in developing innovative technologies and treatments to lower the burden on the health care system – represents only 3.9% of the $4.3 billion in federal government dollars funded for health research since 1999. In contrast, diabetes research has received 22.6% of funding, cancer 14.8%, cardiovascular 14% and HIV/AIDS 4.6%.

2.3 Individual and collective hospital costs, physician and emergency department visits

Hospital cost information can be used in evidence-based decision-making to help assess the potential financial effects of strategic decisions and to identify cost-effective models or practices of patient care.

According to the 2008 Canadian Institute of Health and Information (CIHI) report entitled The Cost of Acute Care Hospital Stays by Medical Condition in Canada, 2004-2005, of the total $17 million share of acute care inpatient costs, 45.5% can be attributed to the treatment or complexities of respiratory diseases and 47.5% attributed to certain infectious and parasitic diseases.

With a total acute care inpatient cost of $438.7 million, chronic lower respiratory diseases (excluding asthma) ranked third among the most expensive medical conditions. This group of diseases includes COPD, bronchitis, emphysema and bronchiectasis. Pneumonia ranked seventh in the list ($387.0 million).

Every year in Canada, asthma attacks result in some 146,000 emergency room visits. According to the 2005 Hospital Report Emergency Department Care produced by the Hospital Report Research Collaborative – a joint initiative of the Ontario Hospital Association and the Government of Ontario - among children seeking care in an Emergency Department, young infants (0-90 days) account for the highest number of visits per population. For children up to four years of age, respiratory illnesses such as asthma and upper respiratory infections, and croup are the predominant conditions seen in the Emergency Department.

Women visited the Emergency Department more often than men for conditions of asthma and depression (combined) – conditions for which Emergency Department visits might have been prevented or reduced with timely access to primary care in the community.

### EXAMPLES OF HOSPITALIZATION COSTS IN CANADA (2005-2006)

- 52,296 cases of COPD reported at an average cost per case of $5,178;
- 78 cases of lung transplants reported at an average cost per case of $93,985;
- 3,888 cases of respiratory failure reported at an average cost per case of $25,827;
- 11,319 cases of malignant neoplasm of respiratory system at an average cost of $7,074;
- 11,319 cases of viral/unspecific pneumonia at an average cost per case of $4,327;
- 10,888 cases of upper/lower respiratory infection at an average cost per case of $2,740;
- 17,140 cases of asthma reported at an average cost per case of $1,918.
According to the CIHI report *A New Approach for Measuring Hospital Mortality Trends in Canada* (2007), in 2004-2005, 65 conditions accounted for about 80% of deaths among patients who did not receive palliative care. The 10 conditions with the most deaths were acute myocardial infarction, heart failure, pneumonia, COPD, septicemia, malignant neoplasm of bronchus and lung, stroke, cerebral infarction, respiratory failure and hip fracture. These groups represented 44% of all in-hospital deaths.
The 10 conditions shown below collectively accounted for 44% of all hospital deaths (excluding patients that hospitals recorded as having received palliative care). This fact reflects both how often hospitalized patients have those diagnoses and their associated death rates. The graph below shows crude (unadjusted) in-hospital death rates in 2006–2007, ordered from top to bottom based on the number of deaths by condition.
3.1 Respiratory Health: Everybody’s Business

Most of us spend very little time thinking about an involuntary action that occurs about 12 times every minute, 24 hours a day, 7 days a week. Yet breathing might be considered the most important of all the body’s functions, for everything else depend upon it. The human body can live weeks without food, days without water, but only minutes without air.

Our lungs, therefore, serve as the pathway to all our life support systems. Without healthy air to breathe and healthy, efficient organs to process this air, there is no life – or, at least, greatly reduced quality of life.

As such, individually and collectively, we are all at some level of risk for respiratory disease, making respiratory health is everybody’s business. For example, improved outdoor air quality benefits everyone. Indoor air quality can vary according to one’s individual situation at work, school, home, or play. However, improvements here – whether it is reduced occupational exposure to air contaminants or elimination of home and vehicle exposure to second hand smoke – also go well beyond benefits to specific individuals. Better respiratory health for one has a direct impact on family, friends, co-workers, and the rest of the community. It translates directly to our economic productivity and well-being, and to improved efficiency, quality, and cost of our health care system.

A. Who is Affected by Respiratory Disease?

For those presently living with respiratory disease, breathing is a very serious matter indeed. In fact, Canada is facing a wave of respiratory diseases. Since many of these can be tied to an aging population, the number of people affected can be expected to increase. The corresponding increase in demand for services will pose a significant challenge for the health care system. And yet, respiratory diseases affect all ages – from before birth through to the end of life. Indeed, maternal health prior to birth has a significant impact on the respiratory health of newborns (for example, exposure to second hand smoke).

THE FACE OF RESPIRATORY DISEASE

Adele from P.E.I finds the cost of her home oxygen to be a heavy burden – especially for portable oxygen, restricting her ability to get out of the house. She wishes that financial support was available when she has to travel to Halifax to see specialists. Like patients in many other regions, she wishes she had access to a pulmonary rehabilitation program and an exercise/education program for people with lung diseases.

We are now seeing a shift with regard to who is experiencing respiratory disease, which will have a significant impact on how Canada responds to respiratory health issues. For example:

- In 2005, 425,300 Canadian women 35 years of age or over self-reported a diagnosis of chronic obstructive pulmonary disease (COPD);
- In 2003, 4,383 women died from COPD in Canada;

• COPD affects 4.8 per cent of women and 3.9 per cent of men
t.

Pediatrics represents another rapidly evolving front. Respiratory diseases in the very young affect long-term lung growth and development, and can influence respiratory health as an adult. Respiratory diseases in children now account for the highest number of hospitalization days for children across Canada. Respiratory diseases also represent the third costliest reason for hospitalization in infants less than one year of age (after perinatal/prematurity related issues and congenital disorders); second costliest in children aged 5-14 years (after accidental poisoning and injury) and the costliest in children aged 1-4 years. Incidence and prevalence of asthma in children is rising, and now represents the leading cause of school absences in Canada.

We are also seeing alarming rates of respiratory disease among the First Nations, Inuit and Métis Peoples. For example:

• 15% of First Nations children and youth under age 12 suffer from asthma. The prevalence of asthma among Métis (15 years and older) is 12%
• In 2006, the tuberculosis rate for the Inuit population was 114.3 per 100,000 population compared to 5.0 per 100,000 for Canada as a whole.

B. Quality of Life

Quality of life is the degree of well-being felt by an individual or group of people. While often seen as a personal experience, the basic attributes of quality of life which can be defined and measured are: 1) a physical aspect, which includes such things as health, diet, protection against disease, and 2) a psychological aspect, which includes such things as stress, worry, pleasure and other positive or negative emotional states.

Although the value of certain elements of living and lifestyle are unique to every individual, one can assume with some confidence the higher average level of health, diet, shelter, safety, as well as freedoms and rights as a general population has, the better overall quality of life said population experiences.

THE FACE OF RESPIRATORY DISEASE

Robert from B.C. lives with COPD. “I would just like to be able to go for a walk in the woods, or on the beach,” he says. “I’m not asking for a miracle or to run a marathon…I don’t expect a cure. I would just like to walk on the beach – one of the simple things in life that most people take for granted.”

Understanding quality of life is particularly important in health care, where monetary measures do not readily apply. Decisions on what research or treatments to invest the most in are closely related to their effect on a patient’s quality of life. Health professionals are increasingly recognizing that one of their aims of treating patients must be to enable them to feel better and to function better in their day-to-day activities. Many are now incorporating health-related quality of life (HRQoL) into their routine clinical practice, and into clinical studies and research.

There is a growing field concerned with developing, evaluating and applying quality of life measures within health related research. These generally focus on measuring HRQoL from the perspective of the patient, through self-completed questionnaires.

The results take into account the individual’s physical, psychological, and spiritual functioning; their connections with their environments; and opportunities for maintaining and enhancing skills. It considers both the components and determinants of health and well-being.

C. Determinants of Respiratory Health

When dealing with respiratory health issues, one size does not always fit all. Many individuals, families and communities encounter barriers as they seek information about, and take action towards, improving their health and quality of life. These barriers are often at the root of why, in communities and regions throughout Canada, some population groups are disproportionately affected by respiratory disease.

Certain segments of people living in Canada are at heightened risk for respiratory illness because of the social, economic, environmental and/or
cultural conditions in which they live. In fact, a wealth of evidence demonstrates that environmental conditions, cultural contexts and socio-economic circumstances are just as important to health status as medical care and personal health behaviors. These determinants of health have a direct impact on the health of individuals and populations, are the best predictors of individual and population health, influence lifestyle choices, and interact with each other in complex ways.

Poverty and social inequality are factors that play a large role in putting individuals and families in Canada at risk. This is expressed by the large gap in health outcomes experienced by individuals, families, and communities living in poverty, compared to others in Canada. Under this scenario, it is not enough just to raise the bar for everybody, because this does not do enough to address the inherent relative disparity – one that is notoriously resistant to change.

An increase in targeted programming is needed to reduce social inequalities and help narrow the poverty gap (and by extension, the gap in health outcomes). Many ethnic communities are disproportionately affected by these inequities, with First Nations, Inuit and Métis communities most often cited by stakeholders as bearing the largest burden in this regard.4

Individuals, families and communities across Canada experience these various barriers differently, depending on their unique circumstances. Examples of how the determinants of health interact with respiratory health include:

*Poverty and income inequality*: Many people living in Canada are unable to afford basic necessities such as food, shelter and clean water. Because of the limits this places on their ability to make healthy choices and access proper health care, entire communities are at increased risk of acquiring respiratory disease and exacerbating existing conditions. Even for those who can meet these basic needs, a number of services, medications, and personal supports are either not covered or insufficiently covered as part of standard provincial or territorial health care, leaving many people living with respiratory disease to absorb these costs on their own.

*Housing*: Thousands of people living in Canada are homeless, underhoused, or are living in substandard housing that poses significant risks to their respiratory health. Individuals, families and communities across the country are being exposed to poor air quality in the home. Many of those who do not own their home, who share space, or who do not have the economic means to make necessary repairs and improvements, have limited control over the housing-based risk factors to which they are exposed. Homeless persons are particularly susceptible to respiratory diseases due to the high prevalence of smoking5, coupled with poor living conditions and other risks of homelessness.

*Culture and ethnicity*: Information and services that are not culturally relevant (i.e. they do not reflect values, customs, and beliefs), or do not reflect diversity within a cultural community, can also create barriers for those seeking resources to improve their respiratory health and well-being. In many cases, the programming being offered does not address the needs, strengths, and successes found within many cultural and ethnic communities. Not only is this a barrier to access, but we also lose opportunities to learn from traditional knowledge while developing innovative models of education, care and disease management.

*Gender*: Both men and women are at risk for respiratory disease. However, different patterns of exposure result in differing patterns of disease (for example, increasing rates of smoking among women in the past 50 years correspond to higher rates of lung cancer among women today). Also, because of differences in physiology, respiratory diseases can manifest and progress differently for men and women, requiring different approaches to treatment and management. For example, women with COPD report experiencing more severe symptoms and limits on physical activity due to breathing difficulty than do men.

*Age*: While people living in Canada of all ages (from before birth through to late age) are at risk from respiratory disease, various demographics require different approaches to prevention and awareness, treatment and disease management. For example, young people need information appropriate to their age, stage of development, and social setting. Availability of, and access

---

4 For specific information on respiratory disease and issues faced by First Nations, Inuit and Métis peoples, see Appendix 4: Respiratory Health among First Nations, Inuit and Métis Peoples

5 Smoking Cessation Rounds – Management of Tobacco Addiction in Patients with Mental Illness, June 2008. Dr Andrew Pipe and Dr. Charl Els
to, this kind of targeted information and programming is highly variable and inconsistent across age groups and communities in Canada.

**Education, literacy, and language:** Many people living in Canada experience barriers to information due to a lack of literacy, education, or language barriers. Even those who are able to read may have difficulty interpreting the language and concepts found in health-specific information, or are not informed about where they can access appropriate, consumer-oriented information.

**Working conditions:** Occupational exposure to poor indoor and outdoor air quality is contributing to new cases of respiratory disease, and is exacerbating existing illness for many workers. In some cases, workers and even employers may not be aware of these risks, are not sure how to address them, or simply do not have the resources to make the necessary changes.

**Location:** Many rural and remote communities face poor access to health care and community supports due to inadequate transportation, and/or a lack of facilities and health human resources. Prevention is also an issue as many organizations lack the capacity to bring awareness campaigns to communities outside the urban centres.

**Environment:** Physical geography can sometimes compromise the respiratory health of an entire community. For example, many neighbourhoods and towns are located near mines that put them at increased risk for lung cancer. Many cities and regions of Canada are located near other communities and factories (including across national borders) that are responsible for high-levels of air contaminants. In most of these cases, these towns and communities do not have the jurisdiction or legislative ability to control these pollutants at the source, yet the impact is seen in poor health outcomes.

**Genetics:** Many factors that put individuals, families and communities at risk for respiratory disease are only beginning to be understood. For example, despite a current lack of data, research is beginning to better understand the relationship linking genetics and family history with respiratory disease. A better understanding of this link will lead to new tools and interventions that will help manage, and potentially prevent, certain respiratory conditions.

**Lifestyle:** Physical fitness levels and the importance of maintaining healthy body weights and reducing obesity among children right up to adults are important factors not just for overall health and wellness, but also for risks associated with specific respiratory diseases. For example, stakeholders believe we will see significant increases in the rate of sleep apnea (particularly among much younger individuals, even as young as youth in their teens), hand in hand with rising obesity rates in North America.

The National Lung Health Framework reflects the importance of identifying social, economic, environmental and cultural barriers to respiratory health, and ensuring that action is taken so that all individuals, families and communities have access to the information, supports, care, treatment and management needed for health and wellness. To do this, we must collectively determine who is not accessing needed information and services and what barriers may be in the way. We then must work with these at-risk populations to identify innovative solutions to remove these barriers.

---

**MENTAL HEALTH AND RESPIRATORY HEALTH**

- Scientific evidence has demonstrated a fundamental connection between mental and physical health. In fact, 43% of adults suffer adverse health effects from stress, and 75-90% of all physician office visits are for stress-related ailments and complaints. Stress is linked to the six leading causes of death: heart disease, cancer, respiratory ailments, accidents, cirrhosis of the liver, and suicide.

- Health behaviour is highly dependent on a person’s mental health. One’s choices around diet, exercise, sexual practices, smoking, and adherence to medical therapies can all have serious implications on the state of one’s physical health. Studies indicate that depression negatively impacts a person’s nutritional choices, their commitment to exercise, whether or not they engage in high-risk sexual practices, smoke, or follow medical advice regarding medication and/or a specific course of treatment.

**In this sense, mental health can be considered an important determinant of respiratory health.**
This priority, clearly identified by stakeholders, underpins the Framework strategies.

D. Canada’s Stakeholders in Respiratory Health

Many organizations and thousands of people across the country are involved in policy, programs and services that address or influence respiratory health. While some have respiratory health specifically in their mandate, others deal with broader health, social, and environmental issues. Regardless of their mandate, all of these stakeholders have a common, collective role to play in improving respiratory health. In order to respond to evolving respiratory health issues and achieve common goals, stakeholders are looking beyond individual “silos” to get a handle on the big picture – that is, the complex interactions involved and the need for all players to work together.

Communities of practice

In assessing how best to coordinate efforts and work collaboratively on a national approach to respiratory health, stakeholders have recommended the concept of “communities of practice” (also called “learning networks”). These are formed by groups of people who engage in a process of collective learning in a shared domain of human endeavour – people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.

A community of practice shares three common elements: a domain, a community, and a practice:

- It has an identity defined by a shared domain of interest; membership implies a commitment to the domain and a shared competence that distinguishes members from other people;
- Members engage in joint activities and discussions, help each other, and share information – they build relationships that enable them to learn from each other;
- Members of a community of practice are practitioners (it is not merely a community of “interest”). They develop a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems – in short a shared practice. This takes time and sustained interaction.

Communities of practice can take on a variety of forms. Some are quite small; some are very large, often with a core group and many peripheral members. Some are local and some cover the globe. Some meet mainly face-to-face, some mostly online. Some are within an organization and some include members from various organizations. Some are formally recognized, often supported with a budget; and some are completely informal and even invisible. Communities of practice have a number of characteristics that make them an inviting vehicle for developing strategic capabilities:

- They enable practitioners to take collective responsibility for managing the knowledge they need;
- They create a direct link between learning and performance;
- They are not limited by formal structures: they create connections among people across organizational and geographic boundaries.

These very characteristics that make communities of practice a good fit for stewarding knowledge – autonomy, practitioner-orientation, informality, crossing boundaries – can also make them a challenge for traditional hierarchical organizations.

3.2 Preventable or Modifiable Risk Factors for Respiratory Disease

At the most basic level, anything that is inhaled into the lungs can put people at risk, whether it is an air pollutant, tobacco smoke, marijuana smoke, solvent fumes, or other inhaled drug or substance. The two most understood, preventable or modifiable risk factors for respiratory disease are tobacco smoke (through personal smoking and exposure to second-hand smoke) and air quality (indoor and outdoor).

---

6 For more detail on Canada’s stakeholders in respiratory health, see Appendix 3: Canada’s Stakeholders in Respiratory Health

7 For more information on preventable or modifiable risk factors for respiratory disease, see Appendix 1: Preventable or Modifiable Risk Factors
Risk factors come into play in all settings and situations – where people live, work, learn and play – including:

- Homes (including multi-dwelling units);
- Vehicles;
- Workplace (including office buildings, factories, mines, and farms);
- Schools (including daycares);
- Health care and palliative care facilities;
- Recreation centres.

Reducing exposure to risk factors will prevent new respiratory disease (primary prevention), and plays a key role in disease management (secondary prevention). Reducing exposures also requires tackling the many social, economic, environmental and cultural factors that put some individuals, groups and communities at greater risk of exposure, which in turn increases their risk for new respiratory disease, exacerbates existing disease conditions and hinders their proper management.

A. Smoking

One in five Canadians currently smokes cigarettes. Tobacco smoking remains the most important preventable risk factor for chronic respiratory diseases.

The estimated 37,209 tobacco-attributable deaths in Canada in 2002 accounted for 16.6% of all Canadian deaths. That year, tobacco smoking was responsible for more than 8,200 deaths from pneumonia/influenza or COPD, and more than 13,400 deaths from lung cancer.

The increase in smoking among women in the past 50 years has resulted in an increased prevalence of diseases such as lung cancer and COPD.

Exposure to tobacco smoke can be direct, by active smoking, or indirect, by exposure to second-hand smoke or maternal smoking during pregnancy.

---


---

SMOKING PREVALENCE (2006)

From the Life and Breath report:

- Slightly fewer than 5 million people, representing 19% of the population aged 15 years and older, are current daily or non-daily smokers (a decline from 35% in 1985);
- Men continue to smoke more cigarettes (16.9 per day on average) than women (13.8 per day on average);
- The rate of smoking among youth aged 15-19 years of age is 15% (about 320,000 youths);
- The rate for First Nations adults on reserve (58.8%) is about triple the rate for Canadians in general. For non-reserve Aboriginal peoples, the rate is more than double;
- The prevalence of smoking among young adults 20-24 years of age is 27%. Within this age group, a greater proportion (30%) of males smoke than females (24%). Young adults still display the highest smoking rates of any age group;
- About 70% of First Nations young adults on reserve between 18 and 29 years of age are current smokers;
- 9% of children 0-11 years of age are regularly exposed to second-hand smoke at home;
- 10% of women between the ages of 20 and 44 who had been pregnant in the previous five years reported smoking during their most recent pregnancy.

From the Dept. of Health and Social Services of Nunavut (2005):

- The current smoking rate in Nunavut is 53.1%;
- 11% of Nunavut residents are exposed to second hand smoke.

In terms of respiratory disease, active smoking is causally linked to lung cancer, poor asthma control, acute respiratory illness, COPD and all
major respiratory symptoms (coughing, phlegm, wheezing and dyspnea).

Growing data supports the position that marijuana smoking is also a risk factor, especially for youth. In 2004, 37% of youth aged 15-24 reported using the substance at least once in the previous 12 months (almost four times the prevalence of adults aged 25 or older), and almost 1 in 10 (8.2%) in the same age category reported using on a daily basis.

Exposure to second-hand smoke affects all people living in Canada. It causes irritation in the eyes, nose and throat, can result in lung cancer in adult non-smokers, and is associated with sudden infant death syndrome (SIDS) in infants. For individuals with asthma and COPD, exposure to second-hand smoke can make symptoms worse.

Exposure to tobacco smoke of a pregnant woman (primary smoking or second-hand smoke) contributes to both premature birth, the major factor associated with respiratory distress syndrome (RDS) in newborns, and decreased birth weight. The small lungs and airways developed by these preterm newborns leads to increased respiratory illnesses within the first few years of life, and the association with SIDS. In the short term, smoking prevention and cessation would have the greatest impact on reducing respiratory diseases (in the case of lung cancer); cessation would also have the greatest impact on reducing their severity (i.e. COPD and others). Smokers who stop smoking reduce their tobacco-related morbidity and mortality associated with respiratory disease. The improvements in health are dramatic and immediate. Lung capacity increases within days, risk of stroke and other circulatory diseases diminishes, and the chance of smoking-related heart attack is cut in half within a year. Within a few years, the chance that an ex-smoker will get cancer is reduced by half compared to those who continue to smoke.

B. Outdoor Air Quality

The relationship between air quality and health is complex because of the interplay of numerous factors. Exposure to ambient air pollution has been associated with adverse health outcomes that range from subtle biochemical and physiological changes to difficulty breathing, wheezing, coughing and aggravation of existing respiratory diseases. These effects can result in increased medication use, more visits to doctors or emergency departments, more hospital admissions and even premature death. In 2008, it is estimated that there will be over 620,000 doctor’s office visits because of air pollution. This total is expected to rise to over 940,000 visits in 2031 if air quality does not improve9. Certain groups within the population who are more sensitive to the effects of air pollution may experience health effects even at very low levels of exposure. Air quality can also affect cardiovascular health and other systems.

In 2008, the cost of air pollution in Canada is estimated to be $10 billion and will lead to approximately 21,000 premature deaths9.

There is strong evidence that exposure to outdoor air pollution exacerbates asthma, with outcomes that include hospitalization, emergency room visits, incident asthma attacks, asthmatic symptoms and medication use. Exposure to air

---

9 No Breathing Room – National Illness Costs of Air Pollution, August 2008. Prepared by the Canadian Medical Association
HEALTH CANADA POLICY STATEMENT ON CLIMATE CHANGE

There is growing evidence that the global climate is changing and that these changes will affect the health and well-being of Canadians. We are already feeling the effects of a changing climate, particularly in Canada’s North.

Canadians are concerned about climate change and about the impacts it will have on them and on their communities. Health Canada is working with researchers and decision-makers in all parts of the country to better understand how a changing climate will affect us and the best ways to prepare for these changes.

Through this collaborative work, we continue to learn about the full scope of impacts that climate change will have on human health.

... pollutants is also associated with both exacerbation of, and hospitalizations for, COPD.

Many studies document the sensitivity of young children and adolescents to air pollution, including such adverse effects as increased cough and respiratory symptoms, physician and hospital visits, and school absenteeism. Long-term exposure to acidic particles may have harmful effects on their lung growth, development and performance. Maternal exposure to air pollutants can also affect pre- and post-natal development.

Examples of prevalent outdoor air pollutants include sulphur oxides (SOx), nitrogen oxides (NOx), volatile organic compounds (VOCs), carbon monoxide (CO), ozone (O3) and fine particulate matter (PM_{2.5}) and other toxic compounds. Climate change and global warming are a growing concern for many people living in Canada who fear the impact these environmental changes are having on their health. Although the effects of climate change are not yet fully understood, many studies are underway to determine its impact on smog and other air pollutants, as well as the relationship with airborne allergens such as pollen and mould.

C. Indoor Air Quality

The levels of air pollutants indoors depend on outdoor air pollution, the rate at which indoor air is exchanged with outdoor air, the presence of sources indoors (combustion appliances, consumer products, etc.), and building design and materials.

Along with exposure to second-hand smoke from smoking (covered in section 3.2 A.), the most common examples of indoor air pollutants include biological agents (such as mould); tobacco smoke; combustion products from appliances that burn fossil fuels; volatile organic compounds (VOCs) and formaldehyde emitted from consumer products; allergens and dust mites; and radon, a naturally occurring radioactive gas.

Associations have been observed between indoor air pollutants and health effects, primarily in relation to asthma, although estimating the burden of disease associated with indoor air pollution is difficult because of the lack of exposure data representative of the Canadian population.

However, it is clear that the quality of both indoor and outdoor air is – at a minimum – a primary factor for the acceleration of respiratory diseases and the exacerbation of symptoms. And although everyone in Canada is affected by the quality of the air that they breathe, the effects are more severe for those who also live with a respiratory disease.

While air quality issues are dependent on geography, and solutions may vary according to locale, action to address air quality issues would make a key contribution to lowering the rising rate of respiratory disease in Canada.

D. Occupational Exposure

Workplaces include a range of indoor and outdoor settings – large factories, small businesses (for example body shops), and even in the home – where exposure to irritating or toxic substances may cause a number of acute or chronic respiratory ailments. Like other developed countries, Canada has experienced significant changes in the prevalence of respiratory diseases directly linked to occupational exposure over the past 30 years. For
example, although Canada is rich in minerals, and mining continues to be relatively common in many parts of the country, pneumoconiosis (lung disease resulting from inhalation of inorganic dust in mines and other work places) has declined both as a cause of recorded mortality and hospital admissions (with the exception of asbestosis). Occupational asthma is now the most frequently occurring occupational respiratory disease, and rates of hospital admissions and mortality from respiratory exposures to chemicals and other agents are also of concern.

Additional conditions caused by occupational exposure include “Farmer’s Lung” (extrinsic allergic alveolitis or hypersensitivity pneumonitis); conditions due to inhalation of chemicals, fumes or gases; lung cancer; and COPD.

Not all workplaces represent traditional structures. People bringing workplace into their homes can raise new respiratory health challenges – for example, the introduction of power tools for traditional, home-based stone carving in northern communities without the use of appropriate masks or ventilation.

3.3 Chronic and Infectious Respiratory Diseases

Respiratory diseases have a major effect on millions of people in Canada. While they take a huge toll in lost lives and costs to our health care system, perhaps the most significant impact is on the long-term quality of life for individuals and families who face a respiratory illness.

Traditionally, the most common respiratory diseases include asthma, COPD, lung cancer, tuberculosis, sleep disordered breathing (sleep apnea), and influenza.

A. New Trends

With changing demographics in Canada we are seeing new trends and shifts in disease. For example:

- Some studies indicate that just less than half of the population is likely to receive medical attention for asthma. This rising prevalence of asthma among adults is causing concern and requires further research to identify the factors responsible and to study the primary prevention of asthma in individuals at risk;

- The increase in the number of people with COPD will require the expansion of existing services in primary care, emergency, hospital, specialist care, pulmonary rehabilitation, home care and home oxygen use. Providing the optimal level of rehabilitation services in the community will be a particular challenge;

- Some studies have shown that women coping with COPD have a significantly higher prevalence of anxiety disorders, as well as higher anxiety sensitivity and depressive symptoms than men. Likewise, women were less confident in their ability to control respiratory symptoms;

- Lung cancer has become a major health issue for women. Both the incidence and mortality rates among older women are increasing, in contrast to decreases seen among older men. The increase in smoking among women 30 to 40 years ago is now being reflected in these trends;

- Although Canada is considered to have a low incidence of tuberculosis, the effects of poverty, including crowded housing, are associated with increased TB incidence among some Aboriginal communities and among the urban homeless;

- Studies are showing that the stress of modern society – coming from family environment, or peer group (school) environment – can lead to exacerbation of asthma symptoms in children;

LIVING WITH PEDIATRIC RESPIRATORY DISEASE

Sylvie from Quebec is the mother of a seven-year old with asthma. She spends numerous hours each month in the emergency room and at medical appointments with her daughter. Not only does her daughter miss school, but Mary misses work. Asthma takes a physical, emotional, and financial toll on the whole family.

12 For more information on chronic and infectious respiratory diseases, see Appendix 2: Chronic and Infectious Diseases

• Hospitalization now accounts for at least 65% of the economic burden of RSV in children <4 years old, and evidence suggests that hospitalization rates have been increasing in the last two decades;

• More people are suffering from episodic illness – experiencing fluctuating and unpredictable periods and degrees of wellness and disability, and forcing people in and out of the labour force in an unpredictable manner.

In addition, many respiratory health issues overlap with each other (for example, patients living with more than one respiratory condition), overlap with other chronic or infectious diseases (co-morbidity), and share common risk factors (air quality, physical activity, etc.).

B. Models of Care

In light of these trends, Canada’s stakeholders in respiratory health are looking forward and working to expand our collective knowledge about respiratory disease. This is going to require new tools, strategies and new ways of approaching these conditions.

Important models for disease detection and management are integrative and systemic in nature; the focus is as much or more on wellness than on illness, with the individual, families and communities playing important roles. Examples include:

• The Chronic Care Model (developed by Dr. Ed Wagner and staff at the MacColl Institute for Healthcare Innovation);

• Ontario’s Chronic Disease Prevention and Management Framework;

• The COPD & Asthma Network of Alberta (CANA)’s System Map.

These models of care identify the essential elements of a health system that encourages high-quality chronic disease care. For Wagner, these elements are: the community, the health system, self-management and support, delivery system and design, decision support and clinical information systems. These elements work together with an informed and engaged patient and a prepared, proactive practice team, to produce functional and clinical outcomes.

CANA’s care model for asthma includes the following elements: specialty care, community, primary health care, Health Link (a nurse telephone advice and health information service), acute care and disease education. A “System Map” depicts the health provider linkages with primary care as a hub, disease education as essential, patient flow as circular and the ideal care being team-based and patient-centric. The role of each element in the model is defined and needs, barriers and sample solutions are mapped out for each element. In this context, certified respiratory educators have the potential to play a key role in disease management and care.

C. Orphan Diseases and Lung Transplants

While The National Lung Health Framework does reference a number of specific chronic and infectious respiratory diseases, the document strives for a broad, inclusive approach – most of the recommended strategies and activities are not disease-specific, and will result in positive health outcomes for a wide range of conditions.

However, several less common but serious lung conditions require more systematic and comprehensive attention. These are referred to as “orphan diseases,” because typically there are scant resources dedicated to them and limited special physician expertise available. Frequently, lung transplantation is the only treatment – once the illness has run its course and caused end-stage lung disease. Examples include lymphangioleiomyomatosis (LAM), pulmonary arteriovenous malformations, eosinophilic granuloma, and primary ciliary dyskinesia.

The Framework’s coordinated, national approach offers a unique opportunity to collect intellectual resources on these rare conditions and provide access to centralized expertise. Elements could include development of databases that provide an accurate snapshot of the numbers affected, and ready access for patients to therapeutic trials or any advances in care. The benefit of offering hope to those living with orphan diseases, and the knowledge that others share these uncommon afflictions, cannot be measured.
For many diseases that are largely untreatable, lung transplantation is the single effective strategy for prolonging and improving quality of life. Since the procedure and the post-operative care is so complex, transplantation is offered in only a few specialized centres in Canada. While this helps to ensure high quality, it also creates barriers to access – for some, it is only a viable option if available locally. Another major limitation is the lack of organs for transplantation. Every year, patients die “waiting for the call.” As such, raising awareness among both potential organ donors and patients suffering from advanced lung diseases is equally important.

D. Incidence and Prevalence of Respiratory Diseases in Canada

<table>
<thead>
<tr>
<th>RESPIRATORY DISEASE</th>
<th>INCIDENCE/PREVALENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asthma</strong></td>
<td>Prevalence:</td>
</tr>
<tr>
<td>• Among Canadian children between the ages of 4 and 11 years, 15.6% (485,700 children) have been diagnosed with asthma;</td>
<td></td>
</tr>
<tr>
<td>• The prevalence of physician-diagnosed asthma among Canadians 12 years of age and over is 8.3% overall (2.2 million Canadians);</td>
<td></td>
</tr>
<tr>
<td>• For off-reserve Aboriginal people 12 years of age and over, 11.9% have asthma;</td>
<td></td>
</tr>
<tr>
<td>• Asthma continues to be a major cause of hospitalization for children in Canada, and children younger than 5 years of age had the highest hospitalization rates for asthma in 2004;</td>
<td></td>
</tr>
<tr>
<td>• Asthma now represents the leading cause of school absences in Canada;</td>
<td></td>
</tr>
<tr>
<td>• The prevalence of self-reported asthma is higher among women than men but is increasing for both sexes.</td>
<td></td>
</tr>
<tr>
<td><strong>Chronic obstructive pulmonary disease (COPD)</strong></td>
<td>Prevalence:</td>
</tr>
<tr>
<td>• Of adults over the age of 34, 4.4% (3.9% of men and 4.8% of women) reported being diagnosed by a health professional with COPD (includes self-report of COPD, chronic bronchitis or emphysema);</td>
<td></td>
</tr>
<tr>
<td>• Among Aboriginal people living off reserve, 7.9% have COPD;</td>
<td></td>
</tr>
<tr>
<td>• The proportion of individuals diagnosed with COPD increases with age. A higher proportion of women than men under the age of 75 are now being diagnosed with COPD (this trend reverses in the 75+ age group);</td>
<td></td>
</tr>
<tr>
<td>• Almost 84% of Canadians over 35 years of age with self-reported COPD were or had been smokers (91% of men; 77% of women) and almost 40% of those were still smoking;</td>
<td></td>
</tr>
<tr>
<td>• The prevalence of COPD is expected to escalate over the next 15 years, particularly in the aging female population, making increased research in this area an even greater imperative.</td>
<td></td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease (COPD) cont...</td>
<td><strong>BURDEN OF OBSTRUCTIVE LUNG DISEASE REPORT (2006)</strong></td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>This worldwide study showed higher levels and more advanced staging of COPD (confirmed via spirometry) than have typically been reported. However, although age and smoking are strong contributors to COPD, they do not fully explain variations in disease prevalence – other factors also seem to be important. Although smoking cessation is becoming an increasingly urgent objective for an ageing worldwide population, a better understanding of other factors that contribute to COPD is crucial to assist local public-health officials in developing the best possible primary and secondary prevention policies for their regions.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lung cancer</th>
<th><strong>Incidence:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• In 2008, an estimated 23,900 Canadians will be diagnosed with lung cancer and 20,200 will die of it;</td>
<td></td>
</tr>
<tr>
<td>• Lung cancer incidence and death rates continue to climb among women;</td>
<td></td>
</tr>
<tr>
<td>• The lung cancer rate for Inuit is the highest in the world.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tuberculosis</th>
<th><strong>Incidence:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• In 2005, 1,616 cases of new and relapsed active cases of tuberculosis were reported in Canada (5.0 per 100,000). Since 1995, the incidence of new active and relapsed tuberculosis reported cases has declined; however, this decline has slowed recently;</td>
<td></td>
</tr>
<tr>
<td>• Incidence rates are highest among the 65-74 and 75 and over age groups, but the greatest number of tuberculosis cases is reported among individuals aged 25 to 44 years;</td>
<td></td>
</tr>
<tr>
<td>• Based on the 2005 data, almost two-thirds (63.0%) of TB cases involve individuals born outside of Canada;</td>
<td></td>
</tr>
<tr>
<td>• In 2006, the TB rate for the Inuit population was 114.3 per 100,000, compared to 5.0 per 100,000 for Canada as a whole. This translates to a rate of almost 23 times higher for Inuit vs. non-Inuit.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sleep Disordered Breathing (sleep apnea)</th>
<th><strong>Incidence</strong>:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• In Canada, sleep apnea affects one in every 25 men and 1 in every 50 women;</td>
<td></td>
</tr>
<tr>
<td>• There is increasing evidence that obstructive sleep apnea causes premature cardiovascular and cerebrovascular disease;</td>
<td></td>
</tr>
<tr>
<td>• The prevalence of sleep disordered breathing in children is not well established. In an Italian study, 1.8% of 1,207 children between the ages of 3 years and 11 years had obstructive sleep apnea.</td>
<td></td>
</tr>
<tr>
<td>Influenza</td>
<td>Incidence:&lt;br&gt;• 7,023 total cases of influenza were identified during 2006-2007, compared to 6,590 total cases during 2005-2006.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cystic fibrosis</td>
<td>Incidence:&lt;br&gt;• The rate of CF among children in Canada is 2.8 per 10,000 births. Prevalence:&lt;br&gt;• According to the Canadian Cystic Fibrosis Foundation Patient Data Registry, 3,453 people – 48% of who were older than 18 years – lived with cystic fibrosis in Canada in 2002: 54% were male and 46% were female.</td>
</tr>
<tr>
<td>Respiratory syncytial virus (RSV)</td>
<td>Prevalence:&lt;br&gt;• Prospective cohort studies of Canadian children hospitalized for RSV infection show that these children are more likely to have prolonged hospital stays, require admission to an intensive care unit and need mechanical ventilation. About 1% of children hospitalized with RSV bronchiolitis die, but mortality is about 3% in those with pre-existing cardiac and lung disease. Incidence:&lt;br&gt;• RSV is the most common cause of lower respiratory tract illness in young children worldwide and infects almost all by age two;&lt;br&gt;• RSV is particularly problematic in Canada's territories and is a major cause of infant deaths in Aboriginal communities.</td>
</tr>
</tbody>
</table>

### 3.4 Opportunities and Challenges

Throughout development of the Framework, stakeholders explored current and emerging issues on the respiratory health front in Canada. As part of this process, participants and informants offered their perceptions of the current strengths, weaknesses (gaps), opportunities and challenges (threats) defining the status of respiratory health in Canada (see table below).

In summary, Stakeholders cited tobacco control programs as a core “strength” and success story. They expressed concern, however, that complacency is setting in. Much more work is required on the tobacco front, especially with regard to at-risk populations.

A second notable strength is the willingness to create and develop partnerships among stakeholders across the country, with strong examples of existing collaborations – fostering these should be considered a priority.

In terms of major weaknesses of the current respiratory health field, informants emphasized that many barriers to collaboration remain. For example, certain stakeholders face competition for

---

14 Canadian Thoracic Society guidelines: diagnosis and treatment of sleep–disordered breathing in adults, October 2006. Presentation prepared by Dr. John Fleetham.
15 Health Reports – Influenza trends in Canada, prepared by Statistics Canada
attention and funding and, as “specialists,” tend to work within a narrow field. It may be challenging to shift this focus towards the “big picture” of respiratory health in Canada.

Additional weaknesses and challenges that need to be considered include:

- Lack of public awareness of respiratory health in general, as well as of specific disease conditions;
- Poor integration of respiratory health education within school curricula (i.e. educators are poorly equipped to teach the subject and lack support to do so);
- Insufficient use of spirometry – a quick and simple breathing test for determining lung function - as a routine standard of care (a quick and simple breathing test for determining lung function);
- Limited access to sleep labs for diagnosing sleep apnea and limited support for Continuous Positive Airway Pressure (CPAP) therapy;
- Lack of disease management resources (need for more certified respiratory educators/certified asthma educators);
- Insufficient and uneven access to pulmonary rehabilitation (the marked shortfall between the national pulmonary rehabilitation capacity and the prevalence of COPD means that only 1.2% of the COPD population had access to the service);
- Lack of resources to support patients in advanced stages of respiratory disease (palliative care);
- A disconnect between environmental contaminants/air pollutants and health policy;
- Many populations are at an increased risk for respiratory disease, yet are falling through the cracks when it comes to prevention, diagnosis, treatment and disease management.

Many stakeholders cited linking respiratory health to the environment (air quality) as a major “opportunity” to engage all people living in Canada in respiratory health awareness. Everyone has a stake in the environment, and stakeholders believe that the timing is ideal for collective action on respiratory health in light of the growing focus on such environmental issues as climate change and air quality.

As for “challenges,” stakeholders were concerned about the inconsistent interpretation and application of the many respiratory best practices and guidelines that exist across Canada. Given the range of jurisdictions and number of respiratory diseases involved, innovative approaches will be required to address this.

Other notable challenges include:

- A lack of overall strategic level planning for respiratory health in Canada at several levels (research, health care education, monitoring and surveillance, care delivery);
- Connecting with at-risk populations that require specialized, targeted information and programming, and/or who may be hard to reach due to social, economic, environmental, cultural and other barriers;
- Overcoming systemic complacency (for example, the perception that the wars against tuberculosis and smoking have been won);
- Achieving coordinated and sustainable funding for research and patient and health care provider education initiatives.

Several resources already exist to respond to these challenges, but more are needed and current ones need to be strengthened. With input and direction from stakeholders, the Framework is designed to take advantage of opportunities and build on strengths that exist throughout Canada’s health system, while responding to gaps and addressing challenges that have been identified.
### Summary of Strengths, Weaknesses, Opportunities and Threats (SWOT Analysis)

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESS (GAPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Good collaboration and exchange among national and regional working groups;</td>
<td>• Lack of a (sustainable) strategy for respiratory health;</td>
</tr>
<tr>
<td>• Strong partnerships and relationships among many stakeholders;</td>
<td>• Lack of coordination at federal, provincial and territorial level;</td>
</tr>
<tr>
<td>• Stakeholder willingness and ability to work together;</td>
<td>• Lack of national research policy for respiratory health;</td>
</tr>
<tr>
<td>• Existing and emerging networks for information sharing and practice;</td>
<td>• Lack of funding and resources for respiratory health;</td>
</tr>
<tr>
<td>• Proven Non-Governmental Organization (NGO) capability and track record for delivery;</td>
<td>• Lack of consistent, current data on respiratory health;</td>
</tr>
<tr>
<td>• Many drivers of excellence – including local champions or experts;</td>
<td>• Inconsistent interpretation and application of guidelines;</td>
</tr>
<tr>
<td>• Pockets of excellence (e.g. youth and smoking, air quality, sleep apnea, Stop TB);</td>
<td>• Lack of respiratory health awareness, promotion, and public education;</td>
</tr>
<tr>
<td>• Tobacco control programs are making a difference;</td>
<td>• Lack of respiratory health information services in communities (especially for at-risk populations);</td>
</tr>
<tr>
<td>• Growing support among stakeholders for focus on environment and tobacco control;</td>
<td>• Lack of trained respiratory health care workers;</td>
</tr>
<tr>
<td>• Growing emphasis on health promotion and prevention;</td>
<td>• Lack of pulmonary rehabilitation and respiratory therapy;</td>
</tr>
<tr>
<td>• Improved pandemic preparedness;</td>
<td>• Lack of access to patient education re: disease self-management;</td>
</tr>
<tr>
<td>• Public willingness to take more active role in their own health care;</td>
<td>• Insufficient support of spirometry, sleep apnea diagnostic/treatment, and sputum tests;</td>
</tr>
<tr>
<td>• Increasing prevalence of interdisciplinary / integrated care models.</td>
<td>• Lack of resources for palliative care;</td>
</tr>
<tr>
<td></td>
<td>• Drug plans and coverage for devices and services inconsistent across the country;</td>
</tr>
<tr>
<td></td>
<td>• Stakeholders/interest groups competing for resources;</td>
</tr>
<tr>
<td></td>
<td>• Missing a respiratory health plan for the environment; current approach is piecemeal;</td>
</tr>
<tr>
<td></td>
<td>• Disconnect between environmental contaminants/air pollutants and health policy;</td>
</tr>
<tr>
<td></td>
<td>• Lack of patient empowerment and disease self-management;</td>
</tr>
<tr>
<td></td>
<td>• Uncertain surge capacity (ability to contain) re: infectious disease outbreaks;</td>
</tr>
<tr>
<td></td>
<td>• Lack of employment opportunities in the area of disease management.</td>
</tr>
<tr>
<td>OPPORTUNITIES</td>
<td>THREATS (CHALLENGES)</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>• Addressing the burden placed on society by respiratory diseases;</td>
<td>• Low level of awareness for respiratory health issues in general, as well as specific disease conditions/risks;</td>
</tr>
<tr>
<td>• Leverage environmental awareness re: respiratory health;</td>
<td>• Complacency (perception that the war against smoking and TB have been won);</td>
</tr>
<tr>
<td>• Timing is right to talk about a “lung health” approach;</td>
<td>• Changing demographics – old approaches no longer work;</td>
</tr>
<tr>
<td>• The Framework can provide the “big umbrella” we’ve been needing;</td>
<td>• How to reach and engage specific at-risk populations;</td>
</tr>
<tr>
<td>• Opportunity to better target prevention (focus on the cause, not the effect of the disease);</td>
<td>• Environment issues require a different set of messages and approaches;</td>
</tr>
<tr>
<td>• Engage all people living in Canada with respiratory health messages – not just those with specific disease conditions;</td>
<td>• Preparedness for infectious outbreaks (pandemic);</td>
</tr>
<tr>
<td>• Establish clear goals on the environment linked to health outcomes;</td>
<td>• Media distortion of risk factors and impact on health priorities;</td>
</tr>
<tr>
<td>• Engage the private sector in new, creative ways;</td>
<td>• Unstable funding/lack of long-term funding for research, programs and services;</td>
</tr>
<tr>
<td>• Develop ways to reach new donors and demographics.</td>
<td>• Mixed or confusing messages coming from multitude of stakeholders/interest groups;</td>
</tr>
<tr>
<td></td>
<td>• Uncertainty re: the systemic capacity to respond to respiratory health care needs.</td>
</tr>
</tbody>
</table>
4. GOALS AND STRATEGIC AREAS FOR ACTION

Stakeholders broadly agree that this National Lung Health Framework initiative can be implemented with success by targeting the following set of common goals:

Goal 1: To prevent, and moderate the impact of, respiratory illnesses through the development and implementation of effective, coordinated: health promotion, awareness, exposure reduction, and smoking prevention/cessation activities.

Goal 2: Improve the health outcomes and quality of life for everyone in Canada through early detection and better management of respiratory diseases.

Goal 3: Develop, implement and strengthen the support structures essential to an effective respiratory health management strategy for all sectors, including policy and legislation, partnerships, community supports, and health care system design and delivery.

Goal 4: Drive effective prevention and management of respiratory disease and its risk factors, through enhanced, coordinated research and surveillance efforts that are then translated into both improved health outcomes and economic benefits.

The Framework goals reflect the needs of stakeholders for improvements in four areas. We need to prevent new cases of respiratory disease, and to better diagnose and manage existing cases (including improving the quality of life for those already living with respiratory disease). We need strong support structures to ensure that we have the people, capacity, technology, training and funding to do the work, and the policy and legislation to support prevention and management efforts. Finally, we need investments in research and surveillance to better understand respiratory disease and who is affected, develop innovative prevention and management tools and practices, and ensure that knowledge is translated into action.

To respond to these goals, the Framework has been organized into four broad Strategic Areas for Action:

1. Health Promotion, Awareness and Disease Prevention
2. Disease Detection and Management
3. Policy, Partnerships, and Community/Systems Support
4. Research, Surveillance and Knowledge Translation

Through extensive stakeholder consultations and feedback, key strategies and activities have been identified within each of the Strategic Areas that serve to frame collective efforts towards achieving the four goals.

There is inevitable overlap between all four Strategic Areas, and none can be viewed or action taken on them in isolation. For example, many policy and regulatory issues are tools for both disease prevention and management, yet are also connected closely to research and knowledge translation, while forming part of a larger system of community support.

Stakeholders acknowledge that the Framework’s strategies and activities, applied in the context of addressing First Nations, Inuit and Métis health issues, must not only aim to improve overall health outcomes, but to reduce the disparity between Aboriginal Peoples and non-Aboriginal people living in Canada in terms of prevalence of respiratory disease and quality of life.
4.1 Health Promotion, Awareness and Disease Prevention

**Goal 1:** To prevent, and moderate the impact of, respiratory illnesses through the development and implementation of effective, coordinated: health promotion, awareness, exposure reduction, and smoking prevention/cessation activities.

**Disease Prevention and Behaviour Change**

With increasing attention being paid to healthy living and healthy social and physical settings as a means of addressing disease and reducing the burden on health care systems, the disease prevention end of the care continuum is receiving considerable attention. A coordinated approach to disease prevention includes taking steps to modify behaviours and prevent exposures that can lead to disease (i.e. primary prevention), raising awareness among the public and at-risk populations of respiratory health issues that affect them, as well as promoting overall health and wellness in all settings: at home, work, school and at play. Smoking and exposure to environmental pollutants are critical risk factors for respiratory disease that are currently at the forefront of disease prevention.

In sum, successful prevention programs support and influence behaviour change, empowering individuals, families and communities to take control of their health.

In designing prevention approaches, stakeholders emphasize the fact that the demographics of respiratory health audiences are changing. For example, prevention messages developed many years ago do not always work as well today, and initiatives crafted for seniors do not work as well for youth. Similarly, programming and messaging crafted for a general audience may have much less of an impact on specific populations and communities, such as First Nations, Inuit and Métis Peoples. To be effective, prevention information must be delivered many times in many different ways (ensuring that they are both culturally and language appropriate), and prevention programs must be adaptable to new knowledge and changing needs. There is also a movement to achieve broader acceptance, in all communities in Canada, of practices that promote respiratory health – for example, frequent hand washing as an effective infection control practice.

Stakeholders want to make the prevention of respiratory disease a national priority within overall health care reform. In order to accomplish this, they express the need to develop evidence-based data for prevention initiatives, including the cost-benefit factors that demonstrate the savings accrued through prevention. This evidence must then be effectively disseminated among stakeholders and promoted to decision-makers.

**Health promotion**

Health promotion is a process for improving respiratory health that at the same time enables people to increase control over, and improve, their overall well-being. It moves away from a disease-specific response to a wholistic, healthy living approach that strengthens the skills and capabilities of individuals through a combination of efforts to enhance awareness, change behavior and create settings that support good health practices.

In addressing respiratory health issues, a particular strength of this approach is that it engages the community as a whole, linking a broad range of sectors and stakeholders to address health in a range of settings, promoting links between respiratory health and other health issues.

Advocacy is an important strategy of health promotion, and stakeholders are looking to coordinate and combine their actions to support respiratory health objectives, but in a manner that also promotes living conditions conducive to overall wellness and the achievement of healthy lifestyles.

**Raising Awareness**

Raising awareness is all about getting respiratory health “on the map” of public consciousness. Awareness strategies and activities target the general public, to get people thinking about respiratory health issues, to demonstrate that they may be at risk, to identify what resources may be available to them, and raise their consciousness to support beneficial policies. But it is equally important to raise awareness among a broader range of stakeholders to allow them to see how other sectors, fields of practice, programs, policies,
etc. are relevant to them, just as they and their programs are relevant to other health issues.

Evidence suggests that awareness of “respiratory health/disease” as broad terms, and of many specific chronic and infectious disease conditions, is relatively low (with the exception of pandemic influenza). This can result in many adverse consequences, including unnecessary exposure to risk, under-reporting by patients, under-diagnosis, misdiagnosis and a lack of, or inappropriate, treatment. Raising awareness of respiratory health and of specific chronic and infectious conditions is a key step in a coordinated approach to the prevention of respiratory disease. Given the current public, political and media interest in environmental issues, the association between air quality and respiratory health represents a largely untapped communications opportunity. According to stakeholders, concern over the environment is an issue that can help give respiratory disease the attention it deserves because like breathing, the environment affects everyone.

Stakeholders in general express the need for a coordinated awareness raising approach that reflects a common set of messages, supported with accompanying tools and capacity building opportunities. Health care professionals in particular indicate that developing consistent promotion, awareness, and education messages, targeted to appropriate demographic segments, would assist them in communicating more effectively with their patients about such sensitive issues as the association between environment and health, mitigating factors and related lifestyle. Public and stakeholder awareness campaigns also need to be evaluated and measured to identify their impact on policy change, research funding, early detection, the development and implementation of programs, and on health outcomes.

**Exposure Reduction**

Although both can cause acute conditions, tobacco smoking and poor air quality are also major contributors to chronic respiratory disease. Respiratory problems due to environmental hazards correlate positively with levels of smog, air pollution and chemical contamination. Reducing and in some cases eliminating exposure to indoor and outdoor environmental triggers may even lead to the reduction of new respiratory disease among some individuals. At the same time, if we as individuals take personal responsibility for reducing our own contributions to indoor and outdoor air contaminants, benefits accrue to all.

Indoor air quality as a risk factor is also closely linked to a variety of social and economic barriers such as income, housing, and where individuals and families are located. While public awareness, policy and regulatory action on certain products and building practices can be put in place for some public indoor spaces, efforts at reducing exposure in the private home (particularly when addressing low-income homes) is difficult. Jurisdictional issues and clean-up costs are significant obstacles to improving indoor air quality.

Preventative exposure reduction is linked to certain behaviours, and it can be achieved by influencing people to avoid exposures through health promotion, awareness, and education activities. However, reducing or managing pollutants is also an important tool for overcoming barriers and reducing exposure.

Examples include:

- Policy making or improving regulations (see Strategic Area #3: Policy, Partnerships, and Community/Systems Support);
- Identifying and developing new tools for monitoring and surveillance (see Strategic Area #4: Research, Surveillance and Knowledge Translation);
- Improving existing tools (such as air quality monitoring and degree and number of contaminants reported).

There are a number of initiatives underway to address air quality issues, including greenhouse gas emissions and the potential for impact on respiratory health. For example, Health Canada is currently working on a Climate Change Policy that will help define these relationships.

In addition, the issue of second hand smoke continues to receive increased attention. There is growing interest in providing a continuum of care within the health system with more jurisdictions implementing smoke-free policies in public places and moves to ban smoking in settings where children, employees, multi-unit apartment dwellers and others may be at risk of exposure.
Stakeholders believe that, collectively, all of this focus, combined with targeted measures, will help to reduce exposure, ultimately leading to improved health outcomes.

**Smoking Prevention, Cessation and Tobacco Industry “Denormalization”**

Smoking is by far the biggest known risk factor associated with respiratory disease. Comprehensive, integrated and sustained actions are universally recognized to be key to successful strategies at reducing smoking rates. In Canada, certain smoking reduction programs (such as smoke-free workplaces) have achieved results that can serve as encouragement for efforts on other fronts.

While many resources exist to manage and treat the chronic disease conditions brought on by an addiction to smoking, the ideal goal is not to manage active smoking but to discourage take up to begin with. Along with preventing people (especially youth) from taking up smoking, key strategies include helping existing smokers to stop, and counteracting or “denormalizing” tobacco industry promotional efforts. Some combination of smoking cessation programming, help/quit lines, nicotine replacement therapy (NRT), and anti-smoking campaigns exist in virtually all Canadian provinces and territories.

In keeping with the seriousness of the risk, much of the primary prevention effort surrounding respiratory disease involves smoking prevention and cessation. Tobacco-related efforts are often targeted at specific populations. For example, several provinces are supporting an activist youth agenda that includes advocacy. What these programs have in common is the desire to reach youth either before they become active smokers, or to get them to quit before the onset of disease.

Prevention efforts directed at smoking have had a positive effect. Public opinion in favour of smoking restrictions in public places has been growing. Progress has also been noted in reported workplace restrictions. In addition to the increase in the prevalence of smoke-free and smoke-restricted workplaces, many provincial and territorial governments have enacted legislation requiring public places to be smoke-free.

However, stakeholders are concerned that a certain amount of complacency has set in. Canadian smoking rates remain high among certain subpopulations, including young adults 20 to 24 years and First Nations, Inuit and Métis people. Much more still needs to be done to reach “at-risk” populations and to counteract tobacco industry promotional campaigns. Tobacco industry denormalization efforts serve to educate and inform both smokers and non-smokers about the motives and tactics of the tobacco industry. Campaigns exposing the industry’s practices help to counter ongoing claims by the industry that it operates like any other normal, legitimate business.

**Key Strategies and Associated Activities**

<table>
<thead>
<tr>
<th>STRATEGY</th>
<th>KEY ACTIVITIES</th>
</tr>
</thead>
</table>
| Make the prevention of chronic and infectious respiratory disease a national priority within health care reform | 1. Develop and effectively disseminate evidence base/cost-benefit factors for prevention initiatives  
2. Identify common, consistent health promotion messaging that all respiratory health stakeholder groups can disseminate  
3. Develop a model communications plan/template for health promotion/awareness that all stakeholders can use or adapt |
<table>
<thead>
<tr>
<th>Increase awareness, knowledge, and understanding of – and active engagement with – respiratory health issues by the public and all stakeholders</th>
<th>4. Complete a needs assessment of public and all-stakeholder awareness and understanding of respiratory health issues that defines gaps, outcomes, and stakeholder segments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5. Develop and implement awareness, education, and behavior change campaigns to build understanding and achieve outcomes identified by the needs assessment</td>
</tr>
<tr>
<td></td>
<td>6. Promote the broader perspective that all determinants of health affect respiratory health</td>
</tr>
<tr>
<td></td>
<td>7. Develop and implement awareness initiatives targeting chronic disease, with an emphasis on at-risk populations</td>
</tr>
<tr>
<td></td>
<td>8. Develop and implement awareness initiatives targeting infectious disease (including emerging infections), with an emphasis on at-risk populations</td>
</tr>
<tr>
<td></td>
<td>9. Implement public education programs and advocacy to inform the public of early signs and symptoms of respiratory disease in order to seek early care</td>
</tr>
<tr>
<td></td>
<td>10. Measure the impact of public and stakeholder awareness campaigns</td>
</tr>
<tr>
<td></td>
<td>11. Promote the relationship between respiratory diseases and other diseases (i.e. co-morbidity and common risk factors) as well as its relationship to overall health and wellness</td>
</tr>
<tr>
<td>Increase awareness of the impact of environmental issues on respiratory health – at work, at home, at school, and at play</td>
<td>12. Create opportunities for stakeholders and sectors to come together and exchange knowledge and raise awareness of key issues around the environment and respiratory health</td>
</tr>
<tr>
<td></td>
<td>13. Ensure that all awareness/education initiatives incorporate the effects of air quality on “pre-cradle to grave” respiratory health</td>
</tr>
<tr>
<td></td>
<td>• Expand outlets where these messages are delivered (i.e. primary care offices, pharmacies, community health care agencies</td>
</tr>
<tr>
<td></td>
<td>• Develop targeted programs according to setting (i.e. school based, work-based) that emphasize the impact of the environment on respiratory health</td>
</tr>
<tr>
<td></td>
<td>14. Increase awareness and understanding of the activities that cause the release of greenhouse gases, the impact of climate change on air quality, and on solutions that reduce both greenhouse gases and air pollutants</td>
</tr>
<tr>
<td><strong>Reduce exposure to environmental air contaminants by influencing people to avoid exposures and to reduce their own contribution to indoor/outdoor air contaminants</strong></td>
<td><strong>15. Promote collaborative community-based interventions (including “training the trainer” models) that address local environmental exposure issues where everyone in Canada lives, learns, works and plays</strong></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><em><em>Assist people living in Canada to avoid taking up smoking and to stop smoking, and counter or “denormalize” tobacco industry promotional efforts (leveraging and coordinating with other tobacco strategies and initiatives</em>)</em>*</td>
<td><strong>16. Reduce/eliminate exposure to air contaminants, including second hand smoke, chemicals, scented products, etc.</strong></td>
</tr>
<tr>
<td><em>see next Strategy</em></td>
<td><strong>17. Implement and promote the use of an Air Quality Health Index across the country</strong></td>
</tr>
<tr>
<td><strong>Collaborate with other strategies and initiatives relevant to respiratory health</strong></td>
<td><strong>18. Build capacity and fill service gaps for smoking prevention, cessation, and protection initiatives, based on development and implementation of effective policies, programs, and regulations</strong></td>
</tr>
<tr>
<td><strong>20. Ensure that smoking cessation supports (i.e. programs, medications, devices) are made available to all, without barrier</strong></td>
<td></td>
</tr>
<tr>
<td><strong>21. Undertake campaigns to educate the public regarding tobacco industry promotional tactics</strong></td>
<td><strong>22. Coordinate with the disease prevention and health promotion aspects of existing frameworks, strategies, initiatives, and programs in order to enhance and fill gaps of existing strategies in such areas as:</strong></td>
</tr>
<tr>
<td><strong>• Tobacco</strong></td>
<td><strong>• Tobacco</strong></td>
</tr>
<tr>
<td><strong>• Air quality</strong></td>
<td><strong>• Air quality</strong></td>
</tr>
<tr>
<td><strong>• Healthy living (nutrition, obesity, physical activity, etc.)</strong></td>
<td><strong>• Healthy living (nutrition, obesity, physical activity, etc.)</strong></td>
</tr>
<tr>
<td><strong>• Chronic Disease</strong></td>
<td><strong>• Chronic Disease</strong></td>
</tr>
<tr>
<td><strong>• Infectious Disease</strong></td>
<td><strong>• Infectious Disease</strong></td>
</tr>
</tbody>
</table>

### 4.2 Disease Detection and Management

**Goal 2: Improve the health outcomes and quality of life for everyone in Canada through early detection and better management of respiratory diseases.**

**Effective Management Today = Results Tomorrow**

Disease detection and management strategies are critical to ensuring appropriate care and treatment and to relieving the overall pressure on the health care system. Early detection and management of diseases improves outcomes, saves lives and leads to significant improvement in quality of life, costs less and reduces the overall burden on the system.

Left undetected or untreated, disease conditions worsen and can have a cascading effect leading to secondary cancer sites and other illnesses. The problem is magnified in the cases of particularly deadly respiratory diseases (pandemic) where surge capacity (the ability to respond to a sudden, dramatic increase in demand for health services)
is tested. For most diseases, poorly managed conditions mean greater frequency of visits to the doctor, more hospital re-admittances, and lessened quality of life for patients.

Many respiratory diseases are thought to be under-reported. One reason for this is low public awareness of respiratory disease conditions. However, other factors also play a role, including the stigma associated with these diseases (for example, the perception that some individuals are at fault for their disease). Informants believe that prevalence of asthma, COPD and sleep apnea is much higher than reported because many people affected simply modify their lifestyle to accommodate the disease. Similarly, people suffering from respiratory impairment due to environmental factors may not associate the environmental triggers with their condition.

Stakeholders express concern that certain tools are available for early detection but are not widely used. Even when these devices are relatively low cost in comparison to other detection methods, a lack of awareness and training among many health care providers creates a barrier. For example, current application in Canada of spirometry is sporadic, even though wider use could result in earlier detection and better disease management. Parallel to the need of raising awareness of respiratory disease for everyone in Canada, stakeholders have identified the importance of raising awareness of diagnostic tools and their use among both health practitioners and health policy-makers.

Early detection and appropriate management also help to contain the spread of infectious diseases. The dramatic increase in the worldwide movement of people and goods means that all countries have rapidly become more vulnerable to the eruption and cross-border spread of infectious diseases. The challenges posed by this “globalization” of disease are well illustrated in Canada by current trends of latent tuberculosis infection originating externally16.

Appropriate management of acute or critical respiratory events is vital to patient outcomes and related to hospital admissions and length of stay. Acute care settings are integral to the continuum of care.

Respiratory healthcare professionals play a key role in acute care settings and have provided leadership in establishing excellence in care and related research. The interdisciplinary teams that function in these capacities require ongoing support to provide consistent, evidence-based care for these unanticipated and acute events, with the aim of achieving the best patient outcomes.

Achieving improvements in disease detection and management requires that respiratory health issues be better integrated into routine medical care by increasing the pool of knowledgeable, skilled and aware health care practitioners. Individuals at greatest risk, or living with a respiratory disease, need assistance to overcome barriers to equal access by addressing the determinants of health. To be effective, treatment programs should respond to the needs of these individuals, and be both sustainable and sustained. This reflects the need to better understand why some populations are more at risk for certain respiratory conditions than others, and to determine how best to reach them for both detection and effective disease management.

### SELF-MANAGEMENT PROGRAMS VS. USUAL CARE

A multi-centre randomized clinical trial (RCT) 1998-2000 showed that Self-Management Programs vs. Usual Care in patients with COPD resulted in a significant reduction in hospitalization, emergency and physician visits and improved quality of life.

#### ER and Unscheduled Visits

<table>
<thead>
<tr>
<th></th>
<th>Usual Care Group</th>
<th>Self-Management Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study ER visits</td>
<td>161</td>
<td>95</td>
</tr>
<tr>
<td>- exacerbations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other diseases</td>
<td>74</td>
<td>57</td>
</tr>
<tr>
<td>Unscheduled Visits (GP)</td>
<td>112</td>
<td>46</td>
</tr>
</tbody>
</table>

16 For more information on tuberculosis in Canada, see Appendix 2: Chronic and Infectious Diseases / 2.2. Infectious Diseases / Tuberculosis
Patient Self-Management and Interdisciplinary Care

Patient self-management serves as an important tool to increase the overall success of disease management efforts by ensuring that the patient is accessing information on living with respiratory disease, and is actively involved in decisions around his or her care. Patient-centered care empowers individuals to take control over their own health. Again, in order to improve support to patients and their families and increase the effectiveness of self-management plans, barriers to access need to be better understood and addressed. This also includes responding to the needs of patients that are not able to self-manage their illness, and ensuring that both patients and their families receive the unique supports that they need.

Though most Canadians with chronic health conditions report that their health care providers work well together, too few of these patients are served by integrated health care teams. Such interdisciplinary teams are a key component of patient-centered care. The integration of health care professionals such as physiotherapists and respiratory educators, nurses and doctors – with each actively participating in a comprehensive approach to care – contributes to significantly better health among people with chronic health conditions. For appropriate cases, interdisciplinary teams can be made even more effective with the inclusion of a case manager who coordinates care, arranges referrals, and follows up with patients.

As a current example of effective interdisciplinary care in respiratory health, the Ministry of Health in Quebec has adopted the Living Well with COPD® program, to be implemented by all health care professionals caring for COPD patients in the province's health care system – CLSCs, home care, hospitals.

Pulmonary Rehabilitation

Many COPD guidelines written on behalf of professional societies recommend pulmonary rehabilitation (PR) as an effective measure for patients with chronic respiratory disease because it results in improved dyspnea, fatigue and mastery. However, access to PR for those who would benefit is poor because it is inadequately funded by many jurisdictions across Canada. A recent national report card issued by the Lung Association determined that most provinces could do better, and that many would fail a standard grading of their management approach for individuals with COPD. A second national survey identified a slight increase in PR programs in Canada.

ACCESS TO PULMONARY REHABILITATION

The marked shortfall between the national pulmonary rehabilitation capacity and the prevalence of COPD means that only 1.2% of the COPD population has access to pulmonary rehabilitation.

Notwithstanding these additional programs, service availability still falls well short of that required to address the burden of chronic respiratory disease. Innovative approaches are required to establish inexpensive community- and/or home-based programs that promote exercise and self-management. Given the proven benefits to exercise capacity and health-related quality of life, increasing the provision of PR remains an important component of overall respiratory care.\(^{17}\)

Palliative/end-of-life care

The need to improve the quality of end-of-life (EOL) care has been termed a “public health crisis,” given the high prevalence of symptom distress and caregiver burden, high use of burdensome technologies, poor transition management, significant associated costs and broad dissatisfaction with overall communication and the general quality of care.\(^{18,19}\) The increase in the number and needs of chronically ill people who are not clearly terminally ill, but need expert symptom-management, communication, decision-making support and care-coordination underscores the urgent need for research enhancing EOL care of those with serious and complex non-malignant illnesses such as COPD and other respiratory diseases.

---


\(^{19}\) Canadian Institute for Health Information (CIHI). Health care use at the end of life in Western Canada. Ottawa, ON, 2007
Guidelines and Best Practices

A number of guidelines, standards and best practices have been developed to address a wide range of respiratory health issues, from detection through to treatment and management. These guidelines help ensure that the detection, treatment and management of respiratory disease is more consistent across the country, despite jurisdictional differences.

This is particularly important for patients who must travel across provincial/territorial borders to receive care, as many report that treatment, devices and other tools used in their disease management vary when they travel to other regions.

Although evidence-based guidelines have been developed for use in a range of clinical settings, their acceptance and implementation by front-line health professionals is inconsistent. Strategies to address this include efforts to increase awareness of the guidelines among health professionals, soliciting their participation in the initial development of guidelines, reviewing fee codes, and providing training and other incentives to increase their capacity and ability to put the guidelines into application.

Ongoing evaluation of guidelines and monitoring their effectiveness are important to ensure they remain relevant and up to date. Of course, guidelines alone are not enough – appropriate resourcing must be provided (including operational supports, human resources, training and education, tools, medications and devices) to support the programs and recommendations specified by the guidelines.

### Key Strategies and Associated Activities

<table>
<thead>
<tr>
<th>STRATEGY</th>
<th>KEY ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement earlier detection</td>
<td>23. Expand evidence to identify and confirm the factors that place certain populations at increased risk</td>
</tr>
<tr>
<td></td>
<td>24. Develop and implement early detection programs that reflect population-based risk factors (with focus on populations facing greatest risk)</td>
</tr>
<tr>
<td></td>
<td>25. Identify the barriers to early detection and the use of detection tools, and ensure that these tools are widely available, accessible, and appropriately used by trained personnel</td>
</tr>
<tr>
<td>Promote a system of inter-disciplinary health care teams for the management of respiratory diseases</td>
<td>26. Develop and/or adapt a model that can be tested and evaluated (pilot project), disseminating the results nationally to all stakeholders</td>
</tr>
<tr>
<td>Promote patient empowerment and self-management</td>
<td>27. Develop, implement and evaluate disease management models based on self-management plans</td>
</tr>
<tr>
<td></td>
<td>28. Ensure that barriers are reduced and supports are in place to allow patients to understand, access, and follow through on their management plans</td>
</tr>
<tr>
<td>Improve treatment, rehabilitation and supportive care in the full continuum from detection through to palliative care</td>
<td>29. Identify gaps and disparities in treatment, education, rehabilitation and supportive care across all age groups</td>
</tr>
<tr>
<td>Implement, and increase use of, standards, guidelines and best practices*</td>
<td>30. Develop, measure and evaluate initiatives that address gaps and disparities in treatment, rehabilitation and supportive care across all age groups</td>
</tr>
<tr>
<td>Collaborate and coordinate efforts with other chronic and infectious disease strategies and initiatives</td>
<td>31. Implement a national system/plan that ensures equal access to medications and devices to treat respiratory illnesses</td>
</tr>
<tr>
<td>32. Identify strategies that inform, encourage, and support health care providers to implement recommended best-practice guidelines (i.e. participation in the development of standards, incentives, training)</td>
<td></td>
</tr>
<tr>
<td>33. Ensure the implementation, accessibility, and evaluation of the diagnosis, treatment and management programs recommended by best practice guidelines, and provide the necessary tools and resources</td>
<td></td>
</tr>
<tr>
<td>34. Network with other disease strategies and initiatives to create joint management approaches and identify opportunities to maximize resources (including human resources), with a focus on co-morbidities</td>
<td></td>
</tr>
</tbody>
</table>

### 4.3 Policy, Partnerships, and Community/Systems Support

**Goal 3:** Develop, implement and strengthen the support structures essential to an effective respiratory health management strategy for all sectors, including policy and legislation, partnerships, community supports, and health care system design and delivery.

The National Lung Health Framework centres on four key support structures of respiratory health:

- Improving the ability of stakeholders to participate in policy development and influence legislation;
- Nurturing existing partnerships among stakeholders, and creating new ones, that allow us to better coordinate our collective knowledge, skills, resources and structures;
- Fostering supportive communities, where resources exist to support an engaged population at every stage of the care continuum but especially attuned to self-management and the needs of at-risk populations;
- Enhancing supports within the health care system itself, including system design, professional education and training, information technology and decision support systems.

### Policy and Legislation

Policy and regulation are essential levers to improving respiratory health in Canada. They
create the framework that supports the efforts and priorities of front-line programs, services, and public awareness activities. For example, instituting policies and legislation at all levels that reflect the serious respiratory health risks and consequences of smoking serve as an important deterrent, and protects individuals (i.e. children) who are not in a position to control the smoking-related exposures around them.

In terms of air quality, both the federal and provincial/territorial levels of government are making significant efforts to reduce air pollution and greenhouse gas emissions. This is having a cascading effect similar to what has been experienced with tobacco control legislation. Many provinces and communities are looking at regulations or bylaws to improve air quality such as idle free zones for motor vehicles, especially school buses, and pesticide free zones. However, stakeholders believe that more must be done in terms of regulation, suggesting that voluntary reduction of indoor and outdoor pollutants and emissions are not producing the desired results and calling for new or tighter regulations.

Respiratory health stakeholders in Canada acknowledge their major responsibility to serve as advocates for health at all levels in society, and are looking for opportunities to more effectively influence the development and application of policy and legislation — especially in the areas of overall health care system reform and indoor/outdoor air quality.

**Partnerships**

Effective partnerships are essential drivers of the new paradigm of cooperation and collaboration underpinning this national Framework approach to respiratory health. The Framework is looking to move partnerships beyond traditional models towards innovative collaborations that cut across jurisdictions, disciplines and sectors. For example, stakeholders cited the need to increase collaborative teamwork among health care providers in order to break down professional silos.

There is growing interest in and understanding of the overlap and opportunities for collaboration on health and environment issues. The Framework provides an opportunity to build new and enhance existing relationships across government portfolios and departments. The Framework also fosters and supports collaborations among stakeholders outside of their traditional “lines of business” on all elements of the Framework including prevention, promotion, advocacy, management, infrastructure, and research.

Part of the process to advance partnership models is to develop a better understanding of the formal and informal relationships that exist in the respiratory health field, and outline where these existing and potential new collaborations can go. One example of how this could be done is through an information and knowledge exchange centre or hub, promoting and sharing evaluated models and best practices developed by stakeholders and promoted among stakeholders.

Partnerships are also important in ensuring that programs and policies are relevant to target populations. Actively engaging target populations in the planning and implementation of programs increases their relevancy and likelihood of success.

**Supportive Communities**

Communities play an important role in respiratory health – non-governmental organizations and grassroots agencies, government departments and agencies, health services and clinics, education and recreation centres, etc. are seeking to increase ways of working together to create a wholistic, integrated and coordinated response to health, in all settings (at work, home, school and at play). Many jurisdictions in Canada are increasingly incorporating lifestyle modalities into disease management approaches. These community care models are accessible and interdisciplinary in scale and scope, and are supported by technologies that facilitate community care networks that serve to link people, information and resources.

While the community care model has been in place for some time, the notion of supportive communities for health promotion, disease prevention and management is finding new meaning in health and healthy living programs, by combining complementary programs and policies. Many provinces, territories, regions, cities and other communities have been taking a more activist approach to health promotion and disease prevention and management. For example, many jurisdictions across the country, at both the provincial/territorial and municipal levels, have instituted anti-tobacco legislation...
and regulation (smoking bans in public places, bars, restaurants etc.).

All communities experience health care gaps, and improvements in health human resources and community supports are universally important to all. However, certain communities and populations are at greater risk than others due to the prevalence of barriers to accessing services and the social, economic, environmental and cultural determinants of health. These situations require custom models, resources, and programs involving outreach and leveraging community strengths to help overcome the barriers.

For example, about 95% of Canada’s territory is rural and about 30% of Canada’s population (approximately 9 million people) lives in rural and remote areas. Rural and remote area residents generally have access only to a small range of service providers, and if they have to seek more specialized care they must travel long distances and incur additional expenses, which are not fully reimbursed. Related to the access problem is the issue of recruitment and retention of health care personnel.

Compared with urban areas, life expectancy in rural areas is shorter, and infant death rates are higher. Overall, the health of rural residents is worse than their urban counterparts. The health and health care needs of the rural population are also different, given the environment, demographics, occupations and ethnic composition. Issues specific to rural and remote areas also overlap with First Nations, Inuit and Métis health care issues.

Whether urban or rural, stakeholder engagement in the process to develop and enhance programs, policies, services and research initiatives is key to ensuring that needs are properly identified, and that target populations are involved in the decisions that affect them. This also works towards ensuring that programs, policies, services and research focus on empowering the individual in the care and decision-making that affects them.

Health System Supports

The debate about the need for health system reform in Canada often hinges on ways to make the system more responsive to patient and population needs. Wait times and limited access to certain diagnostic procedures, medications and surgeries are symptoms of the wider issue of gaps between supply and demand. From a health system perspective, a supportive structure can be seen as one where resources are aligned with systemic needs and priorities.

\[
\text{NEWLY BOARD-CERTIFIED RESPIROLOGISTS IN CANADA (ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF CANADA)}
\]

- 2007 Adult: 17
  2007 Pediatric: 5
- 2006 Adult: 19
  2006 Pediatric: 0
- 2005 Adult: 30
  2005 Pediatric: 1
- 2004 Adult: 26
  2004 Pediatric: 2

For example, stakeholders expressed the need to increase access to programs such as pulmonary rehabilitation and to affordable medication, supplies and equipment such as home oxygen. A supportive health system not only works for patients and families, but for health care practitioners. For example, some stakeholders expressed concern over the amount of paperwork that health care providers are required to manage in order to facilitate patient-access to certain drug programs and government services.

Professional education and training within the health care system is a vital ingredient in the support structure equation, particularly as it relates to the human dimension of health care. Stakeholders have identified a number of opportunities to increase the number and quality of trained health providers. For example, promoting and supporting the training of new health providers with knowledge of respiratory health, expanding the role and engagement of existing trained providers into models of care, and recognizing that rural, remote and cultural communities need a much different response to human resourcing than do urban centres. Improvements in education and training also need to be linked with increased employment opportunities.
At the same time, national shortages of respiratory health professionals loom in many key areas. For example, one third of Canadian pediatric respiratory specialists will attain retirement age within the next 10 years. Ten years is also the average length of time required to educate and train a new pediatric respiratory specialist, yet available training positions are underfunded and filled at only 50% with Canadian trainees. Annual numbers of newly board-certified respiratory specialists for both adult and pediatric practice are drastically low in light of current need and demographics (see table).

Technology is another key element of the discussion around how to create a more responsive and supportive (effective and efficient) health care system. Stakeholders have expressed the need for increased information on what respiratory health programs and resources are available within their community, region, province/territory, and across Canada. Stakeholders are seeking to better understand what is available to them as providers, agencies or NGOs, and to patients and their families, as well as identify opportunities to build on successful and best-practice models that have been developed and tested elsewhere. A coordinated, centralized knowledge exchange hub or portal could support environmental scans, facilitate partnership building, and support the adaptation of evaluated programs across jurisdictions, sectors and fields of expertise.

Many provinces and territories have indicated that gaps in funding and resources continue to challenge their ability to rapidly improve health system supports – for example, to upgrade information systems or to purchase the latest diagnostic equipment. Systemic elements that present the greatest opportunities for improvement include:

- Wait times for certain procedures, which continue to lag and are proving to be stubbornly resistant to change;
- Physician shortages, access to specialist care (and to health professionals in general), particularly in rural and remote regions;
- Integration of health system technologies and inadequate and outdated health records systems, which continue to pose a barrier to research, monitoring, surveillance and treatment.

Fortunately, understanding of the issues appears to be improving. Armed with better information on system performance, there is considerable scope and opportunity to introduce new system supports while building on those already in place.

**Key Strategies and Associated Activities**

<table>
<thead>
<tr>
<th>STRATEGY</th>
<th>KEY ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advocate for healthy public policies and enforcement resources to prevent respiratory disease and improve respiratory health</td>
<td>35. Mobilize stakeholders to provide input into, better advocate for, and monitor implementation of, new and existing policy and legislative development</td>
</tr>
<tr>
<td></td>
<td>36. Work towards alignment and/or harmonization of policy, legislation, regulation, and codes across all levels of government to the highest standard available</td>
</tr>
<tr>
<td></td>
<td>37. Work with key stakeholders to improve regulations and enforcement regarding indoor and outdoor air quality (including workplaces and “smoke-free” public areas) and tobacco control</td>
</tr>
<tr>
<td></td>
<td>38. Work with all stakeholders to implement, manage, and enforce national and international conventions on indoor and outdoor air quality, and on tobacco control</td>
</tr>
</tbody>
</table>
| Build and enhance strategic partnerships that cut across jurisdictions, disciplines, and sectors | 39. Map the relationships between stakeholders, identifying the players and relationships between each group  
40. Identify the gaps, barriers and elements of successful partnerships and programs  
41. Determine what additional partnerships and types of partnerships, formal or informal, are required to advance respiratory health issues in Canada  
42. Build on the relationships that currently exist; monitor and maintain the informal relationships and formal partnerships; develop strategies and work to overcome the barriers to partnerships  
43. Increase collaborative teamwork by developing “communities of practice” – bringing cross-jurisdiction/discipline/sectoral teams together for regular information exchange and strategic planning |
| Increase availability of, and access to, programs throughout the community across the continuum of care | 44. Identify “at-risk” populations and the barriers that are preventing their access to respiratory health  
45. Create/develop programs for target populations that build on their strengths to address barriers to access  
46. Measure and evaluate the effectiveness and cost benefits of existing and new programming and make these findings available to all stakeholders  
47. Identify the impact that investments in community programs have on health outcomes, with a focus on programs that increase access to prevention, care and treatment among people living in urban, rural and remote areas of Canada, and especially at-risk populations |
| Improve education and training for health care providers | 48. Expand health provider education from acute care to include increased focus on chronic disease management  
49. Implement a program that integrates respiratory educators into primary care nation-wide  
50. Increase capacity for training respiratory health providers  
51. Examine opportunities for “train the trainer” approaches and models to address issues such as environment and health  
52. Expand the respiratory health education of all health care providers and interdisciplinary teams |
| Create widely accessible knowledge exchange structures for respiratory health stakeholders | 56. Develop, implement and maintain a permanent, comprehensive and robust centralized online portal to share and access information resources  
• Associated resource to serve as a “knowledge broker”, facilitating connections around information exchange  
57. Ensure that respiratory health information targeting patients, family members, caregivers and the general public is available, accessible, and widely promoted |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------|
| Identify and address remaining support structure gaps, needs and priorities in the respiratory health community | 58. Identify and address gaps, needs and priorities in:  
• Capacity/human resources (i.e. identify the “right mix” of resources, and training and education needs; develop and expand bursary programs and other incentives for recruitment and retention)  
• Information systems and technology  
• Capital investments (i.e. pulmonary rehab centres, clinics, technology) |

### 4.4 Research, Surveillance and Knowledge Translation

**Goal 4:** Drive effective prevention and management of respiratory disease and its risk factors, through enhanced, coordinated research and surveillance efforts that are then translated into both improved health outcomes and economic benefits.

Innovative research is key to finding cures for respiratory illnesses and developing more effective disease management approaches. Every significant advance made in respiratory disease research increases the potential for major cost-savings to our health system and economy. In particular, effective and expanded clinical research – applying the insights gained from primary research to the actual treatment of disease – will result in fewer emergency room visits, less frequent and shorter hospitalizations, reduced wait times, decreased morbidity and mortality, and improved quality of life for patients.

Investments in research over the years by the federal, provincial and territorial governments, research centres and universities, and industry partners have gone a long way to creating an internationally recognized health research community in Canada. In turn, our academic institutions increasingly recognize the opportunity and responsibility to translate research discovery into practice and, where possible, produce economic value.
A 2005 American College of Chest Physicians study evaluating worldwide trends of respiratory disease research productivity during a nine year period found that leaders in quantity and quality of research productivity were: Western Europe, United States, Japan and Canada (4th). However, Canada and Oceania had the best performance based on population and gross national income per capita. Canada is a leader in this area, and yet is capable of so much more.

**Increased Funding and Capacity for Respiratory Health Research**

While respiratory research conducted in Canada is clearly of high quality, available funding is considerably below the commensurate cost of respiratory disease to the economy. Researchers in the field have been doing more with less for quite some time. For instance, while lung disease accounts for 6.5% of total health care costs, monies for research in this area represent just 3.9% of the $4.3 billion for health research that has been funded by the federal government since 199920.

Stakeholders consistently agree that funding levels for both basic and applied research need to increase. Current under-funding has delayed progress in exploring such areas as occupational respiratory disease, air pollution, pulmonary fibrosis, as well as the evaluation of new diagnostic tools. Increased investments will translate into more effective treatment and prevention of lung disease, while realizing a significant cost savings to both our health care system, and the overall productivity of the Canadian economy.

Stakeholders also observe that knowledge transfer and succession planning are so far not being systematically addressed. In order to remain on the cutting edge when it comes to innovation and disease management, Canada must expand its pool of new trainees and clinician-scientists.

In order to attract and retain a new generation of talented young researchers and develop highly innovative scientists, we need to create a supportive setting that includes sustained funding, a stable infrastructure/platform, and mid-career support. Chairs are considered critical to the development of senior scientific support and as recruitment tools for international experts.

**Gaps in Research**

Governments have a critical role to play in supporting long-term, ‘up-stream’ fundamental research, and research that will impact on the greatest number of people [for example, research on common risk factors/co-morbidity issues such as addiction, diet and nutrition, physical activity, the environment (air quality), and wait times, as well as barriers to access and the determinants of health]. However, many stakeholders in the research community believe that funding priorities do not correspond to the actual research gaps and needs.

Stakeholders also identified the need to more thoroughly study the barriers, including the social, economic, environmental and cultural determinants of health, that prevent some populations from accessing respiratory health services (both prevention and management oriented services), and put them at risk for air quality related respiratory problems.

It is particularly important that First Nations, Inuit and Métis organizations and communities be directly involved in developing research and surveillance strategies that address Aboriginal issues, and either lead or partner in initiatives that translate data into policy and programming.

With regard to the environment, specific information on the health effects of both long term and short-term exposure to environmental contaminants is sparse and fragmented (beyond substantial information showing that long-term exposure is more harmful than short-term exposure). More research is needed to understand how the interplay of multiple environmental factors leads to respiratory disease. A specific gap deserving of focus is the area of occupational exposures and risks.

**Coordinated Surveillance**

Understanding and tracking lung disease, its trends, issues, risk factors, impacts and outcomes in the population over time, provides valuable information to decision-makers that can guide strategies and resources for an optimal response. Surveillance is an iterative process that creates a “continuous improvement loop” by identifying future gaps and shedding light on the next steps and new priorities.

---

20 The 6.5% figure excludes lung cancer and tuberculosis, as the indirect costs associated with short and long-term disability are not available. Therefore this figure could be, and is likely to be, higher than noted.
that must be addressed. Stakeholders have indicated that this is particularly important to develop a better understanding of trends in respiratory disease, and risk factors among at-risk populations.

Many communities and regions have identified the need to increase our capacity in respiratory surveillance, and want to see investments made in better coordination and sharing of respiratory health data and analysis. As stakeholders work to better expand our collective understanding of respiratory health, additional opportunities will arise to link databases and research initiatives to include respiratory, environmental, and health economic surveillance data.

Knowledge Translation

Knowledge translation engages stakeholders (often working closely with industry partners) to transform research discovery into effective and innovative changes in health policy, practice or products, and produce economic value.

The process of translating knowledge into action is complex and rarely a straightforward chain of events. The creation of new knowledge does not on its own lead to widespread implementation or impacts on health. However, when the research process is guided by the needs of the users of research, findings are more likely to be translated effectively.

Stakeholders want to see development of strong, quality evidence that is then translated into consistent benchmarks, standards, guidelines and best practices for the prevention, treatment and management of respiratory disease. They are also looking for additional opportunities, tools, and other mechanisms to share and exchange knowledge across jurisdictions and regions, sectors, and fields of practice.

Knowledge translation activities that are important to stakeholders include:

- **Dissemination**: involves identifying the appropriate audience and tailoring the message and medium to that audience. Activities can include summary/briefings to stakeholders, educational sessions with patients, practitioners and/or policy makers, engaging knowledge users in developing and executing implementation plans, tools creation, and media engagement;

- **Exchange**: knowledge exchange refers to the interaction between the knowledge user and the researcher resulting in mutual learning. It involves collaborative problem-solving between researchers and decision makers that happens through linkage and exchange;

- **Application of knowledge**: the term application is used to refer to the iterative process by which knowledge is put into practice. In order to be useful, research needs to translate into action, policy and programming;

- **Commercialization**: effective translation of research also plays a role in transforming innovation into potential commercial applications – thus benefiting the Canadian economy. Optimally, respiratory health research initiatives would help close the gap between a good idea and its exploitation for both economic and health advantages.

Translating research discovery into practice and ensuring that stakeholders see a return on investment requires infrastructure, talent and funding. Effective knowledge translation requires a systematic, integrated approach that accelerates optimal use of the best available research evidence in the interest of the health of Canadians.

### Key Strategies and Associated Activities

<table>
<thead>
<tr>
<th>STRATEGY</th>
<th>KEY ACTIVITIES</th>
</tr>
</thead>
</table>
| Increase funding for respiratory health research and knowledge translation towards disease prevention, detection, management, and cure | 59. Increase funding for respiratory research to reflect:  
  - Evidence of need  
  - Cost/benefit of funding investment  
  - Gross national product |
| Increase respiratory research capacity                                                                 | 60. Create and sustain consistent and effective funding mechanisms for respiratory research |
|                                                                                                        | 61. Support research in the following fields that affect respiratory health: biomedical, clinical, health systems and services, population and public health |
|                                                                                                        | 62. Develop & implement monitoring processes to assess the impact of research on respiratory health in Canada |
| Improve surveillance of respiratory health and measurement of health outcomes as part of a broader, comprehensive disease surveillance system | 63. Build on existing research infrastructure to enhance local capabilities and national networks |
|                                                                                                        | 64. Foster training and mentorship for new researchers |
|                                                                                                        | 65. Promote research capacity through collaborations between health care providers, investigators and institutions |
|                                                                                                        | 66. Promote commercialization of discoveries to foster economic spin off and knowledge translation/access to new knowledge |
| Effectively translate respiratory health research findings into knowledge, best practices, policies and programs for a range of audiences, including the public, industry, healthcare providers, policymakers and funders | 67. Ensure that there is long-term funding for the coordination of ongoing compilation, analysis and timely dissemination of respiratory health data |
|                                                                                                        | 68. Coordinate the sharing of all respiratory, environmental and health economic surveillance data using scientific, evidence-based, and reliable data sources |
|                                                                                                        | 69. Link databases and match all respiratory, environmental and health economic surveillance data with health outcomes |
|                                                                                                        | 70. Increase capacity in respiratory surveillance |
|                                                                                                        | 71. Develop a coordinated, national surveillance approach/system, including consensus on a consistent set of indicators for measurement that are appropriate to all stakeholders (including First Nations, Inuit and Métis communities) |
|                                                                                                        | 72. Develop a nationwide geographic mapping system to identify how the environment interacts with social, economic, environmental and cultural determinants of health, general public exposures and health outcomes |
|                                                                                                        | 73. Establish evidence, and translate into benchmarks, standards, guidelines, and best practices for prevention, treatment, rehabilitation and supportive care, from before birth to end of life |
|                                                                                                        | 74. Apply technology as a tool to support knowledge translation and the implementation of best practices |
| Expand the research that examines relationships between respiratory health and the needs of at-risk populations | 75. Develop and maintain a database of research and identified researchers in the field of respiratory health  
76. Develop and maintain web based information that targets individual stakeholder communication needs  
77. Develop and disseminate, with stakeholders, regular communication vehicles on research outcomes and best practices  
78. Organize opportunities for stakeholders to gather and exchange knowledge of best practices, policies and programs  
79. Centralize the coordination and facilitation of knowledge translation opportunities and designated funding  
80. Conduct specific scans/assessments of respiratory resources and investigate relationships between social, economic, environmental and cultural determinants and respiratory health, with a focus on at-risk populations  
81. Collect and amalgamate data available on the effects of the social, economic, environmental and cultural determinants of health on respiratory health  
82. Develop funding programs to address research gaps on the effects of the social, economic, environmental and cultural determinants of health on respiratory health  
83. Assign research priority to at-risk populations |
5. CONCLUSION

5.1 “We’ll know we have it right, when...”

We will know that the National Lung Framework has succeeded when the following have been achieved:

For individuals and families living with respiratory disease:

• Earlier diagnosis of their respective conditions;
• Affordable and timely access to health care and supports;
• Access to health information and informed choice;
• Improved quality of life;
• Tools and programs that enable greater self-management of their disease and respiratory health.

For everyone in Canada living without respiratory disease:

• Greater awareness of respiratory disease issues;
• Assistance in maximizing their respiratory health;
• Assistance in maintaining good respiratory health through improved air quality at home, at work and in their communities;
• Preventative programs that help reduce their risk of contracting infectious diseases and the development of chronic disease.

For First Nations, Inuit and Métis communities:

• Inclusive, wholistic, respectful and appropriate approach to First Nations, Inuit and Métis issues with respect to respiratory health and partnering on health issues, that results in culturally appropriate prevention and care;
• Active participation in the development and implementation of research, policies, programs and other decision-making that affects their communities;
• The ability to accurately measure, monitor, and evaluate the health status of First Nations, Inuit, and Métis communities;
• Research, policies and programs that acknowledge the barriers increasing risk factors and address the disparity between First Nations, Inuit and Métis people and other people in Canada with respect to incidence and prevalence of respiratory disease and prevention, surveillance, diagnosis and access to care;
• Research, policies and programs that acknowledge the importance of indoor air quality and other home and work place issues that affect respiratory health;
• Research, policies and programs that address the particular concern of high recreational use of tobacco;
• Community-based solutions and increased access to care and services in remote locations.

For health care providers and medical communities:

• A clear picture of the scope of problems and current solutions related to respiratory disease (who is doing what and with what impact);
• The promotion of respiratory health and disease prevention;
• Improved access to best practices and coordinated care;
• Better access to information and increased practical applications of research;

• Tools and knowledge to address the special needs of “at-risk” populations;

• Awareness of the needs of First Nations, Inuit and Métis Peoples;

• Efficient and timely access to new information about respiratory disease.

**For researchers and investigators:**

• Better coordination and sharing of research;

• Sustainable, accessible and increased funding for basic and applied research and investment into new researchers;

• Increased tools and opportunities for knowledge exchange;

• A greater understanding of how public health policy is developed and implemented.

**For non-governmental organizations:**

• Support and resourcing to improve their ability to provide information and support to patients, families, communities and health professionals;

• Better coordination of efforts among health stakeholders;

• More effective translation of research findings into practical applications, such as respiratory health programs, policies and guidelines;

• Increased access to information about programs, policies and research in other regions, sectors and fields.

**For community support agencies:**

• Ability to increase their reach to populations at risk for respiratory disease;

• Increased benefits from health promotion, care and support efforts to address shared risk factors and co-morbidity issues with respiratory health;

• Increased flow of information among agencies and departments about respiratory health issues.

**For federal, provincial, territorial and other governments:**

• Increased coordination among jurisdictions and between departments addressing respiratory health issues;

• Active stakeholder participation in the policy development process to inform new and existing health and environment policy;

• A move towards integrated systems of prevention, treatment and management that reflect a wholistic approach to respiratory health throughout the community;

• Cost-risk-benefit data.

**For private sector/health industry:**

• Tools and programs that have a broader reach and stronger impact on disease management and quality of life;

• Expanded research that reflects new trends and emerging issues in respiratory disease;

• Access to best practices, guidelines and tools;

• Tools to monitor workplace exposure;

• Cost-risk-benefit data.

### 5.2 Closing Comments

The National Lung Health Framework is the creation of over 500 stakeholders representing many communities, perspectives, and areas of expertise, including patients and consumers; First Nations, Inuit and Métis communities; medical professionals and other health care providers; non-governmental organizations; the private sector; researchers and investigators; and federal/provincial/territorial government departments and agencies.

The Framework’s vision, mission and principles embody Canada’s respiratory stakeholders’ collective direction for a coordinated response.
to addressing respiratory disease in Canada. The goals, strategies and activities identify their collective priorities for implementing this response. Built by stakeholders for stakeholders, the Framework serves as a tool for stakeholders to develop and implement their own strategic plans, budgets and programs.

This unprecedented collaborative effort is already facilitating the creation and support of new partnerships, networks and knowledge sharing among the many pockets of excellence in respiratory health across the country, and will continue to do so as more strategies and activities are implemented at all jurisdictional and community levels.

As a living process, the Framework will continue to be responsive to the evolving needs, research, and knowledge of respiratory health stakeholders in Canada, moving forward in the context of continuous evaluation and quality improvement.

Canada’s respiratory stakeholders are both the owners of the National Lung Health Framework, and its beneficiaries. Ultimately however, the advantages belong to all people living in Canada.

By working together to step up prevention, diagnosis, care, treatment, support structures and research, and to achieve the vision set out in this Framework, we can prevent thousands of new respiratory infections, save many lives, and improve the quality of life for people suffering from respiratory disease.

By acting now, our society will reap the enormous economic, social and personal benefits of their productivity and creativity.
APPENDIX 1: PREVENTABLE OR MODIFIABLE RISK FACTORS

1.1 Indoor Air Quality

Along with exposure to second-hand smoke from smoking (covered in detail in 3.1 A.), some of the known indoor air contaminants that put individuals, families and communities at risk include:

**Allergens and dust mites:** Allergic rhinitis (hay fever) is a common allergy that causes itching, sneezing, watery eyes and scratchy throat when a person breathes in air particles such as pollen from ragweed, grass and trees, or pet dander and mould. Some allergies may aggravate the symptoms of respiratory diseases such as asthma. Dust mites live in soft surfaces such as carpeting and bedding. Although they are found in most homes, dust mite allergy is a common problem for people with asthma, as this can be a powerful trigger of their symptoms.

**Carbon monoxide:** Carbon monoxide or CO is a colorless, odorless, tasteless and poisonous gas. Elevated indoor levels of carbon monoxide from sources such as combustion appliances, tobacco smoke, and vehicles in attached garages and nearby roads, can disrupt oxygen transport by hemoglobin, making sensitive individuals, such as people diagnosed with coronary disease, especially susceptible to adverse health effects.

**Formaldehyde and VOCs:** Formaldehyde is a gas emitted by combustion sources (such as wood stoves) and the off-gassing of wood-based materials (like plywood and particle board) and some paints and varnishes. Exposure to formaldehyde causes irritation to the airways and the eyes. Many consumer products (including cleaners, aerosols and fragrances) and construction materials emit VOCs that may persist in the air, triggering such effects as skin, eye, and respiratory tract irritations, headaches, nausea and dizziness.

**Mould:** Significant associations are found between exposure to mould or dampness, and irritative, non-specific respiratory symptoms, as well as the exacerbation and development of respiratory diseases such as asthma. Current knowledge supports the need to prevent damp conditions and mould growth and to remediate any fungal contamination in buildings.

**Radon:** Radon is a radioactive gas arising from the natural breakdown of uranium in soils and rocks. It can accumulate to high concentrations in confined spaces like basements and underground mines. Radon is a well-known human carcinogen, and indoor exposure to this gas is considered to be the second leading cause of lung cancer after smoking.

**Wood smoke:** Exposure to wood smoke may lead to such health effects as impairment of lung defenses in children, asthma symptoms and increases in respiratory symptoms, as well as headaches, nausea and dizziness.

1.2 Outdoor Air Quality

**Smog and Human Health**

Smog is a mixture of pollutants. When inhaled, it can be harmful to human health. The exact impact varies depending on the type and amount of air pollutants that are present in the air; the length of time over which individuals are exposed to those pollutants, as well as factors related to the individuals themselves, such as age, weight, activity level and health status. Recent health studies suggest that there is no safe level of human exposure to O3 (ground-level ozone) and PM (particulate matter). Negative health outcomes are associated with very low levels of exposure, even for healthy individuals.

**Outdoor Air Contaminants**

Specific outdoor air contaminants that put individuals, families and communities at risk include:

---

21 Definitions from the Environment Canada website. For more information please www.ec.gc.ca.
Carbon monoxide (CO): Carbon Monoxide, or CO is a colorless, odorless, tasteless and poisonous gas. It is a product of incomplete combustion of hydrocarbon-based fuels and is emitted directly from automobile tailpipes. CO can have a significant impact on human health. It enters the bloodstream through the lungs and forms carboxyhemoglobin, a compound that inhibits the blood’s capacity to carry oxygen to organs and tissues. Persons with heart disease are especially sensitive to CO poisoning. Infants, elderly persons, and individuals with respiratory diseases are also particularly sensitive.

Nitrogen oxides (NOx): Nitrogen oxides include the gases nitrogen oxide (NO) and nitrogen dioxide (NO₂). Nitrogen oxides or NOx is formed primarily from the liberation of nitrogen contained in fuel and nitrogen contained in combustion air during combustion processes. NO emitted during combustion quickly oxidizes to NO₂ in the atmosphere. NO₂ dissolves in water vapour in the air to form acids, and interacts with other gases and particles in the air to form particles known as nitrates and other products that may be harmful to people and their environment.

Ozone (Ground-level ozone Oz): The ozone found high in the earth’s atmosphere is called “good ozone” because it helps protect us from the sun’s rays. But breathing in ozone that forms at the ground level (referred to as “bad ozone”) can cause health problems. Ground-level ozone is not emitted directly into the air, but forms when nitrogen oxide and volatile organic compounds (VOCs) from vehicle exhaust, factory emissions and other sources react with sunlight. Ground-level ozone usually peaks between noon and 6 p.m. during the summer months.

Particulate matter (PM) consists of airborne particles in solid or liquid form. PM may be classified as primary or secondary, depending on the compounds and processes involved during its formation. Primary PM is emitted at source in particle form; for example, from the smokestack of an electrical power plant or a recently tilled field subject to wind erosion. Secondary PM formation results from a series of chemical and physical reactions involving different precursor gases, such as sulphur and nitrogen oxides, and ammonia reacting to form sulphate, nitrate and ammonium particulate matter.

The size of PM particles largely determines the extent of environmental and health damage caused. For this reason, Environment Canada identifies different sizes of PM:

- **Total Particulate Matter (TPM)** – airborne particulate matter with an upper size limit of approximately 100 micro metres (μm) in aerodynamic equivalent diameter;

- **Particulate Matter <10 microns (PM10)** – airborne particulate matter with a mass median diameter less than 10 μm;

- **Particulate Matter < 2.5 microns (PM2.5)** – airborne particulate matter with a mass median diameter less than 2.5 μm. PM2.5 can be breathed deeply into your lungs and will stay there, causing health problems. PM2.5 can stay in the air longer and travel farther than larger particles.

Numerous studies have linked PM to aggravated cardiac and respiratory diseases such as asthma, bronchitis and emphysema and to various forms of heart disease. PM can also have adverse effects on vegetation and structures, and contributes to visibility deterioration and regional haze.

In an effort to address PM levels in the air, Canada and the United States have completed a joint trans-boundary PM science assessment report in support of the Canada-U.S. Air Quality Agreement.

Polycyclic aromatic hydrocarbons (PAHs): These are a group of approximately 10,000 compounds. Most PAHs are from incomplete burning of carbon-containing materials like oil, wood, garbage or coal. PAHs may be attached to dust or ash.

Sulphur oxides (SOx): Sulphur dioxide, or SO₂, belongs to a family of sulphur oxide gases (SOx). It is formed from the sulphur contained in raw materials such as coal, oil and metal-containing ores during combustion and refining processes. SO₂ dissolves in water vapour in the air to form acids, and interacts with other gases and particles in the air to form particles known as sulphates and other products that can be harmful to people and their environment.

Total reduced sulphur compounds (TRS): Total reduced sulphur compounds are mixtures of gases that smell like rotten eggs. The main ingredients
in total reduced sulphur compounds (TRS) are hydrogen sulphide (H₂S), methyl mercaptan (CH₃S-H), dimethyl sulphide (CH₃-S-CH₃) and dimethyl disulphide (CH₃-S-S-CH₃).

**Volatile organic compounds (VOCs):** Volatile organic compounds are gases in the vapours of gasoline, solvents, oil-based paint. In the presence of sunlight and warm temperatures, VOCs react with nitrogen oxides to form ground-level ozone, the main ingredient in smog.

### 1.3 Occupational Exposure

Farmers are exposed to many chemicals that affect exposed skin and may cause respiratory problems through inhalation. Ammonia (NH₃) is used as a fertilizer and reacts with water to form a strong alkali that may damage the corneas and airways. It can reach toxic levels in animal buildings and may produce chronic bronchitis, bronchial reactivity, pulmonary fibrosis or bronchiolitis obliterans. Oxides of nitrogen (NO, NO₂, N₂O₄) are found in freshly filled silos and may cause death from asphyxia, laryngospasm, or delayed pulmonary edema. More commonly, they cause irritative symptoms (silo fillers disease), and farmers and silo workers who do not take adequate precautions are at risk when they enter the silo within 10 days after it has been filled.

Pesticides pose serious risks to agricultural workers because of toxic effects on the nervous and other organ systems at high exposure levels. They enter the body by inhalation through the nose and mouth into the lungs, absorption through the skin, or through the digestive tract. Some pesticides (e.g., organophosphates) may produce respiratory center failure and/or respiratory muscle weakness by their irritant effects on the airway. Others (e.g., chlorinated hydrocarbons, methyl-bromide, and carbon-di-sulphide) may cause hemorrhagic pulmonary edema, and paraquat may cause pulmonary fibrosis.

Occupational deaths from pesticide exposure are uncommon but, in North America, over half of the grain elevator workers have claimed symptoms or health problems related to recognizable pesticide exposures at work. Proper clothing, proper ventilation and the use of personal respirators reduce the risk of pesticide exposure.

Also at risk are residents of rural areas who are exposed to dusts distributed by winds, sometimes hundreds of kilometers distant from the source of airborne contamination.

Northern communities, where the cultural tradition of stone carving has also become a significant economic stream, face a unique occupational exposure situation. Adoption of power tools is introducing more dust and airborne material into home-based environments without widespread knowledge or traditional use of safety practices such as masks. The higher number of people living in single homes in the North, coupled with lack of ventilation needed to accommodate this activity, exacerbates the risks.

Other respiratory diseases caused by occupational exposure include occupational lung cancer (from agents such as asbestos, chromium, radon), and occupational chronic obstructive pulmonary disease (attributable to occupational exposures in an estimated 15% of cases). Some other known respiratory diseases caused by occupational exposure include:

**Conditions due to inhalation of chemicals, fumes or gases:** In contrast to the declining trends for pneumoconiosis, hospital admissions rates for respiratory conditions due to inhalation of chemicals, fumes or gases remained steady from 1979 to 2004. These include exposures to respiratory irritants resulting from fires; spills of chemicals such as acids; mixing of cleaning chemicals such as bleach and ammonia; and gases such as nitrogen oxides from silos, or phosgene.

**Farmer’s lung:** also referred to in more general terms as “extrinsic allergic alveolitis” and “hypersensitivity pneumonitis,” Farmer’s Lung is an incurable, allergic respiratory disease caused by the inhalation of spores found in moldy crops, such as hay, straw, corn, silage, grain, and tobacco.

**Occupational asthma:** In many Canadian jurisdictions, as in other industrialized nations, asthma attributable to occupational exposures is the most common chronic respiratory disease compensated for by workers compensation. Limited Canadian data suggest that up to 36% of adult-onset asthma may have an occupational component, and that there have been significantly increased rates of hospitalization for asthma.
(28-fold) and respiratory diseases (5-fold) among those compensated for occupational asthma.

Pneumoconiosis: includes silicosis, coal workers’ pneumoconiosis, and asbestosis (an irreversible condition caused by inhaled asbestos fibres), as well as historically less common diseases such as talc-related lung disease, siderosis, stannosis, bauxite lung (from aluminum), graphite lung, and lung disease from beryllium.
APPENDIX 2:
CHRONIC AND INFECTIOUS RESPIRATORY DISEASES

2.1 Chronic Diseases

Asthma

Asthma is a chronic breathing disorder affecting an increasing proportion of children and adults worldwide. An asthma attack can be a frightening event, with feelings of suffocation and breathlessness; it can also be life-threatening. Individuals may be at low risk over a period of years but their overall lifetime risk can be substantive 22. Effective treatment can prevent the onset of symptoms and improve symptoms if they occur. Possible risk factors for the development of asthma include:

- Family history of allergy and allergic disorders;
- High exposure of susceptible children to airborne allergens (pets, house dust mites, cockroaches, mould) in the first years of life;
- Exposure to tobacco smoke, including in utero exposure;
- Frequent respiratory infections early in life;
- Low birth weight and respiratory distress syndrome (RDS).

While asthma is often considered a children’s disease, it is common among Canadians of all age groups and accounts for approximately 80% of chronic respiratory disease in Canada 23. Children and teens do have the highest prevalence of asthma and the highest hospitalization rates. In terms of number of people affected, however, the disease actually affects more adults than children. The onset of asthma in adults may follow exposure to infectious agents, allergens or pollution, or may result from occupational exposures to low molecular weight sensitizers such as isocyanates. At a minimum, air pollution is a trigger for worsening asthma. Other possible risk factors include smoking, obesity and hormonal influences. This has a significant impact on the health care system. Some studies show that individuals with active asthma use 100% more health services, and people with less active asthma 50% more health services, than the non-asthma population. Additionally, only a relatively small proportion of these asthma-attributable health services are specifically for asthma, most are for asthma comorbidity 24.

Asthma rates continue to climb. Data on activity restriction, emergency room visits and hospitalization suggest that many individuals with asthma require help in keeping their disease under control. One critical factor in control is the appropriate use of Asthma Practice Guidelines by the care providing team. Another critical element for effective control is the active involvement of individuals with asthma and their families. Experience shows that asthma control improves when patients are equipped with comprehensive care plans, but many asthmatics need assistance to implement these management strategies. Adequate training of asthma educators, funding for asthma education and increased access to this service could improve the effective control of symptoms and the appropriate use of health services by individuals with asthma. Efforts need to continue in order to further improve asthma control in the population.

Reducing exposure to airborne contaminants at school and in the workplace, as well as to second-hand smoke, house dust mites, animal dander and moulds, may help reduce the risk of asthma for sensitive individuals. It may also decrease symptoms and attacks among those with asthma.

22 From “Measuring Lifetime Risk of Development Asthma” presentation, Toronto Asthma Symposium, May 2008
While individuals can take personal responsibility for some preventive measures, other solutions require the collaborative efforts of government, industry and business. Legislation, policies and voluntary co-operation need to be part of a concerted effort to decrease school and workplace contaminants and improve air quality.

The current asthma surveillance system in Canada provides ongoing data on prevalence, hospitalization and death. The addition of in-depth population surveys on asthma, combined with improved use of provincial/territorial health administrative databases for surveillance, would provide additional meaningful information to policy makers.

**COPD**

Chronic obstructive pulmonary disease (COPD) is now the fourth largest cause of death in the world, and is expected to become the third largest. It is the only major disease where the death rate is increasing, and is one of the largest causes of disability in Canada. *World COPD Day 2007 Project*, a recent report based on research conducted by The Lung Association, suggests that up to 3 million people are potentially at risk from COPD alone (over 3 times the number used in calculating the burden of disease by *Life and Breath*).

COPD is characterized by shortness of breath and exercise limitation, with or without cough and sputum production. Its symptoms are insidious and progressive; more severe disease is associated with systemic manifestations. Most COPD is diagnosed after the age of 50. The changes to the lung, however, begin many years earlier and symptoms can appear as early as 35. Chronic bronchitis and emphysema are the two most common underlying processes contributing to COPD.

COPD progresses slowly over a period of years. Increasing disease severity is associated with more frequent exacerbations, further reductions in airflow and premature death. As the disease advances, shortness of breath significantly limits the activity levels of individuals and progressively reduces their quality of life. Of individuals with self-reported COPD, 45% report that they often experienced a restriction in their activity at home, at work, or in other activities, and an additional 24.6% report an occasional restriction. Rehabilitation resources and programs are key to addressing these quality of life issues.

Families also face two challenges: (1) providing an increasing level of care, and (2) watching the progression of the disease in their loved one. The costs associated with COPD – loss of productivity and the need for additional services – affect the family, the health care system and the community as a whole.

Several modifiable risk factors contribute to COPD. In 80% to 90% of cases, cigarette smoking is the principal underlying cause. Occupational exposure to dusts and fumes is increasingly recognized as another major risk factor requiring urgent attention. Outdoor air pollution is associated with amplifying symptoms among those with COPD, including shortness of breath. Repeated childhood respiratory tract infections and childhood exposure to second-hand smoke (SHS) lead to reduced levels of respiratory function, which may predispose a person to COPD.

While COPD was once more common in men than women, it is now being reported more in women than in men under age 75. The projected increase in the number of individuals with COPD as the Canadian population ages will have major implications for families and for the delivery of comprehensive hospital and community services.

However, when the right tools, treatments and self-management plans are available and supported, COPD is manageable and individuals can experience not only an extended lifespan, but they and their families can benefit from a significant increase in quality of life. The Canadian Thoracic Society (CTS) also emphasizes the need to both better understand and deliver quality EOL care for patients with COPD in their 2007 COPD Guidelines.

The potential for the greatest gains in preventing COPD lies in smoking prevention and cessation. Cessation of smoking can do a great deal to slow the progression of the disease. Involvement of the individual and family in all aspects of care is essential to improve health outcomes. Programs and services such as home care, long-term oxygen therapy, supportive housing and pulmonary rehabilitation, provided in a supportive community environment, can go a long way to meeting the needs of individuals with COPD and their families. Improving indoor and outdoor air quality would eliminate several factors that exacerbate symptoms of COPD.
Monitoring COPD more effectively will require a more comprehensive surveillance system. A population survey that includes assessing lung function with spirometry would provide a more complete picture of the prevalence of COPD in the population. In addition, data on the use of health services other than hospital services, such as home care, oxygen therapy and pulmonary rehabilitation, would provide fuller information for the identification of the need for new or enhanced programs and services. Finally, population surveys to assess the impact of the disease and the quality of life of those with COPD would add another dimension to the data on health outcomes.

Cystic Fibrosis

Cystic fibrosis (CF) is the most common, fatal genetic disease affecting young Canadians. CF mainly affects the lungs and digestive system. People living with the disease have an unusually thick, sticky mucus that clogs their lungs, making it hard to breathe; it can lead to life-threatening lung infections. CF also affects the pancreas: thick secretions there stop the release of the digestive enzymes that normally help break down food, making it hard for people to digest and absorb nutrients. The mucus can also block the bile duct in the liver, which eventually causes permanent liver damage in some people with CF.

The face of CF has changed radically in the last 20 years. While it was once almost exclusively a child’s disease, most individuals with CF are now living into their 20s and 30s, and beyond. The median age of survival has now reached 37 years.

Individuals with CF may require hospitalization for aggressive therapy during acute exacerbations. As the disease progresses, the need for hospitalization increases, as does the length of stay. Improved disease management has resulted in fewer hospitalizations among young children. However with increased life expectancy, hospitalization is increasing overall.

Fibrotic Lung Disorders

Fibrotic lung disorders affect more than 5 million people worldwide. Fibrosis, or scarring of the lung tissue, results in permanent loss of that tissue’s ability to transport oxygen. The level of disability that a person experiences, depends on the amount of scarring. This is because the air sacs, the lung tissue between the air sacs, and the lung capillaries, are destroyed by the formation of scar tissue.

Potential risk factors include cigarette smoking and exposure to wood or metal dust or asbestos. Some drugs can also lead to lung fibrosis. In addition, researchers are exploring a potential genetic predisposition for the disease. Occasionally, pulmonary fibrosis can run in families.

Interstitial lung disease (ILD) is a general term that includes a variety of chronic lung disorders. Breathlessness during exercise and/or a dry cough may be the first symptoms of these diseases. People with different types of ILD may have similar symptoms, but these may vary in severity. Their chest X-rays and results of lung function tests may look alike. Further testing is usually recommended to identify the specific type of ILD. Some ILDs have known causes but for most (idiopathic) the cause is unknown.

Idiopathic Pulmonary Fibrosis (IPF)

This is the most common form of ILD; its cause is not known. The peak age is 50-70 years and males and females appear to be equally affected. The symptoms and exercise limitation progress slowly, and often a diagnosis is not made for over a year. About two-thirds of patients die within five years. Patients typically are treated with anti-inflammatory drugs, including corticosteroids and cytotoxic agents, despite the fact that there is no good evidence that these have any effect on long-term patient survival. Patients may require supplemental oxygen to help reduce breathlessness and allow the patient to be more active. Lung transplantation is recommended for consideration in patients with severe functional impairment, dependency on oxygen and continued, rapid deterioration despite optimal medical management, if they meet established transplantation criteria.

Other Fibrotic Lung Diseases

Several causes of pulmonary fibrosis are known. They include:

- Occupational and environmental exposures: many jobs – particularly those that involve mining or that expose workers to asbestos or metal dusts – can cause pulmonary fibrosis. Workers doing this kind of work may inhale small particles (like silica dusts or asbestos...
fibers) that can damage the lungs and cause scarring. Agricultural workers also can be affected. Some organic substances, such as mouldy hay, cause an allergic reaction in the lung. This reaction, called Farmer’s Lung, can cause pulmonary fibrosis. Other fumes found on farms can be directly toxic to the lungs;

- Sarcoidosis: a disease characterized by the formation of granulomas (a focus of chronic inflammation), which can attack any area of the body but most frequently affects the lungs;

- Hypersensitivity pneumonitis: an inflammatory reaction in the lung caused by the inhalation of various organic materials that can result in fibrosis. Examples include Farmer’s lung, bird-fancier’s lung and humidifier lung;

- Drugs: certain medicines may have the undesirable side effect of causing pulmonary fibrosis. Some of them include: nitrofurantoin (used for urinary tract infections); amiodarone (prescribed for an irregular heart rate); and cytotoxic agents such as bleomycin, cyclophosphamide, and methotrexate (prescribed to fight cancer or rheumatic disease);

- Radiation: (for example, treatment of breast cancer);

- Connective tissue or collagen diseases: such as rheumatoid arthritis, scleroderma and lupus.

Additional diseases that can cause pulmonary fibrosis include: tuberculosis, chronic aspiration, eosinophilic granuloma of lung, lymphohgioloeimyomatosis, tuberous sclerosis, ankylosing spondylitis and the Hermansky Pudiaq Syndrome.

**Lung Cancer**

Lung cancer is the leading cause of death due to cancer in Canada. It accounts for approximately 29% of cancer deaths among men and 22% among women. No tests or techniques are yet universally accepted for the detection of lung cancer at an early enough stage for intervention to improve the course of the disease. As such, the life expectancy of people diagnosed with lung cancer is among the shortest of all cancers.

Cigarette smoking is the predominant cause of lung cancer. It accounts for at least 80% of all new cases of lung cancer in women and 90% in men. Second-hand smoke is now considered a major risk factor for lung cancer among non-smokers, due to human carcinogens present in tobacco smoke inhaled by bystanders. Other factors associated with increased risk of lung cancer include a variety of occupational exposures, air pollution, and history of respiratory disease.

If progress is to be made in reducing the incidence of lung cancer, it will be by preventing children and teens from starting to smoke and by encouraging those who do smoke to stop. In addition, to reduce lung cancer deaths among non-smokers, it will be necessary to prevent exposure to second-hand smoke.

Cancer treatment services are already experiencing difficulty meeting the demand for health care. The projected increase in incidence of lung cancer among women is certain to exacerbate this situation. Greater need is expected for all aspects of cancer care, including diagnosis, staging techniques, radiotherapy, chemotherapy, surgery, education and support. The anticipated need will also place major demands on palliative care services.

**Sleep Disordered Breathing (Sleep Apnea)**

Sleep disordered breathing is an important public health problem. Without adequate high quality sleep people cannot function effectively at home, at work or in the community.

Sleep apnea – the most common of the syndromes described as sleep disordered breathing – affects one in every 25 men and one in every 50 women in Canada. It is characterized by episodes of pauses in breathing lasting from 10 to 30 seconds during sleep which sometimes recur hundreds of times a night. With each episode, the brain briefly rouses the sleeper to resume breathing, resulting in a fragmented, poor quality sleep.

There are four different types of sleep apnea: obstructive sleep apnea; central sleep apnea; complex sleep apnea; and sleep-hypventilation. Treatment varies between these different types.

Patients with obstructive sleep apnea – hypopnea syndrome (OSAHS) have increased health care expenditures for many years prior to diagnosis. CPAP therapy significantly decreases these expenditures during the first two years after diagnosis of
OSAHS, making treatment a cost-effective use of healthcare resources.

Risk factors for sleep apnea include:

- Upper body obesity, resulting in fat deposition both around the airway and in the related soft tissues;
- Hormonal factors, which influence upper body obesity – this is probably why obstructive sleep apnea is less common in pre-menopausal women than in men or postmenopausal women;
- Increasing age, which is associated with narrower and possibly more collapsible upper airways;
- Smoking.

Sleep Hypoventilation Syndrome (SHVS) is the form of sleep disordered breathing associated with the highest health care expenditures because these patients often require hospitalization.

Sleep disordered breathing is associated with reduced quality of life, decreased cardiovascular health and increased health care utilization, transportation accidents and mortality. Since obesity is a major risk factor for sleep apnea, efforts to promote healthy weights will have the greatest impact on the prevention of this disease.

### 2.2 Infectious Diseases

#### Influenza

Annual influenza epidemics continue to place a significant burden on society in terms of morbidity, mortality and lost productivity. For healthy adults and older children, most influenza infections are not severe, but for at-risk populations such as the elderly, young children, and those with chronic medical conditions, influenza can lead to serious complications and even deaths.

Seasonal influenza, or “the flu,” is a common infection of the airways and lungs that can spread easily among humans. Most people will recover from influenza within a week or ten days, but some – including those over 65 and adults and children with chronic conditions, such as diabetes and cancer – are at greater risk of more severe complications, such as pneumonia.

As of 2005, influenza vaccination rates were increasing once again across Canada after an apparent levelling off in 2003. Even so, many who are considered to be at high risk for serious complications from influenza infection, specifically younger people with chronic conditions and healthy seniors, are not being vaccinated. Consequently, the vaccination rates for these high-risk groups fall short of national targets.

If an influenza virus changes and becomes a new strain against which people have little or no immunity AND this new strain is easily spread from person to person, many people around the world could become ill and possibly die. This is referred to as an influenza pandemic. The past decade has seen a number of outbreaks of novel viral respiratory diseases around the world such as the avian influenza and the Severe Acute Respiratory Syndrome (SARS). The latter was associated with 438 cases and 44 deaths in Canada.

There is no influenza pandemic at this time anywhere in the world. However, The Canadian Pandemic Influenza Plan for the Health Sector was created by federal, provincial and territorial officials, and more than 200 experts, to explain how Canada will prepare for and respond to a pandemic influenza outbreak, when and if it occurs.

#### Respiratory Syncytial Virus (RSV)

RSV is the most common cause of lower respiratory tract illness in young children worldwide and infects almost all by age two in yearly epidemics every winter. Primary infection does not confer protective immunity, and re-infection occurs in sequential seasons and throughout the lifespan.

The most common clinical presentation of RSV in young children is bronchiolitis, an acute lower respiratory tract infection associated with symptoms of tachypnea, cough, and wheezing following an upper respiratory tract illness. About 1% to 2% of all children with bronchiolitis will be ill enough to require hospitalization for oxygen supplementation, intravenous fluids, or other supportive care.

Hospitalization accounts for at least 65% of the economic burden of RSV in children <4 years old,
and there is evidence that hospitalization rates have been increasing in the last two decades.

Prospective cohort studies of Canadian children hospitalized for RSV infection show that these children are more likely to have prolonged hospital stays, require admission to an intensive care unit, and need mechanical ventilation. About 1% of children hospitalized with RSV bronchiolitis die, but mortality is about 3% in those with pre-existing cardiac or lung disease.

Children with other lung diseases not associated with prematurity (e.g. recurrent aspiration pneumonitis, cystic fibrosis, pulmonary malformation), particularly those using home oxygen, also appear to be at increased risk of severe lower respiratory infection with RSV. High rates of lower respiratory tract infections associated with RSV, particularly in those <6 months of age, have been observed among Inuit infants (484/1000 infants), up to 38% of infants requiring hospitalization and 12% requiring intubation for respiratory support. This finding is consistent with observations of other aboriginal groups that this population has a high incidence of lower respiratory tract infection and a complicated course compared with non-aboriginals.

Premature birth (<36 weeks’ gestation) is an independent risk factor for severe lower respiratory tract infection with RSV and may manifest as apnea, respiratory failure, or the need for intravenous nutrition because of inability to feed.

RSV is an increasingly recognized cause of lower respiratory tract infection in adults. Although second and subsequent infections may cause milder disease than the first infection, RSV infection after childhood may cause community-acquired lower respiratory tract infection among hospitalized adults, and exacerbations of chronic bronchitis.

Outbreaks among elderly people in long-term care facilities have been reported to be complicated by pneumonia in 5% to 55% of cases and carry a mortality of up to 20%.

**Tuberculosis**

Tuberculosis (TB) continues to be a major health problem worldwide. It is estimated that one-third of the world’s population is infected with Mycobacterium tuberculosis – the cause of TB. Approximately 9 million new cases of active TB disease develop each year, and almost 2 million persons die of the disease. This makes tuberculosis a leading cause of morbidity and mortality – a fact with important implications for Canada due to international travel and immigration from high TB-incidence countries.

After peaking in the early 1940s, the number of TB cases reported in Canada has shown large declines. From 1994 to 2005, the rate decreased by an average of 3.4% per year to 5.0 per 100,000 population. However, the decline slowed to only 2.2% annually between 2001 and 2005, and the rate remained constant in 2004 and 2005. Canada has a goal to reduce its incidence rate to 3.6 per 100,000 or lower by 2015. This will require further substantial declines of approximately 3% annually.

Certain population groups in Canada have an increased risk of TB infection. These include:

- Those who have come into close contact with individuals with known or suspected active TB;
- People born in or travelling to countries where TB is widespread;
- Aboriginal people who have lived in a community with a high rate of TB disease;
- Homeless people;
- Residents of some long-term care or correctional facilities;
- Persons who work with any of these groups, such as health care workers.

People with a weakened immune system run a greater risk that infection will develop into TB disease. Conditions that weaken the immune system include HIV infection, treatment with immunity-suppressing drugs, end-stage kidney disease, cancer of the head and neck, diabetes mellitus, silicosis, being underweight, and long-term cigarette smoking. Babies, pre-school children and the elderly are also at greater risk, because their immune systems are weaker than those of healthy adults.

While Canada’s overall TB rate is considered low, the rate remains high in Canadian-born Aboriginal Peoples and in persons that were born in countries with a high incidence of TB. Many stakeholders
have expressed concern that issues such as crowded housing/living conditions and a lack of systematic detection of latent TB will enable the rate among Aboriginal Peoples to remain high.

Because almost two-thirds of TB cases involve individuals born outside of Canada and at least 80% of immigrants to Canada in the past 10 years have come from high TB-incidence countries, immigration presents a challenge with regard to tuberculosis. There are reported problems with medical assessments in countries of origin. With most immigrants settling in Canada’s largest urban areas and with immigration increasingly contributing to Canada’s population figures, the respiratory health of these new Canadians will continue to be a pressing issue given the prevalence of TB and Community Acquired Pneumonia (CAP) among this group.

One study suggests that Canada’s contribution to TB control in the source countries of immigrants could reduce the number of future cases of actual TB disease in this country. Also, better tools are needed to diagnose latent TB infection in immigrants after they arrive in Canada. More effective ways to treat those at high risk for progression to active disease are also needed.

The continuous monitoring of TB in Canada remains a critical component of an overall TB control strategy. Challenges to global TB control include the ongoing TB-HIV co-epidemic and the spread of drug-resistant TB strains.

2.3 Other Respiratory Diseases and Disorders

**Acute Bronchitis:** swelling of the bronchi, usually caused by the same viruses that produce the common cold. These attack the inner air passages and infect them. The airways react by getting red and swollen, and by producing extra mucus.

**Acute Respiratory Distress Syndrome (ARDS):** a serious and possibly fatal condition in which people develop low blood oxygen levels as a result of inflammation of the lungs and fluid in the lung’s air sacs (alveoli). Adult respiratory distress syndrome is somewhat similar to infant respiratory distress syndrome, but its causes and treatments are different.

**Allergies:** sensitivities that cause the body to over-react to stimuli in the environment that most people don’t react to in the same manner. Common allergens include pollen, dust, pet dander, and foods. The body’s over-reaction can cause many symptoms: itching, watery eyes, wheezing, coughing, sneezing, and more.

**Alpha-1 Antitrypsin:** an inherited disorder caused by a deficiency of Alpha-1 protein, which can lead to lung or liver disease. Individuals with Alpha-1 can develop emphysema (a form of COPD).

**Asbestosis/dust diseases:** lung diseases caused by dusts are called pneumoconiosis. Certain dusts, particularly those found in mines and other work places, can cause injury, even death.

**Avian Flu (also called avian influenza or bird flu):** a contagious infection caused by a virus that comes in many different strains (types). Avian flu can infect all kinds of birds and other animals, and some types can also spread to humans.

**Beryllium Disease / Berylliosis:** an inflammation of the lungs caused by inhaling dust or fumes containing beryllium. Berylliosis differs from other occupational lung diseases in that even low levels and brief exposure to beryllium can cause health problems.

**Black Lung Disease:** an occupational lung disease caused by prolonged inhalation of coal mine dust. Black lung disease is also called silicosis, coal workers’ pneumoconiosis, or black lung.

**Bronchiectasis:** a rare disease that damages the tiny hairs (cilia) that line the inside airways. Damaged cilia can’t do their job of sweeping dirt and mucus out of the lungs. The airways widen and stretch and in some places form small pockets where germs, dust and mucus collect and cause recurring infection.

**Bronchitis:** an inflammation of the bronchi. This inflammation means the walls of your bronchi are swollen and filled with extra sticky mucus. Airflow into and out of your lungs is partly blocked because of the swelling and extra mucus in your bronchi.

**Bronchiolitis:** Chronic abnormal dilation of the bronchi associated with recurrent respiratory infections.
Bronchiolitis Obliterans (BO): Chronic progressive organ transplant dysfunction with airflow limitation as a result of obstruction of the small airways.

Bronchopulmonary Dysplasia (BPD): a type of lung disease that can affect premature infants who need extra oxygen and help in breathing after delivery. BPD seems to be a reaction of the baby’s lungs to the oxygen and the pressure (positive pressure ventilation) used to keep the lungs working normally.

Byssinosis: A lung disease in which the airways narrow due to inhalation of cotton, hemp or flax. Byssinosis occurs almost exclusively in cotton processing workers who handle raw cotton.

Chronic Bronchitis: with chronic bronchitis, the cells lining the inside of the bronchi are continuously red and swollen, narrowing the airways and partly clogging them with mucus that cannot be cleared (instead of helping to clean the lungs, the mucus blocks the airways). This thicker mucus is more difficult to cough up and makes it easier for bacteria to settle in the lower airways, causing infection.

Chronic Cough: one of the most common reasons for family doctor visits. Although a common health problem, chronic cough is not something to ignore. Untreated, it can interfere with daily activities and make sleeping and eating difficult. A chronic cough could also signal a more serious lung disease.

Common Cold: probably the most common respiratory (breathing and lung) illness. Many different viruses can cause a cold; over 100 cold viruses (rhinoviruses) have been identified so far.

Croup: a viral infection that causes swelling in the throat and vocal cords (larynx). Croup commonly affects children under five because their airways are smaller and more prone to swelling. One of the telltale signs of croup is a loud, "barking" cough that is worse at night.

Ciliary Dyskinesia: also known as immotile ciliary syndrome or Kartagener Syndrome (KS), is a rare autosomal recessive genetic disorder which causes a defect in the action of the tiny hair-like structures (cilia) lining the respiratory tract (lower and upper, sinuses, Eustachian tube, middle ear) and fallopian tube.

Dyspnea: causes shortness of breath, difficult or laboured breathing.

Emphysema: a chronic (long-term) lung disease, usually caused by smoking, that can worsen over time. Having emphysema means some of the air sacs in your lungs are damaged, making it hard to breathe. Emphysema is one of a family of lung diseases known as COPD.

Empyema: a condition in which pus and fluid from infection collects in the pleural cavity (space around the lungs). Empyema is most commonly caused by the bacteria Staphylococcus aureus, and is most frequently a complication of pneumonia.

Eosinophilic Granuloma (EG): is a benign disorder that affects children and young adults, particularly males. The solitary bone lesion may be asymptomatic, or it may cause bone pain because of expansion of the medullary bone. Pathologic fractures may ensue. Lung involvement occurs in 20% of patients with EG and in an older group (age, 20-40 y). Lung involvement has a strong association with smoking. Diffuse pulmonary infiltrates may be a manifestation of a covert osseous EG. In 50-75% of patients, the disease is monostotic. Skull involvement is seen in 50% of patients. Rarely, the growing epiphysis is involved with EG; in most such cases, transphyseal extension can be demonstrated, both by the radiologic findings and the histopathologic results.

Flock Worker’s Lung: A chronic lung disease caused by the inhalation of certain synthetic fibers, such as nylon. Specifically, Flock Worker’s Lung occurs in workers involved in the nylon flocking process.

Hantavirus Pulmonary Syndrome: a rare, but serious, lung disease spread by deer mice and other wild rodents. Hantavirus is found in the saliva, urine and droppings of infected rodents.

Hay Fever: There are two kinds of hay fever. The most common, known as seasonal allergic rhinitis, is an allergic reaction to pollens released by trees, grasses or weeds. Individuals may be allergic to one or several pollens, and react when those particular pollens are in season. A second type of hay fever is called “perennial allergic rhinitis,” where individuals are affected by allergies year-round. Their hay fever is caused by indoor allergens such as dust mites, mould, and furry animals.
**Hereditary Hemorrhagic Telangiectasia (HHT):** a hereditary disorder. HHT is characterized by abnormal blood vessels. The abnormal vessels can be small (telangiectasias) or large (arteriovenous malformations, AVMs). HHT occurs in approximately 1 in 5000 Canadians. **Pulmonary arteriovenous malformation** can almost always be treated completely and permanently using an outpatient procedure called embolization. This is why testing or screening is recommended in all individuals with HHT, regardless of their specific symptoms.

**Histoplasmosis:** an infectious disease caused by a fungus called Histoplasma capsulatum. It usually affects the lungs, but can sometimes spread to other parts of the body.

**Infant RDS:** one of the most common lung disorders in premature infants; it causes increasing difficulty in breathing.

Legionnaires Disease: a severe form of pneumonia (lung infection). It is caused by bacteria called legionella pneumophila. The disease first got its name in 1976, when there was an outbreak at a convention of the American Legion in Philadelphia.

**Lymphangioleiomyomatosis (LAM):** a rare lung disease that is characterized by an unusual type of muscle cell that invades the tissue of the lungs, including the airways, and blood and lymph vessels. Over time, these muscle cells form into bundles and grow into the walls of the airways, and blood and lymph vessels, causing them to become obstructed.

**Meconium Aspiration Syndrome:** a disease seen primarily in full-term or post-term infants who have experienced some degree of asphyxia prenatally or during birth. Asphyxia causes the infant to gasp deeply and aspirate meconium and amniotic fluid.

**Occupational Lung Diseases:** an occupational lung disease can develop if the workplace exposes individuals to dust, chemicals, or other things that can irritate the lungs. Work-related lung diseases include dust diseases (pneumoniosis), silicosis, asbestosis, mesothelioma, asthma, lung cancer, farmer’s lung, Hantavirus, legionnaire’s disease/pontiac fever and tuberculosis.

**Pleurisy:** an inflammation of the pleura – a two-ply membrane that both encloses the lung and lines the chest cavity. Both layers of pleura get inflamed (red and swollen), creating a space between the layers called the pleural cavity. In wet pleurisy, this space can fill up with fluid, causing infection.

**Pneumonia:** an infection of the lungs caused by bacteria, viruses or fungi. These can settle in the air sacs (alveoli) deep in the lungs, where they may grow and overcome the body’s normal defenses.

**Pneumothorax:** a collection of air between the outside surface of the lung and the inside surface of the chest wall. These two surfaces are lined with a smooth membrane called pleura and normally are in contact with each other, but can become separated when air, fluid or blood collects between them.

**Primary Alveolar Hypoventilation:** A rare disorder of unknown cause. It leads to inadequate breathing despite the lungs and airways being normal.

**Pulmonary Alveolar Proteinosis:** A rare disease in which a type of protein builds up in the air sacs (alveoli) of the lungs, making breathing difficult.

**Pulmonary Arteriovenous Malformation (PAVM):** an abnormal communication between the pulmonary artery and the pulmonary vein. PAVMs are usually congenital in origin; however, they may be acquired in a variety of conditions, such as hepatic cirrhosis, schistosomiasis, mitral stenosis, trauma, actinomycosis, and metastatic thyroid carcinoma.

**Pulmonary Embolism (PE):** a blockage of the pulmonary artery or one of its branches, usually occurring when a venous thrombus (blood clot from a vein) becomes dislodged from its site of formation and embolizes to the arterial blood supply of one of the lungs. This process is termed thromboembolism.

**Pulmonary Hypertension:** a blood vessel disorder that affects the lungs. In individuals with pulmonary hypertension, the pressure in the pulmonary artery (the blood vessel that leads from the heart to the lungs) rises above normal levels. This extra pressure causes symptoms and may be life-threatening.

**Reactive Airways Dysfunction Syndrome (RADS):** the development of a persistent asthma-like condition with airway hyper-responsiveness developing in a previously healthy asymptomatic individual within 24 hours of a single exposure to concentrated respiratory irritants.
**Respiratory Distress Syndrome (RDS):** A condition of newborns, also known as hyaline membrane disease, that results in breathing difficulties due to a deficiency of lung surfactant, which coats the alveoli (airs sacs) to prevent them for collapsing as the baby exhales.

**SARS:** a contagious respiratory infection caused by a virus (coronavirus) characterized by severe symptoms similar to pneumonia. SARS can be fatal.

**Spontaneous Pneumothorax:** pneumothorax, also known as collapsed lung, occurs when air escapes from the lungs or leaks through the chest wall and enters the pleural cavity, causing the lung to eventually collapse. In some cases, a collapsed lung may occur for reasons other than injuries or medical procedures. Termed “spontaneous pneumothorax”, this condition occurs as a result of lung diseases such as emphysema, asthma, cystic fibrosis and pneumonia. Spontaneous pneumothorax is also common in tall, thin men (typically smokers) between the ages of 20 and 40.

**Sudden Infant Death Syndrome (SIDS):** the sudden and unexplained death of an infant younger than one year old. SIDS seems to strike without warning, usually in babies who seem perfectly healthy. Even though the number of SIDS cases has dropped in the last 10 years, it is still the leading cause of death in infants between one month and one year.

**Tension Pneumothorax:** occurs when an air pocket creates pressure within the pleural cavity, causing the lung to collapse.

**Whooping Cough (Pertussis):** A bacterial lung infection caused by the Bordetella pertussis bacterium. Whooping cough gets its name from the characteristic "whoop" sound heard when inhaling between coughs.
Individuals and families living with respiratory disease

As the consumers of health products and services, individuals and families living with respiratory disease play a key role in identifying what needs to happen to improve respiratory health in Canada. They are working with a wide range of caregivers, are investing in self-management of their own disease, and are often passionate about sharing information about disease prevention with others. Families often play a particularly important role as informal caregivers, providing much-needed support at home to improve quality of life and extend an individual’s personal independence. Families invest extensive amounts of time and effort working with health care providers and learning how to support the use of medical devices, to ensure ongoing and integrated care for their loved ones. Individuals and families living with respiratory disease were integral participants in Framework consultations held across the country.

First Nations, Inuit and Métis Communities and their governing bodies and leadership organizations

First Nations, Inuit and Métis Peoples offer a wholistic approach to health, recognizing the inter-relationships between the physical, mental, spiritual and emotional aspects of being. This wholistic view expands the bio-medical concept of disease and health to also address social, economic, environmental and cultural factors underlying overall wellness. Modern health care practitioners and policy and decision makers are increasingly turning to indigenous knowledge and medicine to inform public health practice. They recognize that health programs and services that reflect traditional knowledge, values and principles are more successful in many communities. In turn, this awareness helps to generate new perspectives on overcoming barriers to access, and the benefits of implementing culturally relevant approaches to health research, policy and programming in general. As trained medical professionals and other health care providers, Aboriginal stakeholders also play an important role in ensuring culturally appropriate care is delivered within their communities, and to First Nations, Inuit and Métis individuals and families that are receiving health care outside of their home communities.

Aboriginal stakeholders working in health research and policy development are ensuring that research leads to policy that is relevant and useful to Aboriginal communities. The active participation of Aboriginal communities in research and policy development has increasingly led to greater self-determination in programming that directly affects them, and has led to improved health outcomes.

Medical Professionals and Other Health Care Providers

A wide range of health care providers are involved in the provision of front-line respiratory health services. Physicians directly involved in respiratory health care include respirologists (specializing in pediatric and adult respirology), family physicians, pediatricians, allergists, and emergency and acute care physicians, among others. They are central to the diagnosis and treatment of respiratory disease. Many also work as researchers, striving to extend our knowledge of diseases and treatments.

Additional respiratory health care providers represent a large and diverse network, demonstrating the breadth and potential of interdisciplinary care. They include respiratory therapists, nurses, cardio-pulmonary physiotherapists, pharmacists, dietitians and other health care professionals. Health care professionals with specialized training (Certified Asthma and Respiratory Educators) play a vital role in the area of chronic disease management. A range of interdisciplinary and specialized health care services and centres (such
as respiratory care clinics, pulmonary rehabilitation and palliative care centres), found in many communities, play an important role in maximizing the quality of life of individuals and families living with respiratory disease.

**Researchers and Investigators**

Federal and provincial/territorial governments, NGOs, the academic community, and the private sector all conduct or fund important respiratory health research in Canada. Governments, in particular, have a critical role to play in supporting long-term, ‘up-stream’ fundamental research, and research for the public good. Our researchers and investigators produce high quality research that is keeping Canada at the forefront of international efforts in the field. They are focused on linking risk factors and health outcomes; tracking trends in respiratory epidemiology; and working with health care providers (in many cases, researchers are health care providers themselves) to develop and evaluate new programming, tools and approaches. Canada’s research community also plays a vital role in the translation of new knowledge into potential applications that produce both economic and health benefits for the country.

**Non-Governmental Organizations (NGOs)**

NGOs working in respiratory health range from well-established national organizations, to grassroots, community-based collectives working on the front-line to provide ongoing support for individuals and their families. They provide important information sharing, awareness raising and education, and programming (such as smoking cessation and patient and family support services). They also play an important public advocacy role, leading to the improvement of existing health policy and the development of new policies (particularly in environmental health). They also work with patients and families to support, coordinate or serve as patient and family advocates on a range of respiratory health issues (particularly when addressing barriers to access). Frequently, NGOs play a key role in partnership development and coordination among sectors, stepping up as partners in multi-sector research initiatives, and taking part in multi-disciplinary care and programming.

**Community Support Agencies**

A wide range of governmental, non-governmental, and health care agencies help to address the social, economic, environmental and cultural barriers that many communities face. These agencies serve as networks within the community, providing access to such supports as: food and income security; housing; cultural and community centres; education and training; recreation and physical activity; mental health; and social integration. In addition to serving as an access point for health education and disease prevention, they play an important role in supporting individuals and families living with respiratory disease in the transition from acute treatment to ongoing, overall health and wellness. Indeed, effective engagement by the whole of these community stakeholders illustrates the benefits of a wholistic health and wellness approach. Big wins are possible by addressing multiple diseases with shared risk factors and/or co-morbidity issues.

**Federal, Provincial, Territorial and Local Governments**

In Canada, the federal government plays an important role in developing health and social policy, and has been facilitating processes to help make Canada a leader in innovative research. The provinces and territories are key players in planning and managing health services, and in working with individual health service providers to ensure that patients and consumers have access to the care that they need. Local governments are investing in communities to support the network of health and social service organizations and agencies that create a setting of health and well being for individuals and families.

**Private Sector/Health Industry**

Canada’s industry stakeholders in respiratory health include pharmaceutical companies, pharmacists, manufacturers and distributors of devices used in the management of respiratory disease, as well as a diverse group of service providers involved in the delivery of care and disease management in the home and in private settings. They develop, distribute and provide training for the use of important tools and medical supports that improve the health care and management of individuals and families living with respiratory disease. By investing into community-based initiatives and programming, private sector partners play an important role in supporting non-governmental organizations.
The private sector also makes important research and development investments for Canada, working closely with government and university research resources. At the same time, they play a key role in the translation of this research, including information dissemination and product commercialization. It is the health industry that transforms innovation into potential applications, working to improve health outcomes and quality of life for individuals and families.

Stakeholders involved in the workplace (i.e. unions, employers, insurance companies, etc.) also have a stake in the Framework, and have been working to address how workplace policy and practice impacts on the health of its workers in a wide range of workplace settings, from offices to factories, to farms.
APPENDIX 4:
RESPIRATORY HEALTH AMONG
FIRST NATIONS INUIUT AND
MÉTIS PEOPLES

The National Lung Health Framework reflects the importance of identifying social, economic, cultural and environmental barriers experienced by First Nations, Inuit, and Métis with regard to respiratory health. Actions that enable individuals, families and communities to access information, supports, care, treatment and management will reduce impediments to respiratory health. As well, innovative solutions are required to rectify the broader systemic issues.

Measures such as the United Nations Human Development Index continue to underlie the unacceptably disparities between Aboriginal and non-Aboriginal people in Canada. Life expectancy for Aboriginal Peoples is notably less than that of the general Canadian population. Chronic diseases, post neonatal mortality, accidental deaths, certain infectious diseases and mental health problems continue to be disproportionately common among Aboriginal Peoples. The Royal Commission on Aboriginal Peoples saw self-government as a key to allow those communities to mould a better future. Negotiations are proceeding slowly and a few new agreements have been signed in the past decade or so. Policymakers are considering the potential of targeted interventions and partnerships (both between governments and with other sectors) for improving outcomes.

4.1 The Aboriginal Peoples of Canada

The Aboriginal Peoples of Canada include the First Nations, Inuit and Métis Peoples residing on reserves, settlements, in rural and urban areas, or in northern and arctic regions. These peoples have unique histories, cultures, traditions and relationships with federal, provincial and territorial governments. Their social and cultural uniqueness are an essential feature of Canadian culture.

Historical Trauma

In Aboriginal communities, the family was viewed as an important unit since traditionally all members of the family had to work together in order to survive. Aboriginal communities view the concept of health and wellness to include spiritual, mental, and physical wellbeing as equally important. In the late 1800s, the federal government, in conjunction with Christian missionaries, began a process commonly known as ‘residential schools’ that contributed and continued over many decades to alter the intrinsic wellbeing of many Aboriginal communities across Canada. Assimilation was the primary goal of these schools.

Exacerbating the diminished cultural identity of many Aboriginal children, residential schools followed hundreds of years of trauma that Canada’s Aboriginal communities experienced from multiple deaths by disease and warfare, forceful removal from traditional homelands and loss of economic and self-sufficiency. It also resulted in the loss of spiritual and cultural leaders, teachers and healers.

By separating a generation (and in some families, generations) from their culture, traditional practices, beliefs, and values, many of Canada’s Aboriginal Peoples were unable to access the cultural rituals and community supports to help them express and grieve their communal loss, and to heal and restore the balance in their lives. This loss had and continues to have profound effects on their health and well being as individuals, families, communities and peoples.

Jurisdictions

Under the Constitution, Parliament has clear authority to make laws with respect to health care and health services for First Nations and Inuit, and the federal government has equally clear authority to administer those laws and to make related expenditures. Parliament’s authority to make health laws specific to Métis is less clear, but it may exercise its overall spending powers in relation to Métis health care and health services where it chooses to do so. Provincial/territorial laws in relation to health care and services apply in most cases to Aboriginal Peoples where federal laws do not apply. For off reserve Aboriginals, this responsibility rests within provincial/territorial jurisdiction. This historical separation of authority emanates from two historical documents – the Royal Proclamation of 1763 and the Constitutional Act of 1867.

The following is an example of a principle promoted by the Canadian Paediatric Society and its Aboriginal partners for use when there is a lack of clarity over responsibility for health care: Named after a young First Nations child with a rare neuromuscular disorder who spent his short life in hospital while governments disagreed over who would pay for his at-home care, Jordan’s Principle involves a “child first” approach to resolving jurisdictional disputes regarding the provision of services to Status Indian children. The principle supports a system where the government of first contact assumes primary economic responsibility for the child’s health care.

Under this principle, where a jurisdictional dispute arises between two government parties (provincial/territorial or federal), or between two departments or ministries of the same government, regarding payment for services for a Status Indian child which are otherwise available to other Canadian children, the government or ministry/department of first contact must pay for the services without delay or disruption. The paying government party can then refer the matter to jurisdictional dispute mechanisms.

Health determinants and their impact on First Nations, Inuit and Métis health and respiratory health

Many barriers exist within Aboriginal communities that reduce the availability, affordability, dissemination and efficacy of effective management of chronic respiratory disease. Many Aboriginal people are disadvantaged compared to the total Canadian population in terms of health determinants such as income, education and employment. Possessing lower status on these determinants correlates to higher rates of health risk behaviours and ultimately poorer health outcomes. Ill health, in turn, exacerbrates or creates economic hardships. Missed income due to illness, the costs of medication, emergency visits, and repeated hospitalizations all impact the economic well-being of Aboriginal families.

Acculturation stress occurs when a community undergoes a rapid socio-cultural transition that disrupts its traditional way of life. For example, in Nunavut, Inuit have undergone an enormous transition in the past 50 years and feel that this stress has had a negative impact on their health. Acculturation stress and its negative health impacts are common among indigenous communities around the world.

The issue of social exclusion is also an important factor to address when examining health disparities. This is most consistently defined as the general denial of individuals from participating in the activities normally expected of members of their society. It occurs whenever the environments where people grow up, live and work, and the institutions that govern them, systematically limit their opportunity to participate in society.

Social exclusion coupled with colonialism and the trauma associated with residential schools creates the ‘perfect storm’ for the health inequalities within First Nations, Inuit and Métis communities. Given this backdrop, concerted efforts are imperative to militate against this history.

Access to health services

Many Aboriginal communities face poor access to health care and community supports due to inadequate transportation, and/or lack of facilities and health human resources. Prevention is also an issue as many organizations lack the capacity to bring awareness campaigns to communities outside the urban centres. Information and services that are not culturally relevant (i.e. they do not reflect values, customs and beliefs), can also create barriers for those seeking resources to improve their respiratory health and well-being.
Aboriginal health providers

The following section illustrates system-wide health human resources imbalances, with a focus on medical students as one of many types of Aboriginal health providers serving their populations. Aboriginal students made up only 0.7% of the first-year class in Canadian medical schools (2001), despite accounting for 4.5% of the Canadian population\(^8\). Medical school enrolment numbers are particularly low among rural Aboriginals: while half of the Aboriginal population is rural, only one-third of Aboriginal medical students are from rural areas\(^9\).

A workforce that mirrors the demographic face of Canada is not only an expression of equity, but should also improve the quality of health care in underserved communities. Research shows that when underserved populations are treated by a physician from a similar background, they are more likely to seek out care and comply with physician directives, and are more responsive to health promotion and prevention advice\(^30\).

Research also reveals that physicians from under-represented groups (e.g. Aboriginal doctors) are more likely to treat patients who are disadvantaged, chronically ill, or who suffer from more than one illness—characteristics often found in Aboriginal and rural communities\(^32\). In addition, under-represented minorities frequently return to their home communities to practice. In one study, 94% of Inuit health-care students planned to return to the North after graduating\(^33\).

Strategies to meet the unique health service needs of Canada’s Aboriginal Peoples are finally underway. Increasing the number of Aboriginal people taking up careers in the health care field, and improving the recruitment and retention of health care workers in Canadian Aboriginal communities is a first step to ensure culturally appropriate policy, programs and services. As well, adapting health care educational programs to be more culturally responsive to the needs of Canada’s Aboriginal communities will help to fortify this process.

For example, at the University of Manitoba, Aboriginal students who want to go into medicine can participate in the Special Premedical Studies Program (SPSP). This program helps them to improve their academic abilities: Aboriginal students often report that they have achieved the marks necessary to enter university, but once on campus, find their abilities weak, especially in science, written English, class presentations, and study skills\(^\text{34,35}\). The SPSP responds to students’ academic concerns by providing them with individualized tutoring, academic advice and extensive pre-university orientation to help consolidate their skills.

In addition, medical schools in British Columbia, Quebec and the Atlantic region have opened satellite medical campuses in rural and remote locations.

Reliable data is needed on the number of trained Aboriginal and non-Aboriginal health care providers serving Aboriginal clients and communities. To this end, a better understanding is needed of the role played by professional associations, recruitment organizations, educational institutions, and other Aboriginal organizations with respect to Aboriginal health human resources.

4.2 Aboriginal Health in Canada

Aboriginal health research is critically needed to increase knowledge and create solutions that address the disparities in health experienced by Aboriginal Peoples in Canada.

Surveillance

The quality and availability of Aboriginal health data currently lags behind data on the general Canadian population, and this hinders the ability to


\(^{31}\) McLachlan. Outreach is better than selection for increasing diversity. Medical Education, 39, 872-875, 2005


\(^{33}\) What Sculpture is to Soapstone, Education is to the Soul: Building Capacity of Inuit in the health field. Ajunnginiq Centre. National Aboriginal Health Organization (NAHO), September 2004.

\(^{34}\) Ibid

adequately understand and respond to Aboriginal health issues. Challenges exist in the collection, extraction, and reporting of health information on Aboriginal Peoples. Due to the lack of standardized “identifiers” it is enormously difficult to accurately extract specific data on First Nations, Inuit and Métis from administrative databases.

For Aboriginal health reporting, the challenge is further complicated by overlapping jurisdictional responsibilities for health between federal, provincial/territorial and local governments. Still, some jurisdictions have had limited success reporting on Aboriginal populations either by using voluntary identifiers or by data linkage.

Statistics Canada was involved in the collection of Aboriginal-specific health information through the Aboriginal Peoples Survey (APS), which was used for the previous federal report on comparable health indicators (2004). This survey was useful in identifying health issues in the population, in particular for Inuit. It struggled, however, with the collection of data from many First Nations communities (notably in Québec) that refused to participate in the survey.

The National Aboriginal Health Organization’s First Nations Centre and 10 First Nations regional organizations collectively undertook a survey, which was overseen and guided by the First Nations Information Governance Committee, a standing committee of the Chiefs’ Committee on Health of the Assembly of First Nations. This survey was developed with appropriate governance to gather the information similar to the APS but with the appropriate approaches and inclusiveness. Known as the National Regional Longitudinal Health Survey, this is a First Nations’ initiative designed to reflect the First Nations cultural perspective. As such, these survey data are not comparable to data on the general population.

Research

Most of the Aboriginal health research conducted in Canada concerns First Nations, in some degree Inuit, and is minimal or almost non-existent concerning Métis. The limitations to developing research studies are due, in most part, to the absence of a Métis registry or list of any sort, and the absence of any bureaucracy or organization charged to deliver, oversee, or fund health services specifically for the Métis. Additional challenges exist including:

- The lack of Métis-specific health data and information;
- Inaccurate or incomplete data sources and the inability to extrapolate or access data;
- Use of the term “Aboriginal” in health literature when data applies to First Nations and Inuit only;
- Limited opportunity for individuals to self-identify as Métis due to a lack of a Métis identifier on health cards, and differing opinions on how to identify and count the Métis in Canada;
- Minimal Métis-specific health research and funding.

Capacity – The Aboriginal Health Human Resources Initiative – a partnership between Health Canada and First Nations, Inuit and Métis governing councils – provides bursaries and scholarships to Aboriginal students pursuing studies in the health care sector. The Canadian Institutes of Health Research (CIHR) – Institute of Aboriginal Peoples’ Health (IAPH) also aims at building Aboriginal health research capacity by developing researchers and providing continued support for scientific careers in this area of research.

Methodology – The CIHR Guidelines for Health Research Involving Aboriginal People offer the kind of safeguards that have long been missing for Aboriginal people in research. These guidelines are designed to be a collaborative tool for researchers, Aboriginal communities, and Aboriginal individuals. They promote health through research that is in keeping with Aboriginal values and traditions, as well as assist in developing research partnerships that facilitate and encourage mutually beneficial and culturally competent research.

The principles of Ownership, Control, Access and Possession (OCAP) are one aspect of First Nations aspirations towards self-determination and self-governance. The principles represent a comprehensive framework developed by First Nations to
bring self-determination into the realm of research and information management. This is the ‘gold standard’ against which research ethics are assessed. They are strongly endorsed by the Assembly of First Nations. OCAP applies to all research, data or information initiatives that involve First Nations, and encompasses all aspects of research (including funding and review), monitoring, statistics, and cultural knowledge and so on.

**Partnerships** – The low awareness of respiratory diseases in Canada, coupled with the complex issues experienced by Aboriginal Peoples requires that focused, direct strategies be implemented that address both the determinants of health as well as the medical aspects of respiratory disease. Effective partnerships with stakeholders such as Health Canada [in particular, the First Nations and Inuit Health Branch (FNIHB)] and CIHR-IAPH would ensure alignment of strategies and activities to improve the respiratory health of First Nations, Inuit and Métis peoples.

### 4.3 The Toll of Respiratory Diseases on Aboriginal Peoples

**First Nations Respiratory Health**

15% of First Nations children and youth suffer from **asthma**\(^{37}\). There is a slightly higher prevalence of asthma among First Nations adults than in the general adult population in Canada (10.6% compared with 7.8%). Most of the difference appears to accrue to First Nations 50 years and older\(^{38}\).

First Nations youth seem to be less susceptible to **allergies** than youth in general in Canada. Allergies affect 15.1% of First Nations youth. However, of First Nations youth with this condition, only 26.3% are receiving treatment for it\(^{39}\).

Chronic **bronchitis** would seem to be more common among First Nations youth than youth in the general population: 2.4% of First Nations youth have this condition compared with 1.4% of youths in general. Chronic bronchitis presents potentially serious long-term health risks. Only 16.5% of First Nations youth with this condition are receiving treatment for it\(^{40}\).

Almost one half (48.5%) of First Nations in band housing reported **mould** or mildew in their home (nearly half of Aboriginal Peoples live in band housing). A lesser percentage (36.9%) of respondents in other types of accommodation reported mould or mildew. This further exacerbates the respiratory problems for these individuals\(^{41}\).

**Inuit Respiratory Health**

Northern infants suffer from **bronchiolitis** to a much greater extent than their southern counterparts and respiratory syncytial virus RSV is the pathogen responsible for much of this morbidity. Of a total of 96 infants born during 2001 from three Nunavut communities, 39 (41%) required medical evacuation on at least one occasion and 16 (17%) required more than one emergency transfer.

Researchers studied 49 Inuit children under age five in four communities in Nunavut’s Qikiqtaaluk (Baffin) Region – Cape Dorset, Igloolik, Clyde River and Pond Inlet. When more than one child lived in a household, the researchers included only the youngest in the study. The research team found 27 of the children (55%) were reported to have experienced a lower respiratory tract infection, either **bronchitis** or **pneumonia**, at some point in their lives. Of those, 21 of the children (43%) were admitted to hospital in Nunavut for treatment of the infections. And 11 of the children (21%) had to be transferred to hospitals outside the territory.

**Indoor air quality** tests were carried out for periods of three to five days in the homes. The tests were conducted in 2005 from January to March, when winter brings bitterly cold temperatures and doors and windows are kept shut. The average concentration of carbon dioxide indoors was found to be 1,358 parts per million, much higher than the recommended level of 1,000 ppm. They found that the average ventilation rate per person was 5.6 litres per second – 80% of the houses had ventilation rates below the recommended rate of 7.5 litres per second.\(^{42}\)

---

37 Canadian Council on Social Development  
40 Ibid  
42 CBC News, Monday July 16, 2007
In 2001, Inuit children were far less likely (46%) than all children in Canada (85%) to have had access to a doctor. They were almost 2.5 times more likely than all children in Canada to have seen a nurse instead. Inuit children in Nunavik and Labrador were more likely than those in the Inuvialuit region, and almost twice as likely as children in Nunavut, to have had contact with a doctor43.

On almost every health indicator, Inuit fare worse than any other group in Canada. The average lifespan for Inuit is 15 years less than the average for all Canadians. Tuberculosis rates among Inuit are 23 times greater than the Canadian rate. In 2006, the tuberculosis rate for the Inuit population was 114.3 per 100,000 population compared to 5.0 per 100,000 for Canada as a whole. The COPD mortality rate for Inuit women is 10 times that of other Canadian women while the rate for Inuit men is 3 times that of other men in the country44. New research has shown that the lung cancer rates for Inuit in Canada are the highest in the world45.


4.4 Summary

Inequities in health status exist within all Aboriginal populations in Canada, as well as those across the globe. The lives of too many First Nations, Inuit and Métis people in Canada are shattered due to chronic respiratory diseases. There is an urgent need to make visible the impact of these health concerns and redress the inequities within a culturally appropriate framework.

Métis Health

Some respiratory illnesses were also reported to afflict Métis more often than First Nations (and off-reserve Aboriginals more than on-reserve). Self-reported bronchitis revealed an interesting pattern: only 4% of on-reserve First Nations reported this condition. However 6% of off-reserve First Nations residing outside Winnipeg reported it, which climbed to 13% within Winnipeg. By contrast, 7% of Métis in Winnipeg and 11% outside Winnipeg reported the condition. As noted, most Métis outside Winnipeg live in non-urban communities, often adjacent to First Nations.

This begs the question of why Métis people reported three times the bronchitis incidence rate of their First Nations neighbors in rural areas, but half the incidence rate within Winnipeg. Métis adults also reported higher rates of asthma: 8% among Métis city residents, compared to 5-6% for Métis outside the city and off-reserve First Nations, and to just 3% on-reserve46.
APPENDIX 5: GLOSSARY

**Acute care:** Necessary treatment of a disease for only a short period of time in which a patient is treated for a brief but severe episode of illness (Bio-medicine.org).

**Advocacy:** The act of speaking or of disseminating information intended to influence individual behaviour or opinion, corporate conduct or public policy and law (voluntary-sector.ca).

**Best practices:** Techniques or methodologies that have been informed by and result in evidence of effectiveness to inform decision makers in practice, policy and research within a variety of setting (Public Health Agency of Canada).

**Burden of disease:** The total significance of disease for society beyond the immediate cost of treatment. It is measured in years of life lost to ill health as the difference between total life expectancy and disability-adjusted life expectancy (WHO, health systems performance glossary).

**Chronic Diseases:** are usually characterized by complex causality, multiple risk factors, a long latency period, a prolonged course of illness, functional impairment or disability, and in most cases, the unlikelihood of cure.(definition taken from the Strategic Framework for Chronic Disease Prevention in Australia – National Public Health Partnership 2001)

**Climate:** Climate in a narrow sense is usually defined as the “average weather” or more rigorously as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. The classical period is 30 years, as defined by the World Meteorological Organization (WMO). These relevant quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system (definition taken from the glossary of the report entitled Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems, July 2008).

**Climate change:** climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity (definition taken from the glossary of the report entitled Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems, July 2008).

**Collaboration:** structured, recursive process where two or more people or organizations work together toward a common goal.

**Community:** A specific group of people, often living in a defined geographical area, who share a common culture, values and norms, are arranged in a social structure according to relationship the community has developed over a period of time (WHO, Health Promotion Glossary).

**Communities:** A group of people living in the same locality and under the same government

**Community-based interventions:** interventions incorporating the needs and resources at the community level.

**Co-morbidity:** Co-existence of two or more diseases or conditions.

**Continuum of care:** Health care, which includes all aspects of care, from diagnosis, treatment through to palliative care.

**De-normalization of tobacco industry products:** activities undertaken specifically to reposition tobacco products and the tobacco industry consistent with the addictive and hazardous nature of tobacco products, the health, social and economic burden resulting from the use of tobacco, and practices undertaken by the industry to promote its products and create social goodwill towards the industry (Canadian Council for Tobacco Control).
Direct costs of respiratory disease: are defined as the value of goods and services which payment was made and resources used in the treatment, care and rehabilitation related to respiratory illness. (Health Canada, Economic Burden of Illness in Canada, 1998, p.1)

Emissions: in the climate change context, emissions refer to the release of greenhouse gases and/or their precursors and aerosols into the atmosphere over a specified area and period of time.

Epidemic: occurring suddenly in numbers clearly in excess of normal expectancy, said especially of infectious diseases but applied also to any disease, injury, or other health-related event occurring in such outbreaks (definition taken from the glossary of the report entitled Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems, July 2008).

Evidence: information or data used in decision making or which supports a result.

Evidence of need: Information or data used in decision making which is qualitative in nature and based on a moral imperative to invest heavier in a specific population disproportionately affected by a given disease’s or group of diseases’ symptoms or determinants.

Geographic mapping: a web-based mapping technology will enable the sharing and access to data over the Internet, illustrated on a geographic basis (NB Lung).

Greenhouse gas: greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth’s surface, the atmosphere, and clouds. This property causes the greenhouse effect (definition taken from the glossary of the report entitled Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems, July 2008).

Health care: The prevention, treatment, and management of illness and the preservation of mental and physical well-being through the services offered by the medical and allied health professions.

Health indicator: An indicator applicable to a health or health-related situation.

Health outcomes: Measuring the results of a project or initiative in terms of health or well-being.

Health promotion: The process of enabling people to increase control over, and to improve their health (WHO Health Promotion Glossary).

Healthy living: Making choices in one’s life with a perspective of wellness including nutrition and physical well being.

Healthy public policy: Policy with a goal of maintaining or enhancing the health of the population.

Incidence (or incidence rate): The number of new cases that occur in the population at risk during a specific time period. (Incidence rate is the number of new cases divided by number of at risk individuals in the population, commonly during a one-year period and is typically expressed per 100,000 population.

Indicator: information based on measured data used to represent a particular attribute, characteristic, or property of a system.

Indirect costs of respiratory disease: there are two categories of indirect cost, related to lost economic production (defined as the value of economic output lost because of respiratory illness); and costs as associated with reduced quality and length of life.

Infectious diseases: any disease that can be transmitted from one person to another. This may occur by direct physical contact, by common handling of an object that has picked up infective organisms, through a disease carrier, or by spread of infected droplets coughed or exhaled into the air (definition taken from the glossary of the report entitled Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems, July 2008).

Interdisciplinary: involving two or more disciplines working towards a common purpose or goal.

Intersectoral collaboration: A recognized relationship between part or parts of different sectors of society which has been formed to take action on an issue to achieve health outcomes or immediate health outcomes in a way which is more effective, efficient or sustainable than might be achieved.
by the health sector acting alone (WHO Health Promotion Glossary).

**Morbidity:** Rate of occurrence of disease or other health disorder within a population, taking account of the age-specific morbidity rates. Health outcomes include chronic disease incidence/prevalence, rates of hospitalization, primary care consultations, disability-days (i.e. days when absent from work), and prevalence of symptoms (definition taken from the glossary of the report entitled *Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems, July 2008*).

**Mortality:** Rate of occurrence of death within a population within a specified time period; calculation of mortality takes account of age-specific death rates, and can thus yield measures of life expectancy and the extent of premature death (definition taken from the glossary of the report entitled *Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems, July 2008*).

**Oceania:** Oceania: islands in the Pacific, including Melanesia, Micronesia and Polynesia (incl. New Zealand) & sometimes, Australia & the Malay Archipelago.

**Pathogen:** an agent that causes disease, especially a living microorganism such as a bacterium or fungus. (dictionary.reference.com)

**Population health:** The overall health of the population, from incidence and prevalence of disease, the population’s ability to cope with the symptoms and impact of the disease and the quality of life of those suffering from disease.

**Prevalence (point prevalence):** The proportion of the population who report a behaviour or have a health problem at a particular time.

**Primary care:** The medical home for a patient, ideally providing continuity and integration of health care. All family physicians and most paediatricians and internists are in primary care. The aims of primary care are to provide the patient with a broad spectrum of care, both preventive and curative, over a period of time and to coordinate all of the care the patient receives (Medterms.com).

**Primary prevention:** To take steps to modify behaviours and prevent exposures that can lead to disease.

**Public health:** The science and art of promoting health, preventing disease, and prolonging life through the organized efforts of society (WHO Health Promotion Glossary).

**Quality adjusted life year (QALY):** A measure of the value of health. A year of life is adjusted for its quality or its value. A year in perfect health is considered equal to 1.0 QALY. The value of a year in ill health would be discounted.

**Quality of life:** the degree of well-being felt by an individual or group of people. This is not a tangible concept, and therefore cannot be measured directly. Quality of life consists of two components: 1) a physical aspect, which includes such things as health, diet, as well as protection against pain and disease, and 2) a psychological aspect, which includes such things as stress, worry, pleasure and other positive or negative emotional states.

**Risk factors / Population-based risk factors:** Something that increases a person’s chances of developing a disease

**Second-hand smoke:** What smokers exhale, and the smoke that rises from a burning cigarette.

**Secondary prevention:** Prevention that happens as a by-product of an activity but is not the sole purpose or primary intention of that activity.

**Self-management:** The ability to have control over some or all of one’s disease symptoms or effects.

**Social determinants of health:** Conditions in which she or he lives which strongly influence their health, contributing to inequities in health, explaining why people living in poverty die sooner and get sick more often than those living in more privileged conditions.

**Spirometry:** A test of lung function where the amount of air moved in one maximal breath is measured.

**Stakeholder:** a person or an organization that has a legitimate interest in a project or entity, or would be affected by a particular action or policy (definition
taken from the glossary of the report entitled
Analyses of the Effects of Global Change on Human

**Well-being:** a context- and situation-dependent
state, comprising basic material for a good life,
freedom and choice, health and bodily well-being,
good social relations, security, peace of mind, and
spiritual experience (definition taken from the
glossary of the report entitled Analyses of the Effects
of Global Change on Human Health and Welfare and

**Wellness:** The state of being healthy.
APPENDIX 6: THE FRAMEWORK TIMELINE

How did this process begin?

In March 2006, The Lung Association initiated a multi-stakeholder workshop (“Breathing Matters”) comprising government department and agencies, non-governmental organizations (NGOs), health institutions, the business community, First Nations, Inuit and Métis Peoples, as well as consumer and patient groups.

An Interim Steering Committee to guide the process

Workshop participants agreed that a collective effort to seek funding and collaborators for the development of a national action plan was needed. The Canadian Lung Association was chosen to lead this effort with the support of a multi-stakeholder Interim Steering Committee. This committee was given the mandate to clarify the necessary steps and funding to build a collective, national action plan over a two-year period.

Research on which to build a foundation

Based on the recommendations from “Breathing Matters”, the Interim Steering Committee identified a series of research and consultation initiatives to build the base of the action plan. They included:

• Four workshops (chronic disease, the environment, infectious disease and tobacco control) which produced draft reports identifying key issues and potential activities to be considered in the action plan (winter 2006);

• A preliminary asset map and gap analysis, to document current work on lung health (spring 2007);

• A preliminary cost-risk-benefit analysis to identify where investment can result in the highest return in health outcomes (fall 2007/ winter 2008).

Plan for Action: A Great Start!

April 2007 marked an important step in the Framework’s creation. Stakeholders participated in the “Plan for Action” working sessions, developing key strategies and associated activities to improve respiratory health for all people living in Canada.

Stakeholder Engagement

Through the fall 2007 and winter 2008, multi-stakeholder consultations were held in each province and territory, followed by a series of workshops (Aboriginal Issues; Health Promotion, Awareness and Disease Prevention; Disease Detection and Management; Infrastructure and Community/Systems Support; Research, Surveillance and Knowledge Translation; and Industry). Feedback was collected on an early draft of the Framework and we explored the priorities, successes and gaps of existing strategic initiatives at the provincial/territorial level.

Taking Action

This document provides a national vision for improving respiratory health in Canada, and identifies the broad strategies and activities that stakeholders across Canada tell us are required. An accompanying implementation plan, also built collectively with stakeholders, identifies how we will put the Framework into action – together.

The National Lung Health Framework remains a “living” process – committed to evolving and responding to changes in respiratory health. While the Vision, Mission, Guiding Principles and Goals provide a long-term strategic approach, the specific strategies and activities will progress over time to respond to new developments in technology, research and programming, epidemiology, and the needs of stakeholders to optimize lung health for all people living in Canada.
An important component of the Framework’s success will involve monitoring and evaluating the impact of the strategies and activities, collectively learning from our experiences, sharing and promoting this knowledge with all stakeholders, and then continually refining and improving the approach.

The Framework Timeline at a Glance
## APPENDIX 7: Stakeholders in the Framework's Development

### Interim Steering Committee Members 2008-2009

<table>
<thead>
<tr>
<th>COMMITTEE MEMBER</th>
<th>SELECTED AFFILIATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nora Sobolov (Chair)</td>
<td>• Canadian Lung Association</td>
</tr>
<tr>
<td>Dr. Gerard Cox Executive Committee</td>
<td>• Canadian Thoracic Society</td>
</tr>
<tr>
<td></td>
<td>• McMaster University, Division of Respirology</td>
</tr>
<tr>
<td></td>
<td>• St. Joseph’s Healthcare, Firestone Institute for Respiratory Health, Hamilton</td>
</tr>
<tr>
<td>Peter MacKenzie Executive Committee</td>
<td>• Lung Cancer Canada</td>
</tr>
<tr>
<td>Onalee Randell Executive Committee</td>
<td>• Inuit Tapiriit Kanatami</td>
</tr>
<tr>
<td>Heidi Liepold (Ex-Officio) Executive Committee</td>
<td>• Public Health Agency of Canada</td>
</tr>
<tr>
<td>Christine Abela</td>
<td>• Health Canada</td>
</tr>
<tr>
<td>Dr. Kim Barker</td>
<td>• Assembly of First Nations</td>
</tr>
<tr>
<td>Pat Camp</td>
<td>• ICEBERGS (Interdisciplinary Capacity Enhancement: Bridging Excellence in Respiratory disease and Gender Studies)</td>
</tr>
<tr>
<td></td>
<td>• James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research</td>
</tr>
<tr>
<td></td>
<td>• St. Paul’s Hospital, Vancouver</td>
</tr>
<tr>
<td></td>
<td>• BC COPD Service Framework Committee</td>
</tr>
<tr>
<td>Catherine Carry</td>
<td>• National Aboriginal Health Organization- Centre ajunnginiq</td>
</tr>
<tr>
<td>Dr. Andrew J. Cave</td>
<td>• University of Alberta</td>
</tr>
<tr>
<td></td>
<td>• CFPC Section of Researchers</td>
</tr>
<tr>
<td></td>
<td>• Family Physicians Airways Group of Canada</td>
</tr>
<tr>
<td></td>
<td>• Alberta Lung Association</td>
</tr>
<tr>
<td></td>
<td>• COPD and Asthma Network of Alberta</td>
</tr>
<tr>
<td>Cheryl Connors</td>
<td>• Canadian Network for Asthma Care</td>
</tr>
<tr>
<td>Dr. Sandra Delon</td>
<td>• Calgary Health Region, Chronic Disease Management Initiative</td>
</tr>
<tr>
<td></td>
<td>• University of Calgary, Faculty of Medicine</td>
</tr>
<tr>
<td>Name</td>
<td>Institutions/Positions</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Nancy Garvey</td>
<td>• Ontario Ministry of Health and Long-Term Care</td>
</tr>
<tr>
<td></td>
<td>• Canadian Respiratory Health Professionals</td>
</tr>
<tr>
<td></td>
<td>• Ontario Respiratory Care Society</td>
</tr>
<tr>
<td></td>
<td>• Canadian Society of Respiratory Therapists</td>
</tr>
<tr>
<td></td>
<td>• Respiratory Therapy Society of Ontario</td>
</tr>
<tr>
<td>Dr. Louise Giles</td>
<td>• University of Manitoba</td>
</tr>
<tr>
<td></td>
<td>• Biology of Breathing Research Theme, Manitoba Institute of Child Health</td>
</tr>
<tr>
<td></td>
<td>• Pediatric Respirology Program Director (RCPSC &amp; ABP)</td>
</tr>
<tr>
<td></td>
<td>• Royal College of Physicians &amp; Surgeons of Canada (RCPSC)</td>
</tr>
<tr>
<td></td>
<td>• American Board of Pediatrics (ABP)</td>
</tr>
<tr>
<td></td>
<td>• Canadian Society of Pediatric Respirologists</td>
</tr>
<tr>
<td></td>
<td>• American Academy of Pediatrics &amp; Canadian Pediatric Society</td>
</tr>
<tr>
<td></td>
<td>• Pediatric Technology Dependent (Home Ventilator) Clinic, Winnipeg, MB</td>
</tr>
<tr>
<td>Dr. Roger Goldstein</td>
<td>• University of Toronto, Faculty of Medicine</td>
</tr>
<tr>
<td></td>
<td>• West Park Healthcare</td>
</tr>
<tr>
<td></td>
<td>• Canadian COPD Alliance</td>
</tr>
<tr>
<td>Christine Hampson</td>
<td>• Asthma Society of Canada</td>
</tr>
<tr>
<td>Dr. Malcolm King</td>
<td>• Alberta ACADRE Network</td>
</tr>
<tr>
<td>Deirdre Laframboise</td>
<td>• Clean Air Champions</td>
</tr>
<tr>
<td></td>
<td>• Environment and Economy Round Table</td>
</tr>
<tr>
<td></td>
<td>• David Suzuki Foundation</td>
</tr>
<tr>
<td></td>
<td>• Green Communities &amp; Active and Safe Routes to School</td>
</tr>
<tr>
<td>Dr. Peter Liu</td>
<td>• Scientific Director, Institute of Circulatory and Respiratory Health (ICRH)</td>
</tr>
<tr>
<td></td>
<td>• Canadian Institutes for Health Research (CIHR)</td>
</tr>
<tr>
<td>Dr. Darcy Marciniuk</td>
<td>• Canadian Thoracic Society</td>
</tr>
<tr>
<td></td>
<td>• Head, Division of Respirology, Critical Care, and Sleep Medicine, University of Saskatchewan</td>
</tr>
<tr>
<td>Brenda Paine</td>
<td>• Health Canada – Tobacco Control Programme</td>
</tr>
<tr>
<td>Dr. Robert Schellenberg</td>
<td>• Canadian Society of Allergy and Clinical Immunology (CSACI)</td>
</tr>
<tr>
<td></td>
<td>• University of British Columbia, Department of Medicine</td>
</tr>
<tr>
<td></td>
<td>• Canadian Immunodeficiencies Patient Organization</td>
</tr>
<tr>
<td></td>
<td>• BC Lung Association</td>
</tr>
<tr>
<td></td>
<td>• SAC-RAC Health Canada</td>
</tr>
<tr>
<td></td>
<td>• Royal College Physicians &amp; Surgeons, Clinical Immunology</td>
</tr>
<tr>
<td>Dr. Wan C. Tan</td>
<td>• UBC iCapture Centre for CardioPulmonary Research</td>
</tr>
<tr>
<td>Lianne Vardy (Ex-Officio)</td>
<td>• Public Health Agency of Canada</td>
</tr>
<tr>
<td></td>
<td>• Public Health Network (PHN)</td>
</tr>
<tr>
<td></td>
<td>• World Health Organization - Global Alliance against Chronic Respiratory Disease (GARD)</td>
</tr>
<tr>
<td></td>
<td>• Canadian Strategy for Cancer Control (CSCC)</td>
</tr>
</tbody>
</table>
Dr. Eduardo Vides  •  NAHO-Métis Centre (Métis National Council)
Jackie Whitaker  •  COPD Canada
Cheryl Winger  •  Canadian Respiratory Health Professionals (CRHP)  
              •  Brandon Regional Health Authority (BRHA)  
              •  College of Registered Nurses Manitoba (CRNM)  
              •  Manitoba Association Health Care Professionals (MAHCP)
Wendy Zatynny  •  Rx & D, Canada’s Research-Based Pharmaceutical Companies

Past Interim Steering Committee Members

<table>
<thead>
<tr>
<th>COMMITTEE MEMBER</th>
<th>SELECTED AFFILIATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kim Bulger</td>
<td>• Métis National Council</td>
</tr>
<tr>
<td>Dr. Kenneth Chapman</td>
<td>• Canadian Network for Asthma Care</td>
</tr>
<tr>
<td>Neil Collishaw</td>
<td>• Physicians for a Smoke Free Canada</td>
</tr>
<tr>
<td>Wayne Courchene</td>
<td>• Assembly of First Nations</td>
</tr>
<tr>
<td>Patricia Hoes</td>
<td>• Health Canada – Safe Environments Programme</td>
</tr>
<tr>
<td>Sonia Isaac-Mann</td>
<td>• First Nations Centre at National Aboriginal Health Organization</td>
</tr>
<tr>
<td>Dr. Harold Kim</td>
<td>• Canadian Network for Asthma Care, University Health Network, Asthma and Airway Centre, Toronto Western Hospital</td>
</tr>
<tr>
<td>Dr. Oxana Latycheva</td>
<td>• Asthma Society of Canada</td>
</tr>
<tr>
<td>Robert Ryan</td>
<td>• National Aboriginal Health Organization</td>
</tr>
</tbody>
</table>

Participating Stakeholders

Breathing Matters Workshop Apr 2006

Dr. Nick Anthonisen  •  Canadian Thoracic Society
Michelle Bishop  •  Public Health Agency of Canada
Vicki Bryanston  •  Consultant, Organizational Planning and Special Projects Management
Chris Bonnett  •  H3 Consulting
Bill Chedore  •  Canadian Labour Congress
Neil Collishaw  •  Physicians for a Smoke Free Canada
Rosemary Colucci  •  GlaxoSmithKline
Cheryl Connors  •  Canadian Network for Asthma Care
Dr. Sandra Delon  •  Calgary Health Region
Havi Echenberg  •  Social Policy Shop
Demet Edeer  •  Interdisciplinary Capacity Enhancement: Bridging Excellence in Respiratory disease and Gender studies (ICEBERGS)
Dr. Gordon Ford  
Vincenza Galatone  
Nancy Garvey  
Jan Haffner  
Blair Hains  
Goldy Hyder  
Irene Klatt  
Ken Kyle  
Deirdre Laframboise  
John Lannom  
Dr. Peter Liu  
Peter MacKenzie  
Ken Maybee  
Douglas Maynard  
Michelle McLean  
Louise McRae  
Darrel Melvin  
Laura Meyers  
Carol Miller  
Bruce Moore  
Maureen Murphy  
Dr. Carolyn Ross  
Virginia Salares  
Linda Pearson  
Linda Pearson  
Michael Sharpe  
Paul Smetanin  
Debbie Smith  
Nora Sobolov  
Jennifer Spencer  
Paula Stewart  
Paul Thomey  
Cheryl Winger  
Wendy Zatylny  

**Chronic Disease Working Group**

Dr. Gerard Cox  
Nancy Garvey  
Donna Blackney  
Dr. Dina Brooks  
Vicki Bryanton  
Dr. Ilana Kogan Gombos  
Jan Haffner  
Dr. Paul Hernandez  
Dr. Rick Hodder  
Dr. Oxana Latycheva  
Douglas Maynard  
Dilshad Moosa  
Robert Ryan  
Mary-Pat Shaw  
Dr. Don Sin  
Dr. Paula Stewart  

Canadian Thoracic Society  
Environment Canada  
Ontario Ministry of Health and Long Term Care  
Lung Association of Saskatchewan  
AstraZeneca  
Hill & Knowlton  
Canadian Life and Health Insurance Association Inc  
Canadian Cancer Society  
Clean Air Champions  
Canadian Environmental Network  
Institute of Circulatory and Respiratory Health  
Lung Cancer Canada  
Lung Association of New Brunswick  
Canadian Society of Respiratory Therapists  
Canadian Cancer Society  
Public Health Agency of Canada  
David Thompson Health Region  
Canadian Dental Hygienists Association  
Canadian Physiotherapy Association  
Canadian Institutes of Health Research  
Canadian Public Health Association  
Canadian Lung Association Research Committee  
Canada Mortgage and Housing Cooperation  
Public Health Agency of Canada  
Public Health Agency of Canada  
Lung Association of Newfoundland & Labrador  
Canadian Respiratory Health Professionals  
Rx&D, Canada’s Research-Based Pharmaceutical Companies  
CO-CHAIR Canadian Thoracic Society  
Ontario Ministry of Health and Long-Term Care  
Saskatoon Health Region  
Canadian COPD Alliance  
Lung Association of Prince Edward Island  
Canadian Institutes of Health Research  
Lung Association of Saskatchewan  
Dalhousie University  
University of Ottawa  
Asthma Society of Canada  
Canadian Society of Respiratory Therapists  
Lung Association of Ontario  
National Aboriginal Health Organization  
Canadian Lung Association  
Canadian Research Chair in Chronic Obstructive Lung Disease  
Public Health Agency of Canada
Infectious Disease Working Group

Dr. Malcolm King CHAIR University of Alberta
Leonor Alvarado Canadian Lung Association
Dr. Monica Avendano West Park Healthcare Centre
Dr. Edward Ellis Public Health Agency of Canada
Dr. Anne Fanning University of Alberta
Dr. Dennis Furlong Lung Association of Newfoundland & Labrador
Richie Gage Lung Association of British Columbia
Dr. Ronald Grossman Credit Valley Hospital
Tony Hudson Lung Association of Alberta & NWT
Dr. Klaus Jochem Agence de la santé et des services sociaux de Montréal
Joy Letkemann Lung Association of Manitoba
Onalee Randell Inuit Tapiriit Kanatami
Robert Ryan National Aboriginal Health Organization
Dr. Terry-Nan Tannenbaum Montreal Health and Social Services Agency
Dr. Heather Ward University of Saskatchewan
Dr. Lori Whitehead Firestone Institute for Respiratory Health

Tobacco Control Working Group

Paul Thomey CHAIR Lung Association of Newfoundland & Labrador
Catherine Carry National Aboriginal Health Organization- Centre ajunnginiq
Neil Collishaw Physicians for a Smoke Free Canada
Dr. Charl Els University of Alberta
Dr. Alan Kaplan Family Physician Airways Group of Canada
Ken Kyle Canadian Cancer Society
Dr. Oxana Latycheva Asthma Society of Canada
Karen McLean Program Training and Consultation Centre
Brenda Paine Health Canada-Tobacco Control Programme
Ratsamy Pathammavong Lung Association of Ontario
Veda Peters Lung Association of British Columbia
Shirley Thompson Health Canada

Environment Working Group

Ken Maybee CHAIR Lung Association of New Brunswick
Dr. Menn Biagtan Lung Association of British Columbia
Jennifer Blomqvist National Aboriginal Health Organization
Bruce Dudley The Delphi Group
Paul Glover Health Canada
Dr. Paul Hasselback Interior Health – British Columbia
Dr. Susan Kennedy University of British Columbia
Dr. Tom Kosatsky Montreal Health and Social Services Agency
Dr. Tom Kovesi Children's Hospital of Eastern Ontario
Deirdre Laframboise Clean Air Champions
Dr. Tim Lambert Canadian Public Health Association
David MacIsaac Transportation Canada
Dr. Barb MacKinnon Lung Association of New Brunswick
Dr. Mark Raizenne Health Canada
Catherine Ray Natural Resources Canada
Dr. Virginia Salares Canadian Mortgage and Housing Corporation
Brian Stocks  
Kerri Timoffee  
Frank Viti  
Christopher Wilson  
Lung Association of Ontario  
Environment Canada  
Asthma Society of Canada  
Canadian Lung Association

2007 Plan for Action Workshop

Lorraine Adam  
Mary Allen  
Sandra Athron  
Monica Avendano  
Mary Basha  
Margaret Bernhardt-Lowden  
John Bertley  
Menn Biagton  
Angela Birch  
Jamie Blackport  
Donna Bleakney  
Jean Bourbeau  
Lucie Bourgouin  
Louis-Philippe Boulet  
Dennis Bowie  
Michael Braun  
Dan Brazeau  
Louis Brill  
Louis P. Brisson  
Dina Brooks  
Beverly Brown  
Vicki Bryanton  
Pat Camp  
Gary Chapple  
Sandy Chaytor  
Victor Chernick  
Neil Collishaw  
Brian Connick  
Cheryl Connors  
Wayne Courchene  
Bob Cowie  
Dr. Gerard Cox  
Priscilla Cranley  
Bernard D’Amour  
Anna Day  
Derek Davidson  
Sandra Delon  
Gregory Downey  
Nigel Duguid  
Claudette Dumont-Smith  
Frank Ervin  
Anne Fanning  
Kathy Ferguson  
Stephen Field  
John Fleetham  
Government of Manitoba, Manitoba Health and Healthy Living  
Allergy/Asthma Information Association  
Lung Association of New Brunswick  
West Park Healthcare Centre  
Lung Association of Newfoundland & Labrador  
Lung Association of Manitoba  
Canadian Thoracic Society  
Lung Association of British Columbia  
Government of Nova Scotia, Dept. of Environment and Labour  
AztraZeneca  
Saskatoon Health Region  
Montréal Chest Institute  
Association pulmonaire du Québec  
Laval University  
Dalhousie University  
Pfizer Canada Inc.  
Medigas  
Lung Association of Nova Scotia  
Association pulmonaire du Québec  
University of Toronto  
Medigas  
Consultant, Organizational Planning and Special Projects Management  
Interdisciplinary Capacity Enhancement: Bridging Excellence in Respiratory disease and Gender studies (ICEBERGS)  
Lung Association of British Columbia  
Canadian Lung Association  
University of Manitoba  
Physicians for a Smoke Free Canada  
Lung Association of Nova Scotia  
Canadian Network for Asthma Care  
Assembly of First Nations  
Canadian Network for Asthma Care  
Canadian Thoracic Society  
Clean Air Partnership  
Canadian Urban Transit Association  
University of Toronto  
Boehringer Ingelheim  
Calgary Health Region  
National Jewish Medical and Research Center  
Newfoundland & Labrador Eastern Health  
Native Women's Association of Canada  
Fraser Health Authority  
University of Alberta  
University of Western Ontario  
University of Calgary  
Vancouver Coastal Health
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization/Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>George Fox</td>
<td>Memorial University</td>
</tr>
<tr>
<td>Nicole Frappier</td>
<td>Ottawa Public Health</td>
</tr>
<tr>
<td>Todd Fraser</td>
<td>Government of Prince Edward Island, Dept. of Environment</td>
</tr>
<tr>
<td>Richie Gage</td>
<td>Lung Association of British Columbia</td>
</tr>
<tr>
<td>Nancy Garvey</td>
<td>Ontario Ministry of Health and Long-Term Care</td>
</tr>
<tr>
<td>Sheila Gaudet</td>
<td>Lung Association of Prince Edward Island</td>
</tr>
<tr>
<td>Nancy Gibson</td>
<td>Medigas</td>
</tr>
<tr>
<td>Louise Giles</td>
<td>University of Manitoba</td>
</tr>
<tr>
<td>Paul Glover</td>
<td>Health Canada</td>
</tr>
<tr>
<td>Roger Goldstein</td>
<td>West Park Healthcare Centre</td>
</tr>
<tr>
<td>Ilana Gombos</td>
<td>Canadian Institutes of Health Research</td>
</tr>
<tr>
<td>Brian Graham</td>
<td>Lung Association of Saskatchewan</td>
</tr>
<tr>
<td>Helen Griffiths</td>
<td>Radiation Protection Bureau</td>
</tr>
<tr>
<td>Leslie Greenberg</td>
<td>GlaxoSmithKline</td>
</tr>
<tr>
<td>Eileen Gresl</td>
<td>COPD &amp; Asthma Network of Alberta</td>
</tr>
<tr>
<td>Dennis Gurwitz</td>
<td>Hospital for Sick Children</td>
</tr>
<tr>
<td>Jan Haffner</td>
<td>Lung Association of Saskatchewan</td>
</tr>
<tr>
<td>Patrick Hanly</td>
<td>University of Calgary</td>
</tr>
<tr>
<td>Howard Harkness</td>
<td>Trudell Medical International</td>
</tr>
<tr>
<td>Jean Harvey</td>
<td>Chronic Disease Prevention Alliance of Canada</td>
</tr>
<tr>
<td>Paul Hasselback</td>
<td>Interior Health Authority</td>
</tr>
<tr>
<td>Susan Hassan</td>
<td>Medigas</td>
</tr>
<tr>
<td>Frank Hechter</td>
<td>Lung Association of Manitoba</td>
</tr>
<tr>
<td>Rick Hodder</td>
<td>University of Ottawa</td>
</tr>
<tr>
<td>Patricia Hoes</td>
<td>Health Canada</td>
</tr>
<tr>
<td>Donna Hogg</td>
<td>Canadian Network for Asthma Care</td>
</tr>
<tr>
<td>Kristine Houde</td>
<td>Canadian Physiotherapy Association</td>
</tr>
<tr>
<td>Tony Hudson</td>
<td>Lung Association of Alberta &amp; NWT</td>
</tr>
<tr>
<td>Gina Ibach</td>
<td>Lung Association of Alberta &amp; NWT</td>
</tr>
<tr>
<td>Sonia Isaac-Mann</td>
<td>National Aboriginal Health Organization</td>
</tr>
<tr>
<td>Klaus Jochem</td>
<td>Agence de la santé et des services sociaux de Montréal</td>
</tr>
<tr>
<td>Alan Kaplan</td>
<td>Family Physician Airways Group of Canada</td>
</tr>
<tr>
<td>Bob Kelly</td>
<td>Lung Association of Ontario</td>
</tr>
<tr>
<td>Cheryle Kelm</td>
<td>Dalhousie University</td>
</tr>
<tr>
<td>Malcolm King</td>
<td>Alberta ACADRE Network</td>
</tr>
<tr>
<td>Thomas Kovesi</td>
<td>University of Alberta</td>
</tr>
<tr>
<td>Ken Kyle</td>
<td>Children’s Hospital of Eastern Ontario</td>
</tr>
<tr>
<td>Deirdre Laframboise</td>
<td>Canadian Cancer Society</td>
</tr>
<tr>
<td>Tim Lambert</td>
<td>Clean Air Champions</td>
</tr>
<tr>
<td>Oxana Latycheva</td>
<td>Canadian Public Health Association</td>
</tr>
<tr>
<td>Joy Letkemann</td>
<td>Asthma Society of Canada</td>
</tr>
<tr>
<td>Robert Levy</td>
<td>Canadian Thoracic Society</td>
</tr>
<tr>
<td>Sarah MacKeigan</td>
<td>Government of Nova Scotia, Dept. of Health</td>
</tr>
<tr>
<td>Peter MacKenzie</td>
<td>Lung Cancer Canada</td>
</tr>
<tr>
<td>Barbara MacKinnon</td>
<td>Lung Association of New Brunswick</td>
</tr>
<tr>
<td>Carole Madeley</td>
<td>Lung Association of Ontario</td>
</tr>
<tr>
<td>Darcy Marciniuk</td>
<td>Canadian Thoracic Society</td>
</tr>
<tr>
<td>Nicole Massicotte</td>
<td>Alpha-1 Antitrypsin Deficiency Canada Inc.</td>
</tr>
<tr>
<td>Ken Maybee</td>
<td>Lung Association of New Brunswick</td>
</tr>
<tr>
<td>Irvin Mayers</td>
<td>Canadian Thoracic Society</td>
</tr>
<tr>
<td>Scott McDonald</td>
<td>Lung Association of British Columbia</td>
</tr>
<tr>
<td>Rob McFadden</td>
<td>University of Western Ontario</td>
</tr>
<tr>
<td>Andrew McIvor</td>
<td>McMaster University</td>
</tr>
<tr>
<td>Name</td>
<td>Organization</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Karen McLean</td>
<td>Program Training and Consultation Centre</td>
</tr>
<tr>
<td>John McNeil</td>
<td>Canadian Lung Association</td>
</tr>
<tr>
<td>Christopher Mody</td>
<td>University of Calgary</td>
</tr>
<tr>
<td>Dilshad Moosa</td>
<td>Lung Association of Ontario</td>
</tr>
<tr>
<td>Debra Morrison</td>
<td>Queen Elizabeth II Health Sciences Centre – Dalhousie University</td>
</tr>
<tr>
<td>Carmelle Mulaire</td>
<td>St. Boniface University</td>
</tr>
<tr>
<td>Keith Murray</td>
<td>Harris &amp; Company</td>
</tr>
<tr>
<td>Laura Nicholson</td>
<td>Lung Association of Prince Edward Island</td>
</tr>
<tr>
<td>Heather Nicolson-Morrison</td>
<td>Ontario Home Respiratory Services Association</td>
</tr>
<tr>
<td>Mary Noseworthy</td>
<td>Newfoundland &amp; Labrador Eastern Health</td>
</tr>
<tr>
<td>Eddie Oldfield</td>
<td>Lung Association of New Brunswick</td>
</tr>
<tr>
<td>Paul Ostrowski</td>
<td>VitalAire</td>
</tr>
<tr>
<td>Brenda Paine</td>
<td>Health Canada – Tobacco Control Programme</td>
</tr>
<tr>
<td>Ratsamy Pathammavong</td>
<td>Lung Association of Ontario</td>
</tr>
<tr>
<td>Ann Pederson</td>
<td>British Columbia Centre of Excellence for Women’s Health</td>
</tr>
<tr>
<td>Veda Peters</td>
<td>Lung Association of British Columbia</td>
</tr>
<tr>
<td>Dallas Petroff</td>
<td>Lung Cancer Canada</td>
</tr>
<tr>
<td>Chad Pilon</td>
<td>Healthy Lung Consulting</td>
</tr>
<tr>
<td>Michael Pohanka</td>
<td>Professional Respiratory Home Care</td>
</tr>
<tr>
<td>Mark Raizenne</td>
<td>Health Canada, Office of Sustainable Development</td>
</tr>
<tr>
<td>Helen Ramsdale</td>
<td>McMaster University</td>
</tr>
<tr>
<td>Onalee Randell</td>
<td>Inuit Tapiritt Kanatami</td>
</tr>
<tr>
<td>Heidi Rathjen</td>
<td>Coalition québécoise pour le contrôle du tabac</td>
</tr>
<tr>
<td>Marilyn Reddy</td>
<td>Lung Association of Saskatchewan</td>
</tr>
<tr>
<td>Karen Rimmer</td>
<td>Calgary Health Region</td>
</tr>
<tr>
<td>Carolyn Ross</td>
<td>Canadian Respiratory Health Professionals</td>
</tr>
<tr>
<td>Cheryl Rothenburg</td>
<td>Lung Association of Nova Scotia</td>
</tr>
<tr>
<td>Michel Y Rouleau</td>
<td>Canadian Thoracic Society</td>
</tr>
<tr>
<td>Ursula Rudden</td>
<td>Pauktuuit Inuit Women of Canada</td>
</tr>
<tr>
<td>Robert Ryan</td>
<td>National Aboriginal Health Organization</td>
</tr>
<tr>
<td>Stephen Samis</td>
<td>Heart and Stroke Foundation of Canada</td>
</tr>
<tr>
<td>Bertha Schofield</td>
<td>Canadian Respiratory Health Professionals</td>
</tr>
<tr>
<td>Derek Scholten</td>
<td>Public Health Agency of Canada</td>
</tr>
<tr>
<td>Frank Scott</td>
<td>Lung Association of Saskatchewan</td>
</tr>
<tr>
<td>Cindy Shcherban</td>
<td>Lung Association of Ontario</td>
</tr>
<tr>
<td>Richard Shuhany</td>
<td>Lung Association of Alberta &amp; NWT</td>
</tr>
<tr>
<td>Sandra Small</td>
<td>Memorial University, School of Nursing</td>
</tr>
<tr>
<td>Brian Stocks</td>
<td>Lung Association of Ontario</td>
</tr>
<tr>
<td>Lloyd Sutherland</td>
<td>Canadian Lung Association</td>
</tr>
<tr>
<td>Kerri Timofee</td>
<td>Environment Canada</td>
</tr>
<tr>
<td>Paul Thomey</td>
<td>Lung Association of Newfoundland &amp; Labrador</td>
</tr>
<tr>
<td>Lianne Vardy</td>
<td>Public Health Agency of Canada</td>
</tr>
<tr>
<td>Peter Vavougios</td>
<td>St. Mary’s Hospital</td>
</tr>
<tr>
<td>Jane Wallingford</td>
<td>Lung Association of Ontario</td>
</tr>
<tr>
<td>Dr. Shannon Walker</td>
<td>Penticton Regional Hospital</td>
</tr>
<tr>
<td>Peter Warren</td>
<td>Lung Association of Manitoba</td>
</tr>
<tr>
<td>Susan Waserman</td>
<td>McMaster University</td>
</tr>
<tr>
<td>Karen Weir</td>
<td>Canadian Pharmacists Association</td>
</tr>
<tr>
<td>Lori Whitehead</td>
<td>McMaster University</td>
</tr>
<tr>
<td>Andrea White Markham</td>
<td>Canadian Respiratory Health Professionals</td>
</tr>
<tr>
<td>Lindsay Williams</td>
<td>ALTANA Pharma</td>
</tr>
<tr>
<td>Cheryl Winger</td>
<td>Canadian Respiratory Health Professionals</td>
</tr>
<tr>
<td>Laurie Woodland</td>
<td>Government of British Columbia, Healthy Living/Chronic Disease Prevention</td>
</tr>
</tbody>
</table>
Provincial/Territorial Workshop Participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution/Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ram Abdulla</td>
<td>Regina General Hospital</td>
</tr>
<tr>
<td>Kelly Ablog-Morrant</td>
<td>Lung Association of British Columbia</td>
</tr>
<tr>
<td>Daniel Adam</td>
<td>Corporation d’urgence santé</td>
</tr>
<tr>
<td>Carole Albert</td>
<td>Table québécoise sur l’herbe à poux</td>
</tr>
<tr>
<td>Kristin Anderson</td>
<td>Government of Manitoba, Manitoba Health and Healthy Living</td>
</tr>
<tr>
<td>Susan Andrews</td>
<td>Island Respiratory Specialists</td>
</tr>
<tr>
<td>Scott Antle</td>
<td>Canadian Cancer Society</td>
</tr>
<tr>
<td>David Arbeau</td>
<td>River Valley Health</td>
</tr>
<tr>
<td>Sylvie Arseneau</td>
<td>River Valley Health</td>
</tr>
<tr>
<td>Monique Assi</td>
<td>Calgary Regional Health Authority</td>
</tr>
<tr>
<td>Bruno Assiwi</td>
<td>Centre Hospitalier de L’Université de Montréal</td>
</tr>
<tr>
<td>Mike Atkinson</td>
<td>Government of Nunavut, Dept. of Environment</td>
</tr>
<tr>
<td>Francine Auger</td>
<td>Sherbrooke University</td>
</tr>
<tr>
<td>Dr. Harris-Eze Ayodeji</td>
<td>Queen Elizabeth Hospital</td>
</tr>
<tr>
<td>Ginette Ayotte</td>
<td>Groupe d’entraide St-Boniface de Shawinigan</td>
</tr>
<tr>
<td>Dr. Tony Bai</td>
<td>Pacific Lung Health Centre</td>
</tr>
<tr>
<td>Wendy Banks</td>
<td>York Manor Nursing Home</td>
</tr>
<tr>
<td>Mary Basha</td>
<td>Lung Association of Newfoundland &amp; Labrador</td>
</tr>
<tr>
<td>Lillian Bayne</td>
<td>LB &amp; Associates</td>
</tr>
<tr>
<td>Dr. Dean Befus</td>
<td>University of Alberta</td>
</tr>
<tr>
<td>Danielle Beaucage</td>
<td>Association pulmonaire du Québec</td>
</tr>
<tr>
<td>Charles Bellavance</td>
<td>Centre Hospitalier de L’Université de Montréal</td>
</tr>
<tr>
<td>Margaret Bernhardt-Lowden</td>
<td>Lung Association of Manitoba</td>
</tr>
<tr>
<td>Dr. Yves Berthiaume</td>
<td>Centre Hospitalier de L’Université de Montréal</td>
</tr>
<tr>
<td>Dr. Denis Bérubé</td>
<td>Hôpital Sainte-Justine</td>
</tr>
<tr>
<td>Dr. Drew Bethune</td>
<td>Queen Elizabeth II Health Sciences Centre –Dalhousie University</td>
</tr>
<tr>
<td>David Bezak</td>
<td>Government of Manitoba, Dept. of Conservation and Natural Resources</td>
</tr>
<tr>
<td>Dr. Menn Biagatan</td>
<td>Lung Association of British Columbia</td>
</tr>
<tr>
<td>Kendra Biggar</td>
<td>Prince County Hospital</td>
</tr>
<tr>
<td>Angela D. Birch</td>
<td>Government of Nova Scotia, Dept. of Environment and Labour</td>
</tr>
<tr>
<td>Donna Bleakney</td>
<td>Saskatoon Regional Health</td>
</tr>
<tr>
<td>Robert Boileau</td>
<td>Association des pneumologues de la province de Québec</td>
</tr>
<tr>
<td>Dr. Dennis Bowie</td>
<td>Dalhousie University</td>
</tr>
<tr>
<td>Dr. Louis-Philippe Boulet</td>
<td>Hôpital Laval</td>
</tr>
<tr>
<td>Dr. Jean Bourbeau</td>
<td>Montréal Chest Institute</td>
</tr>
<tr>
<td>Lucie Bourgouin</td>
<td>Association pulmonaire du Québec</td>
</tr>
<tr>
<td>Rosemary Boyle</td>
<td>Canadian Cancer Society</td>
</tr>
<tr>
<td>Deborah Bradley</td>
<td>Government of Prince Edward Island, Dept. of Health</td>
</tr>
<tr>
<td>Joe Bradley</td>
<td>Government of Prince Edward Island, Dept. of Health and Social Services</td>
</tr>
<tr>
<td>Nancy Bradshaw</td>
<td>Women’s College Hospital-Environmental Health Clinic</td>
</tr>
<tr>
<td>Dr. Paul Brassard</td>
<td>Hôpital Royal-Victoria</td>
</tr>
<tr>
<td>Louis Brill</td>
<td>Lung Association of Nova Scotia</td>
</tr>
<tr>
<td>Louis P. Brisson</td>
<td>Association pulmonaire du Québec</td>
</tr>
<tr>
<td>Dina Brooks</td>
<td>University of Toronto</td>
</tr>
<tr>
<td>Rachel Byers</td>
<td>Little Salmon/Carmacks First Nation</td>
</tr>
<tr>
<td>Mary-Jane Buchanan</td>
<td>Public Health Agency of Canada</td>
</tr>
<tr>
<td>Dr. Michel Bureau</td>
<td>Ministère de la santé et des services Sociaux</td>
</tr>
</tbody>
</table>

Ted Yachemetz                | University of Manitoba                                    |
<p>| Sherry Zarins               | AztraZeneca                                                |
| Wendy Zatylny               | Rx&amp;D, Canada’s Research-Based Pharmaceutical Companies    |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jennifer Burrage</td>
<td>Lung Association of Newfoundland &amp; Labrador</td>
</tr>
<tr>
<td>Pat Camp</td>
<td>Pacific Lung Health Centre</td>
</tr>
<tr>
<td>Shelly Canitz</td>
<td>British Columbia Ministry of Health</td>
</tr>
<tr>
<td>Angela Carragher</td>
<td>Prince County Hospital</td>
</tr>
<tr>
<td>Pierre Carrier</td>
<td>Le Réseau québécois de l’asthme et de la MPOC (RQAM)</td>
</tr>
<tr>
<td>Linda Carter</td>
<td>Government of Newfoundland and Labrador, Dept. of Health and Community Services</td>
</tr>
<tr>
<td>Cheryl Case</td>
<td>Government of NWT, Office of the Chief Medical Officer</td>
</tr>
<tr>
<td>Geri Cashin</td>
<td>Memorial University-Centre for Nursing Studies</td>
</tr>
<tr>
<td>Kirstin Castator</td>
<td>Nunavut Arctic College, School of Nursing</td>
</tr>
<tr>
<td>Marlene Chapellaz</td>
<td>Government of Saskatchewan, Dept. of Health</td>
</tr>
<tr>
<td>Gary Chapple</td>
<td>Lung Association of British Columbia</td>
</tr>
<tr>
<td>Lisa Clatney</td>
<td>Health Quality Council</td>
</tr>
<tr>
<td>Dr. Eilish Cleary</td>
<td>Government of New Brunswick, Deputy Chief Officer of Health</td>
</tr>
<tr>
<td>Kevin Coady</td>
<td>Alliance for the Control of Tobacco</td>
</tr>
<tr>
<td>Janette Conklin</td>
<td>Queen Elizabeth Hospital</td>
</tr>
<tr>
<td>Brian Connick</td>
<td>Lung Association of Nova Scotia</td>
</tr>
<tr>
<td>Dr. Andre Corriveau</td>
<td>Government of NWT, Chief Medical Health Officer</td>
</tr>
<tr>
<td>Ken Costello</td>
<td>VitalAire Healthcare</td>
</tr>
<tr>
<td>Helen Cotton</td>
<td>Lung Association of Saskatchewan</td>
</tr>
<tr>
<td>Wayne Courchene</td>
<td>Assembly of First Nations</td>
</tr>
<tr>
<td>Yves Couturier</td>
<td>Association pulmonaire du Québec</td>
</tr>
<tr>
<td>Terry Creagh</td>
<td>Government of Nunavut, Dept. of Health and Social Services</td>
</tr>
<tr>
<td>Lyna Cyr</td>
<td>La Fondation Lyna Cyr</td>
</tr>
<tr>
<td>Judy Davis</td>
<td>Association of Registered Nurses of Newfoundland and Labrador (ARNNL)</td>
</tr>
<tr>
<td>Karen Davis</td>
<td>University of Toronto</td>
</tr>
<tr>
<td>Liz Dawe</td>
<td>Qikiqtani General Hospital</td>
</tr>
<tr>
<td>Richard Debigné</td>
<td>Hôpital Laval</td>
</tr>
<tr>
<td>Ghislaine De Ladurantaye</td>
<td>Groupe d’entraîne Longueuil</td>
</tr>
<tr>
<td>Éric Dionne</td>
<td>Health Canada -Tobacco Control Programme</td>
</tr>
<tr>
<td>Carol Donaldson</td>
<td>Nova Scotia College of Respiratory Therapy</td>
</tr>
<tr>
<td>Jo-Anne Douglas</td>
<td>Lung Association of Manitoba</td>
</tr>
<tr>
<td>Bernard Drainville</td>
<td>Hôtel du Parlement</td>
</tr>
<tr>
<td>Louis Drouin</td>
<td>Direction de la santé publique de Montréal-Centre</td>
</tr>
<tr>
<td>Hélène Dubois</td>
<td>Groupe d’entraîne Laval</td>
</tr>
<tr>
<td>Dr. Nigel Duguid</td>
<td>Newfoundland &amp; Labrador Eastern Health</td>
</tr>
<tr>
<td>Lori Duncan</td>
<td>Council of Yukon First Nations</td>
</tr>
<tr>
<td>Dr. Gordon Dyck</td>
<td>Clearsprings Medical Clinic</td>
</tr>
<tr>
<td>Lynn Edwards</td>
<td>Government of Nova Scotia, Dept. of Health</td>
</tr>
<tr>
<td>Dr. Charl Els</td>
<td>University of Alberta</td>
</tr>
<tr>
<td>Dr. Frank Ervin</td>
<td>Fraser Health Authority</td>
</tr>
<tr>
<td>Jennifer Ferguson</td>
<td>Lung Association of Manitoba</td>
</tr>
<tr>
<td>Roberta Ferrance</td>
<td>Ontario Tobacco Research Unit</td>
</tr>
<tr>
<td>Johanne Fillion</td>
<td>Ordre des inhalothérapeutes du Québec</td>
</tr>
<tr>
<td>David Fitzgerald</td>
<td>Capital Health Region</td>
</tr>
<tr>
<td>Dr. Mark Fitzgerald</td>
<td>The Lung Centre</td>
</tr>
<tr>
<td>François Fleury</td>
<td>Conseil pour la protection des malades</td>
</tr>
<tr>
<td>Marino Francispillai</td>
<td>Alberta Cancer Board</td>
</tr>
<tr>
<td>Todd Fraser</td>
<td>Government of Prince Edward Island, Dept. of Technology and Environment</td>
</tr>
<tr>
<td>Long Fu</td>
<td>Government of Alberta, Dept. of Environment</td>
</tr>
<tr>
<td>Angela Fulton</td>
<td>David Thompson Health Region</td>
</tr>
<tr>
<td>Jean-Nicolas Gagné</td>
<td>National Assembly of Québec</td>
</tr>
<tr>
<td>Name</td>
<td>Organization</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>Louis Garon</td>
<td>Coalition québécoise pour le contrôle du tabac</td>
</tr>
<tr>
<td>Darlene Gartner</td>
<td>Alberta Alcohol and Drug Abuse Commission</td>
</tr>
<tr>
<td>Nancy Garvey</td>
<td>Ontario Ministry of Health and Long-Term Care</td>
</tr>
<tr>
<td>Dr. David Gass</td>
<td>Dalhousie University</td>
</tr>
<tr>
<td>Steve Gaspar</td>
<td>Alberta Cancer Board</td>
</tr>
<tr>
<td>Sheila Gaudet</td>
<td>Lung Association of Prince Edward Island</td>
</tr>
<tr>
<td>Dr. Richard Gauthier</td>
<td>Service régional de soins à domicile pour malades</td>
</tr>
<tr>
<td>Louis Gauvin</td>
<td>Coalition québécoise pour le contrôle du tabac</td>
</tr>
<tr>
<td>Dr. Louise Giles</td>
<td>University of Manitoba</td>
</tr>
<tr>
<td>Cathy Gillespie</td>
<td>Children’s Asthma Education Centre</td>
</tr>
<tr>
<td>Hedy Ginzberg</td>
<td>Lung Association of Ontario</td>
</tr>
<tr>
<td>Dr. Louis Godin</td>
<td>Quebec Federation of General Practitioners</td>
</tr>
<tr>
<td>Chris Gogan</td>
<td>GlaxoSmithKline</td>
</tr>
<tr>
<td>Michel Goulet</td>
<td>Ministère du développement durable</td>
</tr>
<tr>
<td>Brian Graham</td>
<td>Lung Association of Saskatchewan</td>
</tr>
<tr>
<td>Leslie Grant</td>
<td>Carcross/Tagish First Nation</td>
</tr>
<tr>
<td>Chris Gray</td>
<td>Government of Saskatchewan, Dept. of Environment</td>
</tr>
<tr>
<td>Martha Greechan</td>
<td>IWK Health Centre</td>
</tr>
<tr>
<td>Gogi Greeley</td>
<td>Government of Nunavut, Dept. of Health and Social Services</td>
</tr>
<tr>
<td>Libby Groff</td>
<td>Women's College Hospital</td>
</tr>
<tr>
<td>George Habib</td>
<td>Lung Association of Ontario</td>
</tr>
<tr>
<td>Jan Haffner</td>
<td>Lung Association of Saskatchewan</td>
</tr>
<tr>
<td>Les Hagen</td>
<td>Action on Smoking and Health</td>
</tr>
<tr>
<td>Dr. Andrew Halayko</td>
<td>University of Manitoba</td>
</tr>
<tr>
<td>Heather Halldorson</td>
<td>Cumberland Medical Clinic</td>
</tr>
<tr>
<td>Harold Hammond</td>
<td>Lung Savers</td>
</tr>
<tr>
<td>Christine Hampson</td>
<td>Asthma Society of Canada</td>
</tr>
<tr>
<td>Brendan Hanley</td>
<td>Government of Yukon, Chief Medical Officer</td>
</tr>
<tr>
<td>Judy Hansen</td>
<td>Queen Elizabeth Hospital</td>
</tr>
<tr>
<td>Michele Harding</td>
<td>Smoke Free Ontario Strategy</td>
</tr>
<tr>
<td>Cheryl Harrison</td>
<td>Regional Health Authority Central Manitoba</td>
</tr>
<tr>
<td>Susan Haskell</td>
<td>Newfoundland &amp; Labrador Eastern Health</td>
</tr>
<tr>
<td>Kathy Hayward</td>
<td>Canada Safeway Pharmacies</td>
</tr>
<tr>
<td>Gwen Healey</td>
<td>Arctic Health Research Network</td>
</tr>
<tr>
<td>Dr. Frank Heether</td>
<td>The Sanatorium Board of Manitoba</td>
</tr>
<tr>
<td>Amy Henderson</td>
<td>Memorial University</td>
</tr>
<tr>
<td>Betty Ho</td>
<td>McMaster University</td>
</tr>
<tr>
<td>Dr. Vernon Hoeppner</td>
<td>University of Saskatchewan</td>
</tr>
<tr>
<td>Tony Hudson</td>
<td>Lung Association of Alberta &amp; NWT</td>
</tr>
<tr>
<td>Kristine Hutchinson</td>
<td>Government of Nunavut, Dept. of Health and Social Services</td>
</tr>
<tr>
<td>Ron Humble</td>
<td>Government of Manitoba, Dept. of Science, Technology, Energy and Mines</td>
</tr>
<tr>
<td>Barb Hume</td>
<td>Champagne/Aishihik First Nation</td>
</tr>
<tr>
<td>Dr. Barry Hunt</td>
<td>Parkdale Medical Centre</td>
</tr>
<tr>
<td>Fran Hydman</td>
<td>Métis Nation of Alberta</td>
</tr>
<tr>
<td>Larry Jackson</td>
<td>Sunnybrook Health Sciences Centre</td>
</tr>
<tr>
<td>John Jaques</td>
<td>JDJ Consulting Saskatchewan</td>
</tr>
<tr>
<td>Jackie Johnny</td>
<td>White River First Nation</td>
</tr>
<tr>
<td>Neil Johnston</td>
<td>Winnipeg Regional Health Authority</td>
</tr>
<tr>
<td>Judy King</td>
<td>University of Ottawa</td>
</tr>
<tr>
<td>Dr. Malcolm King</td>
<td>Alberta ACADRE Network</td>
</tr>
<tr>
<td>Steven King</td>
<td>AstraZeneca</td>
</tr>
<tr>
<td>Shona Kinley</td>
<td>Rx&amp;D, Canada’s Research-Based Pharmaceutical Companies</td>
</tr>
<tr>
<td>Luanne Kinsella</td>
<td>Newfoundland &amp; Labrador Eastern Health</td>
</tr>
<tr>
<td>Dr. Jill Konkin</td>
<td>University of Alberta</td>
</tr>
<tr>
<td>Name</td>
<td>Affiliation</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Ainiak Korgak</td>
<td>Government of Nunavut</td>
</tr>
<tr>
<td>Sandy Kostyniuk</td>
<td>Public Health Agency of Canada</td>
</tr>
<tr>
<td>Kathy Kowalski</td>
<td>River Valley Health</td>
</tr>
<tr>
<td>Dr. Allan Kraut</td>
<td>University of Manitoba</td>
</tr>
<tr>
<td>Dr. Manon Labrecque</td>
<td>Hôpital Sacré-Cœur de Montréal</td>
</tr>
<tr>
<td>Dr. Paige Lacy</td>
<td>University of Alberta</td>
</tr>
<tr>
<td>Dr. Tim Lambert</td>
<td>Calgary Regional Health Authority</td>
</tr>
<tr>
<td>Marion Laroque</td>
<td>Lung Association of Saskatchewan</td>
</tr>
<tr>
<td>Nicole Lauzier</td>
<td>Association pulmonaire du Québec</td>
</tr>
<tr>
<td>Michel Lebel</td>
<td>Montréal Chest Institute</td>
</tr>
<tr>
<td>Serge Leblanc</td>
<td>Centre Hospitalier de l'Université de Montréal</td>
</tr>
<tr>
<td>Pierre Lecomte</td>
<td>Aboriginal Health Transition Fund</td>
</tr>
<tr>
<td>Pierre Leduc</td>
<td>Groupe d'entraide et aidant naturel Valleyfield</td>
</tr>
<tr>
<td>Fat Lee</td>
<td>Pictou County District Health Authority</td>
</tr>
<tr>
<td>Niki Legge</td>
<td>Lung Association of Newfoundland &amp; Labrador</td>
</tr>
<tr>
<td>Dr. Richard Leigh</td>
<td>University of Calgary</td>
</tr>
<tr>
<td>Dr. Jacques Le Lorier</td>
<td>Hôtel-Dieu de Montréal - Centre de recherche</td>
</tr>
<tr>
<td>Dr. Catherine Lemière</td>
<td>Hôpital du Sacré-Cœur de Montréal</td>
</tr>
<tr>
<td>Joy Letkemann</td>
<td>Lung Association of Manitoba</td>
</tr>
<tr>
<td>Alice Leverman</td>
<td>South Shore District Health Authority</td>
</tr>
<tr>
<td>Dr. Bob Levy</td>
<td>Pacific Lung Health Centre</td>
</tr>
<tr>
<td>Deborah Leishman</td>
<td>Stanton Hospital</td>
</tr>
<tr>
<td>Heidi Liepold</td>
<td>Public Health Agency of Canada</td>
</tr>
<tr>
<td>Dr. Trent Litzenberger</td>
<td>Saskatoon Health Region</td>
</tr>
<tr>
<td>Dr. Peter Liu</td>
<td>Institute of Circulatory and Respiratory Health</td>
</tr>
<tr>
<td>Betty Locke</td>
<td>New Brunswick Pulmonary Hypertension Society</td>
</tr>
<tr>
<td>Rob Loney</td>
<td>Pfizer Canada Inc.</td>
</tr>
<tr>
<td>Neyda Long</td>
<td>Lung Association of New Brunswick</td>
</tr>
<tr>
<td>Dr. Richard Long</td>
<td>University of Alberta</td>
</tr>
<tr>
<td>Andrew Lougheed</td>
<td>Government of Manitoba, Dept. of Health</td>
</tr>
<tr>
<td>Sue Lysachuk</td>
<td>Alberta Alcohol and Drug Abuse Commission (AADAC)</td>
</tr>
<tr>
<td>David MacGillivray</td>
<td>AstraZeneca</td>
</tr>
<tr>
<td>Steve Machat</td>
<td>Government of Nova Scotia</td>
</tr>
<tr>
<td>Sharon MacIntosh</td>
<td>Smoke Free Nova Scotia</td>
</tr>
<tr>
<td>Bill MacKeen</td>
<td>Respiratory Cardiac Investigation/Rehab Services</td>
</tr>
<tr>
<td>Alex Mackenzie</td>
<td>Alberta Health and Wellness</td>
</tr>
<tr>
<td>Barbara MacKinnon</td>
<td>Lung Association of New Brunswick</td>
</tr>
<tr>
<td>Doug MacLean</td>
<td>Yukon Lung Association</td>
</tr>
<tr>
<td>Marlene MacLennan</td>
<td>Lennox Island Health Centre</td>
</tr>
<tr>
<td>Carole Madeley</td>
<td>Lung Association of Ontario</td>
</tr>
<tr>
<td>Kathy Mahar</td>
<td>Prince Edward Island Medical Society</td>
</tr>
<tr>
<td>Martine Maillé</td>
<td>Ordre des Infirmières et Infirmiers du Québec</td>
</tr>
<tr>
<td>Dr. Marcell Mallett</td>
<td>Respirologist</td>
</tr>
<tr>
<td>Dr. Jean-Luc Malo</td>
<td>Hôpital du Sacré-Cœur de Montréal</td>
</tr>
<tr>
<td>Dr. François Maltais</td>
<td>Hôpital Laval</td>
</tr>
<tr>
<td>Mahen Manickum</td>
<td>Stanton Hospital</td>
</tr>
<tr>
<td>Dr. Darcy Marciniuk</td>
<td>Canadian Thoracic Society</td>
</tr>
<tr>
<td>Pauline Marois</td>
<td>Hôtel du Parlement</td>
</tr>
<tr>
<td>Dr. Bruce Martin</td>
<td>University of Manitoba, Northern Medical Unit</td>
</tr>
<tr>
<td>Mary Martin-Smith</td>
<td>Government of Saskatchewan, Dept. of Health</td>
</tr>
<tr>
<td>Geoff Matthews</td>
<td>AstraZeneca</td>
</tr>
<tr>
<td>Ken Maybee</td>
<td>Lung Association of New Brunswick</td>
</tr>
<tr>
<td>Farah McCrate</td>
<td>Government of Newfoundland and Labrador, Dept. of Health and Community Services</td>
</tr>
<tr>
<td>Name</td>
<td>Organization</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Scott McDonald</td>
<td>Lung Association of British Columbia</td>
</tr>
<tr>
<td>Shawna McGhan</td>
<td>Alberta Asthma Care</td>
</tr>
<tr>
<td>Keith Mclaughlin</td>
<td>Alberta Health and Wellness</td>
</tr>
<tr>
<td>Judith McMullin</td>
<td>Clean Air Nova Scotia</td>
</tr>
<tr>
<td>Krista McMullin</td>
<td>Colchester East Hants Health Authority</td>
</tr>
<tr>
<td>Daniela Meier</td>
<td>Government of Yukon, Dept. of Health and Social Services</td>
</tr>
<tr>
<td>Darrel Melvin</td>
<td>David Thompson Health Region</td>
</tr>
<tr>
<td>Kathy Mesery</td>
<td>Government of Manitoba, Dept. of Health</td>
</tr>
<tr>
<td>Nadia Mike</td>
<td>Government of Nunavut, Dept. of Health and Social Services</td>
</tr>
<tr>
<td>Lyse Millette</td>
<td>Hôpital Hôtel-Dieu</td>
</tr>
<tr>
<td>Dr. Debra Morrison</td>
<td>Queen Elizabeth II Health Sciences Centre – Dalhousie University</td>
</tr>
<tr>
<td>Dr. Redwan Moqbel</td>
<td>University of Alberta</td>
</tr>
<tr>
<td>Carmelle Mulaire</td>
<td>St. Boniface University</td>
</tr>
<tr>
<td>Keith Murray</td>
<td>Lung Association of British Columbia</td>
</tr>
<tr>
<td>Dr. Cory Neudorf</td>
<td>Saskatoon Regional Health</td>
</tr>
<tr>
<td>Heather Nicolson-Morrison</td>
<td>Ontario Home Respiratory Services Association</td>
</tr>
<tr>
<td>Rob Nevin</td>
<td>Government of Nunavut, Family Practice Clinic</td>
</tr>
<tr>
<td>Kathy Noël</td>
<td>Hôpital Maisonneuve-Rosement/Clinique de pneumologie</td>
</tr>
<tr>
<td>Greg Noel</td>
<td>Lung Association of Newfoundland &amp; Labrador</td>
</tr>
<tr>
<td>Dr. Mary Noseworthy</td>
<td>Newfoundland &amp; Labrador Eastern Health</td>
</tr>
<tr>
<td>Elizabeth Ochitwa</td>
<td>Saskatchewan Health Region</td>
</tr>
<tr>
<td>Amy Ogawa</td>
<td>Pfizer Canada Inc.</td>
</tr>
<tr>
<td>Dr. Geraldine Osborne</td>
<td>Government of Nunavut, Deputy Medical Officer of Health</td>
</tr>
<tr>
<td>Brigitte Ouellette</td>
<td>University of Moncton</td>
</tr>
<tr>
<td>Doris Mae Oulten</td>
<td>Community and Youth Services</td>
</tr>
<tr>
<td>Sheila Owens</td>
<td>Government of Saskatchewan, Dept. of Health</td>
</tr>
<tr>
<td>Carolina Palacios</td>
<td>Government of Nunavut, Dept. of Health and Social Services</td>
</tr>
<tr>
<td>Corey Parker</td>
<td>Alberta Cancer Board</td>
</tr>
<tr>
<td>Stephen Parker</td>
<td>Government of Nova Scotia, Dept. of Health Promotion and Protection</td>
</tr>
<tr>
<td>Paula Pasquali</td>
<td>Government of Yukon, Dept. of Health and Social Services</td>
</tr>
<tr>
<td>Heather Pearson</td>
<td>Ontario Ministry of Environment</td>
</tr>
<tr>
<td>Nettie Pentland</td>
<td>Government of Manitoba, Dept. of Health</td>
</tr>
<tr>
<td>Veda Peters</td>
<td>Lung Association of British Columbia</td>
</tr>
<tr>
<td>Kelly-Jo Pfaff</td>
<td>Lung Association of Nova Scotia</td>
</tr>
<tr>
<td>Michael Pohanka</td>
<td>Professional Respiratory Home Care</td>
</tr>
<tr>
<td>Laraine Poole</td>
<td>Government of Prince Edward Island, Dept. of Health</td>
</tr>
<tr>
<td>Rolf Puchtinger</td>
<td>Government of Manitoba, Dept. of Health</td>
</tr>
<tr>
<td>Dr. Harvey Rabin</td>
<td>University of Calgary</td>
</tr>
<tr>
<td>Elaine Randell</td>
<td>Government of Nunavut, Dept. of Health and Social Services</td>
</tr>
<tr>
<td>Monique Raymond</td>
<td>Métis Nation of Ontario</td>
</tr>
<tr>
<td>Marilyn Reddy</td>
<td>Lung Association of Saskatchewan Board</td>
</tr>
<tr>
<td>Dr. Ted Redekop</td>
<td>Workplace Health and Safety</td>
</tr>
<tr>
<td>Donna Rennie</td>
<td>University of Saskatchewan</td>
</tr>
<tr>
<td>Wandlyn Richards</td>
<td>River Valley Health</td>
</tr>
<tr>
<td>Dr. Martin Richter</td>
<td>University of Sherbrooke</td>
</tr>
<tr>
<td>Dr. Jeremy Road</td>
<td>University of British Columbia</td>
</tr>
<tr>
<td>Sandy Robertson</td>
<td>West Side PCN</td>
</tr>
<tr>
<td>Lucie Robitaille</td>
<td>Conseil du médicament</td>
</tr>
<tr>
<td>Dr. Graeme Rocker</td>
<td>Queen Elizabeth II Health Sciences Centre – Dalhousie University</td>
</tr>
<tr>
<td>Dr. Stephen Rosenthal</td>
<td>Association des spécialistes en médecine d’urgence</td>
</tr>
<tr>
<td>Cheryl Rothenburg</td>
<td>Lung Association of Nova Scotia</td>
</tr>
<tr>
<td>Dr Michel Rouleau</td>
<td>Hôpital Saint-Sacrement</td>
</tr>
<tr>
<td>Dr. Éric Rousseau</td>
<td>Sherbrooke University</td>
</tr>
<tr>
<td>Francine Rousseau-Lord</td>
<td>Le Réseau québécois de l’asthme et de la MPOC (RQAM)</td>
</tr>
</tbody>
</table>
Dr. Michael Routledge
Nicole Rowell
Elissa Sakariassen
Lorelei Samis
Patty Samms
Leanne Sayle
Dr. Robert Schellenberg
Bertha Schofield
Maribeth Scott
Bob Scotten
Dr. Frédéric Sériès
Peter Simpson
Dr. Rob Skomro
Sandra Small
Curt Smith
Don Smith
Pat Smith
Sylvie Snow
Dr. Isaac Sobol
Sarah Sololuk
Stella Spanos
Stephanie Spencer
Danielle St-Jules
Rosella Stoez
Bernie Squires
Matthew Stanbrook
Pat Steele
Jean Stillway
Dr. Wan Tan
Erin Taylor
Doreen Tennant
Paul Thomey
Sheila Thompson
Evelyne Trask
Dr. Justin Travers
Lily Tremblay
Mélanie Tremblay
Dr. Jacques Turgeon
Ceal Tournier
Donna Turner
Suzanne Valois
Dr. Laurent Vanier
Paul Van Loon
Lianne Vardy
Peter Vavougios
Dr. Shannon Walker
Dr. Peter Warren
Dr. Wade Watson
Diane Weinwurm
John Wellner
Andrew West
Lindsay Williams

Winnipeg Regional Health Authority
Government of Newfoundland and Labrador
Nunavut Arctic College, School of Nursing
St. Mary’s of the Lake Hospital
Lung Association of New Brunswick
Government of Prince Edward Island, Dept. of Health
Canadian Society of Allergy and Clinical Immunology (CSACI)
Canadian Respiratory Health Professionals
South East Sask Airshed Authority
Hôpital Laval
GlaxoSmithKline
University of Saskatchewan
Memorial University
The Sanatorium Board of Manitoba
Health Care Consumer
Regina Qu’Appelle Health Region
Lung Association of Newfoundland & Labrador
Government of Nunavut, Chief Medical Health Officer
Lung Association of Saskatchewan
Newfoundland & Labrador Eastern Health
Service régional de soins à domicile pour malades
Government of NWT, Dept. of Health and Social Services
Government of Newfoundland and Labrador, Dept. of Health and Community Services
Toronto General Hospital
Cape Breton Regional Hospital
Lennox Island Health Care
UBC iCapture Centre for CardioPulmonary Research
Government of Prince Edward Island, Dept. of Environment, Energy and Forestry
Lung Association of Alberta & NWT
Lung Association of Newfoundland & Labrador
Government of Nunavut
Maritime Asthma & Respiratory Care
Summerside Medical Clinic
Regroupement des aidantes et aidants naturels
Hôpital de Verdun
Hôtel-Dieu
Federation of Saskatchewan Indian Nations
Lung Association of Saskatchewan
Association des infirmières en info-santé
Association des médecins urgentologues du Québec
Lung Association of Saskatchewan
Public Health Agency of Canada
St. Mary’s Hospital
Penticton Regional Hospital
The Sanatorium Board of Manitoba
IWK Health Centre
Trillium Health Care
Ontario Medical Association
Regina-Qu’Appelle Regional Health
Nycomed Canada
Advisory Committee Participants

Aboriginal Issues Advisory Committee

Onalee Randell Inuit Tapiriit Kanatami
Wayne Courchene Assembly of First Nations
Catherine Carry National Aboriginal Health Organization - Centre ajunnginiq
Maxwell King Consultant
Dr. Bruce Martin University of Manitoba, Northern Medical Unit
Michelle Bishop Public Health Agency of Canada
Halina Cyr Health Canada-First Nations Inuit Health Branch
John Berniquez Newfoundland & Labrador Aboriginal Affairs
Monique Raymond Métis Nation of Ontario
Dr. Sentil Senthilselvan University of Alberta
Dr. Hans Pasterkamp University of Manitoba
Dr. Marcus Lem Public Health Agency of Canada
Jeannie May Nunavik Board of Health and Social Services
Gail Turner Government of Nunatsiavut
Margaret Bernhardt-Lowden Lung Association of Manitoba
Lorraine Etter Atlantic Policy Congress Of First Nations Chiefs
Kathy Green Health Canada - First Nations Inuit Health Branch
Donna Turner Lung Association of Saskatchewan

Health Promotion, Disease Prevention and Public Awareness Advisory Committee

Menn Biagtan Lung Association of British Columbia
Louis P. Brisson Association pulmonaire du Québec
Maria Chia Canadian Tobacco Control Research Initiative
Kevin Coady Alliance for the Control of Tobacco
Wendy Enright Health Canada
Marino Francispillai Alberta Cancer Board
Danielle Gagnon Environment Canada
Klaus Jochem Agence de la santé et des services sociaux de Montréal
Dr. Sherri Katz Children's Hospital of Eastern Ontario
Deirdre Laframboise Clean Air Champions
Heidi Liepold Public Health Agency of Canada
Peter MacKenzie Lung Cancer Canada
Barbara MacKinnon Lung Association of New Brunswick
Onalee Randell Inuit Tapiriit Kanatami
Donna Rennie University of Saskatchewan
Bertha Schofield Canadian Respiratory Health Professionals
Annette Shultz University of Manitoba
Cheryl Winger Canadian Respiratory Health Professionals
Policy, Partnerships and Community/Systems Support Advisory Committee

Michelle Bishop Public Health Agency of Canada
Brenda Butters Lung Association of Ontario
Cheryl Connors Canadian Network for Asthma Care
Dr. James Dosman University of Saskatchewan
Francois Fleury Conseil pour la protection des malades (CPM)
Kathryn Andrews Klay Canadian Institutes of Health Research
Peter MacKenzie Lung Cancer Canada
Ken Maybee Lung Association of New Brunswick
Shawna McGahan University of Alberta
Rodel Padua Calgary Health Region
Dr. Helen Ramsdale McMaster University
Heidi Rathjen Coalition québécoise pour le contrôle du tabac
Dr. Satyendra Sharma University of Manitoba
Dr. Sheldon Spier Calgary Health Region
Lorne Yelland Central Okanagan Respiratory Services - Interior Health Authority

Disease Detection and Management Advisory Committee

Dr. Doug Bradley University of Toronto
Dr. Anna Day University of Toronto
Francine Ducharme McGill University
Jan Haffner Lung Association of Saskatchewan
Christine Hampson Asthma Society of Canada
Kathryn Hyndman Brandon University
Diane Kunyk University of Alberta
Maurice Lanteigne Lung Association of New Brunswick
Heather Nicolson-Morrison Ontario Home Respiratory Services Association
Dr. Sheldon Spier University of Calgary
Dr. Elizabeth Tullis University of Toronto
Margot Underwood Calgary COPD & Asthma Program
Peter Vavougios St. Mary’s Hospital
Chris Wigley COPD Canada

Research, Surveillance and Knowledge Transfer Advisory Committee

Dr. Monica Avendano West Park Healthcare Centre
Dr. Yves Berthiaume Centre Hospitalier de L’Université de Montréal
Dr. Louis-Philippe Boulet Laval University
Jacqui Brinkman The James Hogg iCapture Centre for Cardiovascular and Pulmonary Research
Catherine Carry National Aboriginal Health Organization-Centre ajunnginiq
Katherine Gardner Canadian Institutes of Health Research
Nancy Garvey Ontario Ministry of Health and Long-Term Care
Donna Goodridge College of Nursing, University of Saskatchewan
Brian Graham Lung Association of Saskatchewan
Dr. Dennis Gurwitz Hospital for Sick Children
Dr. Andrew Halayko University of Manitoba
Dr. Larry Lands McGill University
Dr. Irvin Mayers University of Alberta
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization/Association</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eddie Oldfield</td>
<td>Lung Association of New Brunswick</td>
</tr>
<tr>
<td>Dr. Teresa To</td>
<td>Hospital for Sick Children</td>
</tr>
</tbody>
</table>

**Industry Advisory Committee**

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization/Association</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michael Braun</td>
<td>Pfizer Canada Inc.</td>
</tr>
<tr>
<td>Nancy Gibson</td>
<td>MediGas</td>
</tr>
<tr>
<td>Suzanne Kelly</td>
<td>Novartis Pharmaceuticals</td>
</tr>
<tr>
<td>Patricia Manzi</td>
<td>Novartis Pharmaceuticals</td>
</tr>
<tr>
<td>Dora Mugambi</td>
<td>AstraZeneca Canada Inc.</td>
</tr>
<tr>
<td>Laura Thorpe</td>
<td>Eli Lilly Canada Inc</td>
</tr>
<tr>
<td>Wendy Zatylny</td>
<td>Rx&amp;D, Canada’s Research-Based Pharmaceutical Companies</td>
</tr>
</tbody>
</table>

**Asset Map Key Reviewers**

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization/Association</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monica Avendano</td>
<td>West Park Healthcare Centre</td>
</tr>
<tr>
<td>Menn Biatan</td>
<td>Lung Association of British Columbia</td>
</tr>
<tr>
<td>Victor Chernick</td>
<td>University of Manitoba</td>
</tr>
<tr>
<td>Louise Giles</td>
<td>University of Manitoba</td>
</tr>
<tr>
<td>Eileen Gresl</td>
<td>COPD &amp; Asthma Network of Alberta</td>
</tr>
<tr>
<td>Susan Hassan</td>
<td>Medigas</td>
</tr>
<tr>
<td>Suzanne Kelly</td>
<td>Novartis</td>
</tr>
<tr>
<td>Deborah Morrison</td>
<td>Queen Elizabeth II Health Sciences Centre–Dalhousie University</td>
</tr>
<tr>
<td>Dilshad Moosa</td>
<td>Lung Association of Ontario</td>
</tr>
<tr>
<td>Veda Peters</td>
<td>Lung Association of British Columbia</td>
</tr>
<tr>
<td>Ursula Rudden</td>
<td>Paaktuutit Inuit Women of Canada</td>
</tr>
<tr>
<td>Bertha Schofield</td>
<td>Canadian Respiratory Health Professionals</td>
</tr>
<tr>
<td>Peter Vavougios</td>
<td>St. Mary’s Hospital</td>
</tr>
</tbody>
</table>

**Cost-Risk-Benefit Analysis Key Informants and Peer Reviewers**

RAP Session #1- August 7, 2007, RAP Session #2-August 21, 2007

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization/Association</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michelle Bishop</td>
<td>Public Health Agency of Canada</td>
</tr>
<tr>
<td>Phil Blagden</td>
<td>Health Canada</td>
</tr>
<tr>
<td>Jean Bourbeau</td>
<td>McGill University</td>
</tr>
<tr>
<td>Ainsley Chapman</td>
<td>Canadian Lung Association</td>
</tr>
<tr>
<td>Bob Cowie</td>
<td>Canadian Network for Asthma Care</td>
</tr>
<tr>
<td>Tim Folkins</td>
<td>Environment Canada</td>
</tr>
<tr>
<td>Nancy Garvey</td>
<td>Ontario Ministry of Health and Long-Term Care</td>
</tr>
<tr>
<td>Roger Goldstein</td>
<td>COPD Alliance</td>
</tr>
<tr>
<td>Brian Graham</td>
<td>Lung Association of Saskatchewan</td>
</tr>
<tr>
<td>Sonia Isaac-Mann</td>
<td>National Aboriginal Health Organization</td>
</tr>
<tr>
<td>Barry Jessiman</td>
<td>Health Canada</td>
</tr>
<tr>
<td>Louis Leigh</td>
<td>Environment Canada</td>
</tr>
<tr>
<td>Heidi Liepold</td>
<td>Public Health Agency of Canada</td>
</tr>
<tr>
<td>Peter MacKenzie</td>
<td>Lung Cancer Canada</td>
</tr>
<tr>
<td>Charles Mallory</td>
<td>Health Canada</td>
</tr>
<tr>
<td>Irvin Mayers</td>
<td>University of Alberta</td>
</tr>
<tr>
<td>Paul Ouellette</td>
<td>Canadian Respiratory Health Professionals</td>
</tr>
<tr>
<td>Mary-Pat Shaw</td>
<td>Canadian Lung Association</td>
</tr>
<tr>
<td>Debbie Smith</td>
<td>Canadian Lung Association</td>
</tr>
<tr>
<td>Name</td>
<td>Organization</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Paula Stewart</td>
<td>Public Health Agency of Canada</td>
</tr>
<tr>
<td>Theresa Tam</td>
<td>Public Health Agency of Canada</td>
</tr>
<tr>
<td>Kerri Timoffee</td>
<td>Environment Canada</td>
</tr>
</tbody>
</table>
APPENDIX 8: REFERENCES


Canadian Council on Social Development

Canadian Thoracic Society guidelines: diagnosis and treatment of sleep–disordered breathing in adults, October 2006. Presentation prepared by Dr. John Fleetham.


Canadian Institute for Health Information (CIHI). Health care use at the end of life in Western Canada. Ottawa, ON, 2007


Smoking Cessation Rounds – Management of Tobacco Addiction in Patients with Mental Illness, June 2008. Dr Andrew Pipe and Dr. Charl Els.


What Sculpture is to Soapstone, Education is to the Soul: Building Capacity of Inuit in the health field. Ajunnginiq Centre. National Aboriginal Health Organization (NAHO), September 2004.


2007/8 Stakeholder Consultation Reports

The National Lung Health Framework Nunavut Engagement Workshop, March 2008


National Lung Health Framework Patient and Stakeholder Results, January 2008. The Lung Association of Alberta & NWT.


2006/7 Stakeholder Consultation Reports


