

# NATIONAL LUNG HEALTH FRAMEWORK

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Leading. Acting. Together.

## PHASE I TECHNICAL REPORT

APRIL 2007

### Infectious Disease Working Group

#### The National Lung Health Framework vision

“to **advance respiratory health** and health care of Canadians through public engagement in collaborative policy development, leadership, research, innovation and education”.

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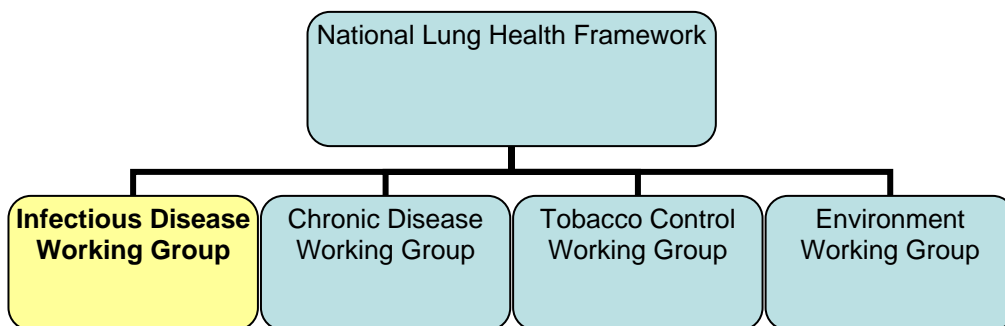
## Background

The National Lung Health Framework is a “made in Canada” initiative spearheaded by The Lung Association in collaboration with the Public Health Agency of Canada (PHAC), which will provide a coordinated action plan for the prevention and management of respiratory diseases. The development of this plan is an inclusive process seeking to maximize opportunities for stakeholder collaboration, and is guided by the following vision statement:

*“to advance respiratory health and health care of Canadians through public engagement in collaborative policy development, leadership, research, innovation and education”.*

The Tobacco Control Working Group is one of four multi-stakeholder working groups charged with providing input, recommendations and guidance towards the creation of this Framework. This Report is a summary of the initial discussions held by members of this working group.

This report provides direction for achieving important and measurable outcomes in the field of respiratory health in Canada. It reflects a range of emerging issues raised by working group members, and includes possible strategies and actions that should be considered when developing a National Lung Health Framework. This report is a launch pad for discussion, and will continue to be informed by additional research and stakeholder engagement in the months ahead.



## Process/Methodology

The development of the National Lung Health Framework began in April, 2006, when The Lung Association, with support from Health Canada, the Public Health Agency of Canada, and industry partners, initiated the planning of a multi-stakeholder workshop to bring together parties interested in collaborating on the development of a National Lung Health Framework. During this two-day workshop, participants outlined a number of activities and research priorities that needed to be taken on in order to move forward, among which included:

- an asset map and gap analysis, to help create a clear picture of what is happening in respiratory health in Canada;
- a cost-benefit/risk analysis, to outline where financial investment will result in the most gains;
- the creation of a multi-stakeholder Steering Committee, chaired by the Lung Association; and
- the creation of four working groups to drive the content of the Framework, in the areas of Chronic Disease, Infectious Disease, Tobacco Control and Environment.

Since that workshop, steps have been taken to follow through on these action items, and Working Groups were formed. Each of the Working Groups began preparations for holding their own workshops, beginning with the design and distribution of a pre-workshop questionnaire to survey Working Group.

The Tobacco Control Working Group workshop was held in Ottawa on December 15, 2006 with the following objectives:

- to develop a shared understanding of the strategic issues, challenges and opportunities related to the Tobacco Control theme of the National Lung Health Framework;
- to articulate the desired outcomes to achieve related to the Tobacco Control theme; and, in light of the desired outcomes,
- to identify the key results that must be achieved and the activities to be pursued to deliver the outcomes

The Workshop followed a classic “strategic planning” approach beginning with an environmental scan to take stock of the issues, trends and factors influencing the tobacco related respiratory health environment and proceeding to identifying key priorities and ways to achieve them.

Subsequent to the workshop, key documents were consulted to support the environmental scanning process conducted during the workshop. Working Group members and key informant interviews by the consultant team were undertaken to further inform various aspects of the Report and to sharpen its focus. The Report is the result of an iterative, multi-stage process of engagement involving a wide range of stakeholders. The following table summarizes the key stages in the process to date and the timeline at each stage.

<b>Step</b>	<b>Process Activity</b>	<b>Timeline</b>
1.	“Breathing Matters” Workshop	April, 2006
2.	Working Group Formation	November, 2006
3.	Pre-Workshop Survey	December, 2006
4.	Working Group Workshop	December, 2006
5.	Scan of key documents	Dec. 2006 – ongoing
6.	Review of Draft Report by Members	Jan. / Feb., 2007
7.	Key Informant Interviews (in conjunction with Asset Map and Gap Analysis research)	Jan. / Feb., 2007
8.	Discussion Draft, Draft and Final Report	Feb. / Mar., 2007

These steps are just the beginning. Highlights of this report and other key pieces of research will be compiled into a Framework Discussion Document, to be used to facilitate further discussion and stakeholder engagement over the coming months.

## Objectives of the Working Group

The Working Group members were tasked to work together to provide recommendations and guidance for the content of the National Lung Health Framework. More specifically, the Working Group members were asked to:

- expand on the work completed by Working Groups at the “Breathing Matters” workshop, held in April, 2006;
- identify additional stakeholders to be involved in the development of the National Lung Health Framework;
- identify additional respiratory health issues to be included in the National Lung Health Framework;
- identify additional goals, objectives, and outcomes to be included in the National Lung Health Framework; and,
- identify potential activities that can achieve these goals, objectives and outcomes.

Members of the Infectious Disease Working Group share the common overarching goal of lowering infectious respiratory disease mortality and morbidity rates through better prevention, early detection and treatment, and effective management. Given the increasing toll of infectious respiratory disease in Canada, this goal has taken on a greater urgency in recent years.

Other expectations, of which there are many, provide motivation and momentum towards this overarching goal. Working Group members see an opportunity to make strides in the area of respiratory health and to learn lessons from other health related framework initiatives undertaken in Canada and internationally. An effective approach for combating infectious respiratory disease demands an understanding of the scope of the problem including knowledge gaps. In keeping with the National Lung Health Framework objectives, it also requires a pan-Canadian perspective – a true partnership, coordinated with, and supported by, provincial and territorial governments and other key stakeholders.

### Multiple Perspectives

A multitude of perspectives are needed to fully inform the strategies employed to achieve expectations. The Working Group particularly wishes to acknowledge the importance of the patient voice/perspective in addressing respiratory disease.

Nor can infectious respiratory disease be considered in isolation from other respiratory disease categories or disease in general. The entire acute care sector perspective needs to be factored into the discussion as well as the broader public health perspective, with an increasing focus on prevention and advocacy. The Working Group understands that the delivery of health care is constantly evolving. The perspectives of the primary care community, multi-disciplinary teams, community care practitioners and those involved in environmental health areas are all required to fully inform strategies to promote respiratory health.

It is also clear that one of the unique features of this Working Group is its need to deal with multiple disease conditions, from the common cold to RSV, pneumonia, influenza and especially tuberculosis. Each disease presents unique challenges along the continuum of care, from prevention to post-care follow-up, and so while some aspects of the discussion cut across these different diseases, much of it will be disease-specific.

The Canadian public expects that public health, care facilities and health providers will respond adequately to prevent and control local outbreaks or deal with large-scale epidemics of serious respiratory infections caused by both known and unknown respiratory pathogens. Canadians also have a right to expect that TB cases will be quickly identified and adequately treated to minimize transmission, and that TB contacts will receive appropriate follow-up. No one wants MDR and XDR TB to ever become a significant public health problem in Canada. Most importantly, there are vulnerable target groups and communities who should all have access to prevention (vaccination and self-care information) and treatment in order to minimize preventable respiratory mortality and morbidity. In particular, First Nations, Inuit and Métis peoples are disproportionately affected yet do not experience equitable access to prevention and treatment.

## Logic Model

The following table illustrates the logic model that serves as the organizing framework for the Infectious Disease Working Group Report. The model contains five (5) broad elements. Associated with each element are specific expectations, inputs, strategies, activities and outputs all of which lead to nine (9) key overarching outcomes. The model is shown to be informed and supported by the various steps in the development process. The logic model content will be further developed as the consultation process unfolds.

<b>Vision</b>	To advance respiratory health and health care of Canadians through public engagement in collaborative policy development, leadership, research, innovation and education						
<b>Elements</b>	<b>Public Awareness, Health Promotion &amp; Prevention</b>	<b>Detection and Infectious Disease Management</b>	<b>Supportive Environment (Systems, Human and Community)</b>	<b>Surveillance</b>	<b>Research and Knowledge Translation</b>		
<b>Expectations</b>	See page 9	See page 9	See page 9	See page 9	See page 9		
<b>Inputs</b>	Next steps	Next steps	Next steps	Next steps	Next steps		
<b>Strategies</b>	See page 26	See page 28	See page 29	See page 31	See page 33		
<b>Activities</b>	See page 26	See page 28	See page 29	See page 31	See page 33		
<b>Outputs</b>	Next steps	Next steps	Next steps	Next steps	Next steps		
<b>Overall Outcomes</b>	<ol style="list-style-type: none"> <li>1. All provinces and territories implement respiratory disease recommendations and evidence-based guidelines/best practices Strategies and plans, including Human Resources have been developed and communicated for TB and pandemic. Roles and responsibilities have been clarified for community MD's, hospitals, public health, Boards of education. We have also developed influenza pandemic information for people with chronic lung disease and other chronic diseases.</li> <li>2. There is a national surveillance database.</li> <li>3. Strategies for lung health from prevention/education to care delivery and surveillance target vulnerable populations, including First Nations, Inuit and Métis, children and seniors, new immigrants, inner city and low income Populations.</li> <li>4. New partnerships are defined and contribute to overall and measurable improved health outcomes.</li> <li>5. There is a unified voice advocating for lung health through research and knowledge translation, raising awareness with practitioners and the public, and more effective representation to politicians, health agencies and various governance mechanisms (social marketing).</li> <li>6. Research value is improved by integrating how major research centres conduct research and interact with other agencies. There is more applied research.</li> <li>7. Government agencies involved in immigration and refugee health have a well-coordinated plan, starting with more reliable medical assessments in country of origin for prospective immigrants and extending to faster access to health insurance after arrival, and subsequent monitoring and surveillance. Better enforcement of medical exam within 30 days for refugee claimants.</li> <li>8. There is an increase in the political will of Canadian government to assist developing countries, through expertise and resources, in dealing with infectious lung disease if only because of increasing rates of immigration.</li> </ol>						
<b>Breathing Matters Pre-Summit</b>	<b>Working Group Collaboration</b>	<b>Survey Input</b>	<b>Working Group Workshop</b>	<b>Literature Review / Scan</b>	<b>Broad Consultations</b>	<b>Key Informant Interviews</b>	<b>Iterative Reports</b>

## Framework Elements

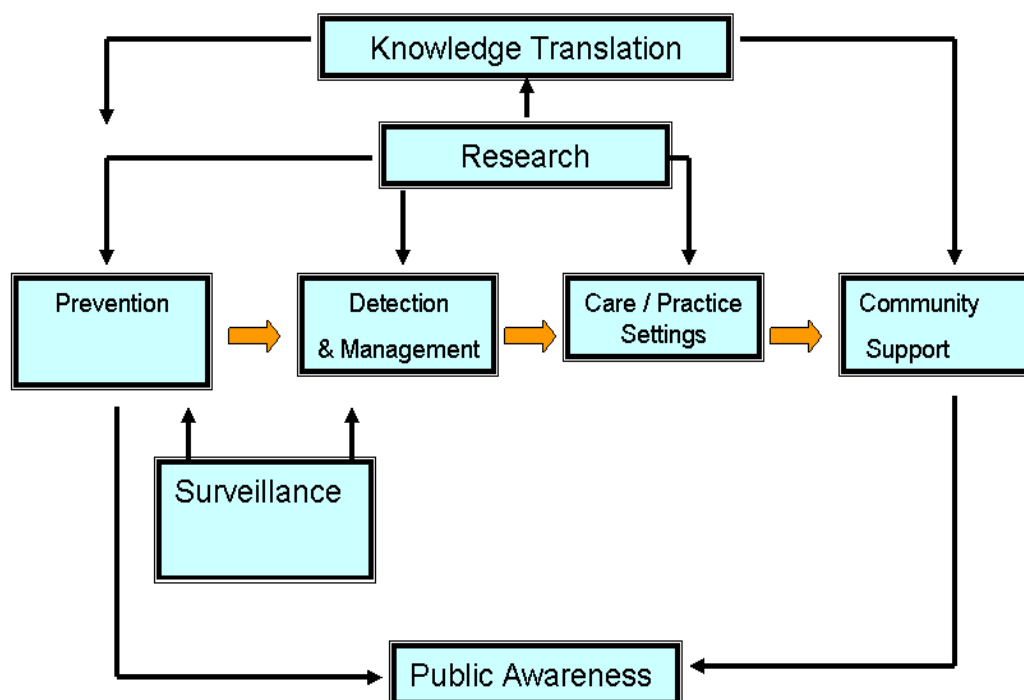
Five (5) key elements constitute the organizing framework for the Infectious Disease Working Group strategy and logic model. The result of considerable deliberation by the Working Group, the elements represent broad areas within which resources (inputs), key strategies, activities and outputs are to be aligned. The five key elements are:

Logic Model Elements	Public Awareness, Health Promotion & Prevention	Detection and Infectious Disease Management	Supportive Environment (Systems, Human and Community)	Surveillance	Research and Knowledge Translation
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- 1. Public Awareness, Health Promotion and Prevention** – Except for the recent awareness of pandemic diseases, infectious respiratory disease suffers from comparatively low public interest and awareness. This can result in many adverse consequences such as unnecessary exposure to risk, under-reporting by patients, misdiagnosis and treatment. While the threat of pandemic diseases are quick to create media interest, there is a generalized complacency around TB; and, desensitization around most forms of RSV, colds, community acquired pneumonia, influenza, etc. as pressing issues.
- 2. Detection and Infectious Disease Management** – Early detection and appropriate management can lead to significant improvement in quality of life for patients and help contain the spread of disease.
- 3. Supportive Environment (Systems, Human and Community)** – Supportive environments are essential to an effective health management strategy. This includes information systems infrastructure within the health care system, health education as well as supportive human and infrastructure environments in the community. TB and CAP are “diseases of poverty”. Adequate housing, employment, access to affordable healthy food, etc. are seen as a health factor.
- 4. Surveillance** – Tracking lung disease, its risk factors, impacts and outcomes in the population over time provides valuable information to decision-makers to guide strategies and resources for an optimal response. Currently, there is no national database allowing for a comprehensive view and trend analysis.
- 5. Research and Knowledge Translation** – Research is needed to address critical information gaps and support intelligent, evidence-based responses to infectious respiratory disease challenges and it is vital that the research conducted be translated into meaningful action and results. There may be a “disconnect” between public health and health care itself in terms of communication and feedback, thus leading to differing research priorities and poor research translation.

## Linkages

The Logic Model is a useful tool as an organizing framework. However, it is important to recognize that the elements of the model are not static but interdependent; each element influences the other and together they form a complex system. This systemic aspect of the model is illustrated below.



Important linkages also exist among the various Working Group components that will comprise the National Lung Health Framework. For example, many issues raised in the Infectious Disease Working Group were also raised or implied in other Working Groups such as Environment and Tobacco. These linkages, which will become evident as the process evolves, will highlight the dynamic and interdependent nature of the Framework components.

## Stakeholder Interests, Expectations and Roles

All Canadians have a stake in addressing infectious respiratory disease. To be effective, however, it is important for strategies to focus on addressing the unique needs and interests of specific stakeholder groups. With respect to infectious respiratory health, key stakeholders identified by the Working Group include:

- The federal government
- Regional health authorities
- First Nations, Inuit and Métis
- Patients and families
- Private Industry
- Educators (health system and academic)
- Research community
- International agencies
- Other governments (Provincial / Territorial)
- Municipal/local governments, Boards of Education
- Health care providers
- Employers
- General public
- Private health care including pharmaceutical industry and insurers
- Non Governmental Organizations (NGOs)

Because stakeholder needs differ, the infectious respiratory disease component must respond to the needs, interests and expectations of each of these stakeholder groups.

### Core Overarching Expectations

A number of core overarching expectations were identified from the workshop and surveys. These include:

1. A unified voice, allowing for respiratory health advocacy to be expressed with a single voice, that could lead to increased resources and funding i.e. the “big tent” approach versus the current fragmentation of advocacy efforts;
2. Effective communication and dissemination of guidelines is a priority. Increased coordination and/or production of targeted, tailored, and timely information. This should be evidence-based best practices information.
3. Public policy that is linked to practical health care.
4. All aspects of health care are recognisant and responsive to multi-cultural needs, particularly in respect to the First Nations, Inuit and Métis communities and immigration.
5. The national respiratory health agenda is driven by the stakeholders (i.e. care and research priorities)
6. Expand the priority of respiratory health research across multiple disciplines and research areas; integrate aspects of respiratory health into other disease and research areas.

7. Key stakeholders for the entire respiratory health community are involved managing pandemics, including business groups.
8. The national respiratory health agenda will work in conjunction with other diseases that have an impact on respiratory health (e.g. Cancer, HIV etc.).
9. There will be clear data collection and analysis of the burden of lung disease that will be effectively disseminated. Surveillance will play a more effective role in epidemiology, but also in terms of measuring broader needs.
10. Information with the international community on emerging issues is effectively exchange, with a mechanism for taking in international knowledge.

### **Map of Core Expectations to Key Elements**

<b>Logic Model Elements</b>	Public Awareness, Health Promotion & Prevention	Detection and Infectious Disease Management	Supportive Environment (Systems, Human and Community)	Surveillance	Research and Knowledge Translation
<b>Core Expectations</b>	1,2,3,4,9	3,4,6,12	1,2,3,4,5,6,9,10,13	9,10,11,12	6,7,8,10,11,12

## Analysis of Stakeholder Perspectives, Interests and Potential Roles

Individual stakeholders have differing perspectives, interests and roles with respect to infectious respiratory disease. An analysis of these differences is summarized in the following table; the analysis serves to inform the Working Group strategies and activities which are integral to this Framework component.

Stakeholder	Expectations
<p style="text-align: center;"><b>The Federal Government</b></p>	<ul style="list-style-type: none"> <li>• Eliminate problem of who is responsible for lung health, i.e. who pays! i.e. cooperative connection – Fed and Prov Health</li> <li>• Synthesize research relating to \$\$ estimates</li> <li>• Links to providers and partners for dissemination</li> <li>• Strong links should be established; Prov Health Ministry + Provincial Lung Associations, Fed Health and CLA</li> <li>• Eliminate problem of who is responsible for lung health, i.e. who pays! i.e. cooperative connection – Fed and Prov Health</li> <li>• Improve health approach, improve access to health care for First Nations, Inuit and Métis and care of refugees</li> <li>• Address lack of health insurance for landed immigrants for the first 3 months (they do not seek medical care)</li> <li>• Promote culturally relevant approaches</li> <li>• National inventory of providers (respiratory providers, infection control) and physical infrastructure (specialized laboratories, such as imaging equipment)</li> </ul>
<p style="text-align: center;"><b>Other Government departments</b></p>	<ul style="list-style-type: none"> <li>• Better role definition</li> <li>• Environment – Indoor, outdoor air quality</li> <li>• Need to work with CIC on medical assessments of refugee claimants, and prospective immigrants in country of origin</li> <li>• Need a Canadian Processing Center</li> <li>• Central sources of lung health priority list, action guide, evidence- e.g. education/finance/logistic</li> </ul>
<p style="text-align: center;"><b>Regional health authorities</b></p>	<ul style="list-style-type: none"> <li>• Focused agenda (prioritized) around partners for delivery</li> <li>• HR and facilities inventory. Identifying gaps</li> <li>• Focus has been on reducing costs; budget continues to expand – highest provincial expenditures</li> <li>• Budget</li> <li>• Reduced number of beds in smaller communities</li> </ul>

Stakeholder	Expectations
	<ul style="list-style-type: none"> <li>• Emergency rooms overloaded</li> <li>• Relocated PH to hospitals to reduce expenditures</li> <li>• Design realistic approaches: too much planning for pandemics, but there are no beds in the hospitals to accommodate the surge</li> <li>• Home care has been drastically reduced</li> <li>• Do not ignore common, chronic care our outpatient issues, e.g. pneumonia build capacity for everyday problems, not just potential e.g. pandemic (build capacity for both)</li> </ul>
<p style="text-align: center;"><b>Municipal/local governments, Boards of Education</b></p>	<ul style="list-style-type: none"> <li>• Information flow to schools, Day Cares (most of these are private)</li> <li>• Teachers awareness, administration</li> <li>• Improve social environment – respiratory health is strongly associated to economic level/education//employment</li> <li>• Access to messages re lung health for dissemination, role in early warning</li> </ul>
<p style="text-align: center;"><b>Aboriginal Peoples and their organizations</b></p>	<ul style="list-style-type: none"> <li>• Eliminate gaps in care created by on/off reserve funding, in Inuit communities by inconsistent interpretation of existing agreements.</li> <li>• Appropriate engagement</li> <li>• Commitment to surveillance</li> <li>• Recognizes importance and role of non-medical determinants of health</li> <li>• Outcome is equitable health status</li> <li>• Community based solutions</li> <li>• Psychosocial support</li> <li>• Financial assistance, expertise in reserves and settlements</li> <li>• Culturally appropriate care (language, patient care settings, health information)</li> <li>• Remote/isolated communities – access to care/services locally or transportation if needed</li> <li>• Surveillance data to inform delivery of health, identifying burden and factors (determinants)</li> <li>• Assurance that the best practices and guidelines are applied</li> <li>• Better outcomes</li> </ul>

Stakeholder	Expectations
<p style="text-align: center;"><b>Health care providers</b></p>	<ul style="list-style-type: none"> <li>• MD, nurses, first line should be working together</li> <li>• To be informed about guidelines for managing or referring lung health problems</li> <li>• Early warning system</li> <li>• Provincial Medical Associations</li> <li>• Outreach to ethnic medical association, i.e. Vietnamese and other associations</li> <li>• First Nations, Inuit and Métis, CHRs, nurse practitioners – are key stakeholders.</li> <li>• Appropriate role definitions in pandemic response</li> <li>• Infection control nurses in hospitals should be informed</li> <li>• PH – Indian Health; many gaps</li> <li>• GP's lack of connection; too busy to meet (attend conferences etc.)</li> <li>• GP's and Public Health, big disconnect</li> <li>• Bridge the gap – information provided + update</li> <li>• Centralized advocate for programs (e.g. TB) to provide expert care</li> <li>• Centralized data that will allow communication of trends and risks to health practitioners</li> </ul>
<p style="text-align: center;"><b>Patients and families</b></p>	<ul style="list-style-type: none"> <li>• Affordable care, e.g. immunization</li> <li>• Accessible information for informed choice including prevention + health promotion</li> <li>• Treatment by knowledge providers</li> <li>• Consistent, equitable care across jurisdictions</li> <li>• Assurance of best practices, care, and education relating to health issues</li> <li>• Better outcomes</li> <li>• Targeted specialized pandemic information for people with chronic lung disease</li> <li>• Aboriginals off reserve access to health care and most important : access to health information</li> </ul>

Stakeholder	Expectations
<b>Employers</b>	<ul style="list-style-type: none"> <li>• Consistent useful information, Standardized guidelines and timely communications</li> <li>• Role in awareness, education, action to support and protect workers</li> <li>• Not penalize employees for health issues (otherwise employees will go underground and hide their disease, such as TB)</li> <li>• Information to employers – interested in reducing time away from work because of lung related illness and spreading of infectious diseases in the workplace</li> </ul>
<b>Private Industry</b>	<ul style="list-style-type: none"> <li>• Priority setting based on burden, need will direct research, delivery of drugs and vaccines</li> </ul>
<b>General public</b>	<ul style="list-style-type: none"> <li>• Believe doctors and PH will have all the answers</li> <li>• Contact are the GPs (office) and community care workers</li> <li>• Communities/ethnic associations – education, and reduce stigma</li> <li>• Care delivered by best practices guidelines by all practitioners</li> <li>• Awareness of lung health concerns</li> <li>• All should have access to info, prevention and care</li> <li>• Information without creating panic and without promoting discrimination of affected groups</li> <li>• Regional disparities in access, morbidity, mortality, reduce and disappear</li> </ul>
<b>Educators (health system and academic)</b>	<ul style="list-style-type: none"> <li>• Recognition of their role</li> <li>• Safe working conditions</li> <li>• Incorporate in to teacher programs – key health info</li> <li>• Once framework is compiled</li> </ul>
<b>Private health care including pharmaceutical industry and insurers</b>	<ul style="list-style-type: none"> <li>• Role in pandemic planning</li> <li>• MOU</li> <li>• Clear reimbursement mechanisms</li> <li>• Private practitioners access best practices, guidelines and materials to serve their patients</li> <li>• Facilitate continuing education/incentives</li> </ul>

Stakeholder	Expectations
<p style="text-align: center;"><b>Academia/Research community</b></p>	<ul style="list-style-type: none"> <li>• Lung Health Priorities for education and research, which will serve community</li> <li>• Academic research continues to get funding</li> <li>• Duties of academics:               <ol style="list-style-type: none"> <li>1. develop research questions</li> <li>2. address research questions</li> <li>3. respond to public groups and government agencies</li> </ol> </li> <li>• Need multidisciplinary approach</li> <li>• Consultation with public and users at all stages</li> <li>• Access to funding (esp. non-industry sponsored research)</li> <li>• Encourage academic/research careers for health care providers</li> <li>• Engage communities and individuals in research</li> <li>• CIHR-HPPH : issues/barriers to knowledge dissemination &amp; application</li> </ul>
<p style="text-align: center;"><b>Non Governmental Organizations (NGOs)</b></p>	<ul style="list-style-type: none"> <li>• Other NGOs in disaster work , e.g. Red Cross</li> <li>• International focused</li> <li>• Clear role in dissemination of lung health alerts, actions, guides, experts, advocacy tasks</li> <li>• Priority setting mechanisms for LHF issues (and all LHF partners)</li> </ul>
<p style="text-align: center;"><b>International Agencies</b></p>	<ul style="list-style-type: none"> <li>• Strategies, build on existing agencies and partnerships for migration health</li> <li>• Advocate for involvement of Canadian resources (financial and human)</li> <li>• Canada sees a role in Global Lung Health surveillance, best practices through funding of multi and bilateral interventions and expertise</li> <li>• Political will for Canadian government to understand that unless help and funding is provided, problems in Canada will persist and maybe increase</li> </ul>

## Environmental Scan

There are a variety of key issues, trends and factors that are shaping the infectious disease environment which point to both challenges and opportunities for progress on the respiratory health front. This environmental scan summarizes the various contributions of Working Group members, key informants and stakeholders.

### Tuberculosis (TB)

TB is still considered to be one of the deadliest infectious diseases worldwide, especially prevalent in developing countries. According to World Health Organization (WHO) estimates, each year 2 million people die from TB and more than 8 million people develop active TB. In the last decade, TB cases have increased by about 20% worldwide with alarming proportions in Africa, Asia and Latin America. If this trend continues, there will be a total of 36 million deaths from TB by the year 2020. Overall, one-third of the world's population is currently infected with the TB bacillus, with 5-10% of people who are infected with TB bacilli (but who are not infected with HIV) becoming sick or infectious at some time during their life. This has important implications for Canada due to international travel and immigration from TB-endemic countries<sup>1</sup>.

In addition to significant health cost consequences, TB strikes people most often during their most productive years, thus indirectly adding to the economic burden by depriving society of its more productive members and turning them into dependents. It should also be noted that HIV and TB form a lethal combination, each speeding the other's progress. HIV has led to rapid growth of the TB epidemic, and increases the likelihood of dying from TB. HIV-positive individuals are up to 30 times more likely than HIV-negative individuals to progress to active infectious TB disease from TB infection. Among persons with HIV infection, TB is the leading "opportunistic" disease and cause of death worldwide."<sup>2</sup>

In Canada<sup>3</sup>, the tuberculosis incidence rate has stabilized at a provisional rate of 5 per 100,000 in 2005<sup>4</sup>, (1,616 cases)<sup>5</sup>, after several years of slow decrease. The highest rate of 150.0 per 100,000 population was reported in Nunavut. The Canadian Tuberculosis Committee<sup>6</sup>, has set a target incidence rate of 3.6 per 100,000 by 2015. This goal supports the target set in the Global Plan to Stop TB<sup>7</sup> 2006-2015 to reduce the burden of

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<sup>1</sup> "Respiratory Disease in Canada", Canadian Institute for Health Information, Canadian Lung Association, Health Canada, Statistics Canada, September 2001

<sup>2</sup> Ibid.

<sup>3</sup> "In the early part of the 20th century, the Canadian Lung Association operated facilities to care for Canadians with this infectious disease. Thanks in part to the work of the Canadian Lung Association, we've seen a dramatic decline in the number of TB cases in Canada.", [www.lung.ca](http://www.lung.ca)

<sup>4</sup> "Tuberculosis in Canada 2005 – Pre-Release" <http://www.phac-aspc.gc.ca/publicat/tbcan-pre05/index.html>

<sup>5</sup> Contrast with the estimated incidence per capita in sub-Saharan Africa at nearly 400 cases per 100 000 population. <http://www.afro.who.int/tb/>

<sup>6</sup> federal/provincial/territorial/NGO with Canadian Lung Association and Canadian Thoracic Society representation

<sup>7</sup> <http://www.stoptb.org/globalplan/>

the disease by 50 per cent compared to the 1990 rate. Achieving this goal will require a three per cent annual reduction in the incidence rate, including a significant decrease in the aboriginal Canadian TB rate (provisional rate of 27/100,000 in 2005) and in the foreign-born TB rate (provisional rate of 14.8/100,000 in 2005). In 2005, TB among foreign-born individuals accounted for 63% of all reported cases in Canada. Canadian-born non-Aboriginal and Canadian-born Aboriginal cases made up 13% and 19%, respectively.

The upcoming 6th edition of the Canadian Tuberculosis Standards, (co-produced by the Canadian Lung Association/Canadian Thoracic Society and the Public Health Agency of Canada; to be published in 2007), will have a number of recommendations for TB prevention and control. Meanwhile concern has been expressed that TB is no longer part of the medical curriculum and that TB researchers are an aging group whose succession planning and knowledge transfer have not been properly addressed.

Inadequate funding for TB programs is a frequently topic of concern among stakeholders, especially as TB requires long-term treatment; even though it only exists in low numbers, it does represent high cost to the health system. Stakeholder participants point to Ontario as a notable example where the TB program has been shut down for 20 years, and where Toronto, as the only TB resource center in that province, is now said to be scrambling to address increasing immigrant health issues. While funding and expertise are reported to be better in the West than in the East, participants suggest using TB as a “touchstone indicator” of how well the Lung Health Framework might contribute to respiratory health; they also underline the need for Canada to make a public investment in developing countries as Canada has become a net importer via current immigration patterns.

### **Common Cold and Respiratory Syncytial Virus (RSV)**

Some of the most common, and contagious respiratory infectious diseases are the **Common Cold** and **Respiratory Syncytial Virus (RSV)**. In seniors, young children, and people with chronic (long-term) lung diseases like asthma and COPD, even a cold can become quite serious, either leading to complications or severe restrictions on activities of daily living. In especially vulnerable people, complications are always possible and the cold can sometimes lead to acute bronchitis, croup or pneumonia, sinusitis, or strep throat. Respiratory syncytial virus (RSV) infects the lungs and airways and is so common in infants and young children that almost all of them have been infected with RSV by the age of 3. In some children, RSV can lead to severe complications and it is the leading cause of bronchiolitis and pneumonia in children under 2 years of age<sup>8</sup> and one of the leading causes of infant deaths in Aboriginal communities.

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<sup>8</sup> “Respiratory Disease in Canada”, Canadian Institute for Health Information, Canadian Lung Association, Health Canada, Statistics Canada, September 2001

## **Influenza**

It is estimated that the flu (Influenza) causes 500 - 1500 deaths in Canada per year<sup>9</sup> and different strains of the flu virus periodically make their appearance. Between 10% and 20% of Canadians are infected by the flu every year (type A + type B). The Immunization and Respiratory Infections Division (IRID) of the Public Health Agency of Canada (PHAC) manages the Respiratory Virus Detection Surveillance System and reports on respiratory viruses in Canada. PHAC's FluWatch<sup>10</sup> program produces its surveillance reports weekly during the influenza season (October - May) and biweekly during the off season (June - September). The National Advisory Committee on Immunization (NACI) provides the Public Health Agency of Canada with an annual Statement on Influenza Vaccination.<sup>11</sup> Each year, hundreds of thousands of Canadians receive an influenza vaccine the preventive benefits of which can last up to 4 to 6 months. Canada now has the second highest rate of vaccine distributed per capita in the world, following the USA very closely.

## **Pandemic Influenza**

According to the WHO<sup>12</sup>, there has been a cumulative total of 277 confirmed human cases of Avian Influenza A/(H5N1) across the world between January 2003 and March 1, 2007 from which 167 deaths resulted (a 60% rate). No cases have been reported in Canada. When taken in context of many of the dire warnings of the last 10 years about bird flu being the next dreaded pandemic, these are relatively small numbers. However, there is no shortage of media speculation about what unknown or little-known infectious diseases are to come.

While unpredictable in timing and impact, a pandemic influenza would likely have a disproportionate impact on health care professionals involved in respiratory care and infection control. This was one of the lessons from the short-lived SARS<sup>13</sup> crisis and a still worrisome one when considering the low rates of vaccination in the medical community.

While not everyone agrees that the current risk models for funding pandemics are adequate<sup>14</sup>, there is tremendous popular support for research and investment in pandemic preparedness. A key strategic decision for the Lung Health Framework is the degree to which it will address pandemic preparedness as this is largely covered by PHAC.

In terms of pandemic preparation, the Working Group participants have observed that health care workers will have to work closely with Disaster and Emergency Measures (army, police, fire chiefs etc.) whose state of readiness and willingness to work together is for the most part unknown. Pandemic plans may also point to gaps in infrastructure,

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<sup>9</sup> [www.lung.ca](http://www.lung.ca)

<sup>10</sup> <http://www.phac-aspc.gc.ca/fluwatch/index.html>

<sup>11</sup> "Statement on Influenza vaccination for the 2006-2007 season", NACI, June 15, 2006

<sup>12</sup> [http://www.who.int/csr/disease/avian\\_influenza/country/cases\\_table\\_2007\\_03\\_01/en/index.html](http://www.who.int/csr/disease/avian_influenza/country/cases_table_2007_03_01/en/index.html)

<sup>13</sup> "The SARS Commission Interim Report, SARS and Public Health In Ontario", The Honourable Mr. Justice Archie Campbell, Commissioner April 15, 2004

<sup>14</sup> "Stop Chasing a Phantom Flu", Dr Richard Schabas, May 2006

including the physical readiness and surge capacity of hospitals, isolation rooms, imaging equipment, and other operational infrastructure. Stakeholder participants suggest that there may be a role for the LHF in all this and that its “big test” would be what would happen in the event of a pandemic. Pandemic plans make the case that infrastructure is needed now, rather than later, in anticipation of an event as opposed to being reactive to it. That being said, participant informants suggest that the current ER capacity is inadequate today with overload wards having become a way to manage the overflow as opposed to having to pay fines. This results in many issues, not the least of which is the increasingly common sight of idling ambulances having to wait while patients are queued.

Through the Canadian Pandemic Influenza Plan, PHAC in partnership with the provinces and territories has made preparations for a pandemic flu. Most provinces also have their own pandemic plans, as does the City of Toronto. Canada invests a significant amount in pandemic preparation and yet, some 91% of Canadians want more investment in health and medical research related to pandemic preparedness. In fact, research indicates that fully 88% of Canadians are either *very supportive* (50%) or *supportive* (38%) of this investment<sup>15</sup>. Meanwhile, Working Group participants argue for more science in this debate, pointing to the need for more funding for TB and CAP which are real killers (quantitatively and annually). It is important to support and develop overall preparedness and surveillance strategies that would complement each other in terms of skills and human resources.

In 2006, the Department of Finance (DOF) published a comprehensive study<sup>16</sup> of the economic impacts of a pandemic influenza. The study noted that “the direct (economic) effects of an influenza pandemic are the hours worked and production losses associated with death and illness, while indirect effects could include psychological impacts on demand for certain products, absenteeism stemming from fear of contracting the illness in the workplace and, if peak absenteeism is sufficiently high, production and supply chain disruptions”. While acknowledging that a number of previous studies had argued that a pandemic presented the potential for large negative economic impacts, the DOF analysts suggest that this kind of research requires “*consideration of the relevance of economic and social changes since the previous pandemics*” (1918, 1957 and 1968), i.e. that the advances in medicine and infrastructure should be factored in as opposed to simply looking to past events and forecasting linearly. The Department of Finance analysts conclude that, at worst, a severe pandemic could cause a small, but very temporary, shrinkage of the GNP (at worst 1%, based on the 1918 pandemic, as the 1957 and 1968 pandemics had no significant economic impact and all three were of short duration). The impact would mainly be felt in the accommodation, travel and restaurant sectors, due to a decrease in discretionary travel, especially tourism. This was illustrated by the SARS crisis which caused a temporary 0.03% GNP shrinkage, most of which occurred in these industries.

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<sup>15</sup> “Canada Speaks – 2006”, Research Canada: An Alliance for Health Discovery

<sup>16</sup> “The Economic Impact of an Influenza Pandemic”, Economic Analysis and Forecasting Division  
Department of Finance – Canada, July 19, 2006

## Lessons from SARS

Severe Acute Respiratory Syndrome (SARS) is a respiratory infection caused by the coronavirus. It's a contagious disease that causes symptoms similar to pneumonia and it can be fatal. SARS is a relatively new disease in humans having been first detected in China in November 2002 from where it spread to other countries. According to the World Health Organization, by July 2003 there were 8,098 SARS cases in 26 countries<sup>17</sup>; in 774 of these cases, the patient died. Outside of a small resurgence in China in early 2004, it seems to have largely vanished. The WHO's latest guidelines are from October 2004.<sup>18</sup>

SARS was first detected in Canada in March 2003 and traced back to travelers from Hong Kong. In total, 438 Canadians were diagnosed with SARS and 43 Canadians died of it. The last human-to-human transmission happened in July 2003, and while there have been four more episodes of SARS since then, three of these were caused by improper handling of SARS virus in research laboratories.

In collaboration with the provinces and territories, Health Canada has developed a series of public health tools<sup>19</sup> to ensure that Canada is ready to identify severe or emerging respiratory infections and able to quickly implement prevention and control measures. The 21 “Principles for Reforms”, or recommendations, of the Campbell<sup>20</sup> report provide further guidance to address the “constellation” of problems identified by the Commission.

One of the lessons from SARS is that a pandemic, while unpredictable in timing and impact, would likely have a disproportionate impact on health care professionals involved in respiratory care and infection control.

With increased privatization of the health sector, there is a risk of loss of expertise and decreased access to laboratory and imaging resources in the public sector. In the event of an epidemic or pandemic, stakeholders believe that mobilization of the entire health network could be more difficult unless steps are taken now to negotiate the involvement of private services in emergency response.

## Pneumonia

Pneumonia is an infection of the lungs that can have over thirty different causes including bacteria, viruses and fungi, and even breathing in (i.e. aspirating) food, liquid, chemicals and dust. Influenza and pneumonia are the leading causes of death from infectious disease in Canada and 6<sup>th</sup> most common cause of death overall.<sup>21</sup> Pneumonia is a leading cause of death and hospitalization in seniors (affecting men more than women) and in

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<sup>17</sup> <http://www.who.int/topics/sars/en/>

<sup>18</sup> [http://www.who.int/csr/resources/publications/WHO\\_CDS\\_CSR\\_ARO\\_2004\\_1/en/index.html](http://www.who.int/csr/resources/publications/WHO_CDS_CSR_ARO_2004_1/en/index.html)

<sup>19</sup> These include the National Case Definitions for Severe Acute Respiratory Syndrome (SARS), Surveillance for Severe or Emerging Respiratory Infections in the SARS Post-Outbreak Period, Public Health Management of cases and Clusters of Severe Respiratory Illness (SRI) in the Post-Outbreak Period and the SARS-CoV Laboratory Investigation Protocol for the SARS Post-Outbreak Period

<sup>20</sup> “The SARS Commission Interim Report, SARS and Public Health In Ontario”, The Honourable Mr. Justice Archie Campbell, Commissioner April 15, 2004

<sup>21</sup> “The Leading Causes of Death at Different Ages 2002”, Statistics Canada, Catalogue no.: 84F0503XPB

people with long-term (chronic) diseases. In 2001<sup>22</sup>, it was reported that influenza and pneumonia accounted for around 8,000 deaths per year. “It is estimated that community-acquired pneumonia (CAP) accounts for 1 million doctor visits a year in Canada as well as 60,000 hospitalizations costing about \$100 million”<sup>23</sup>. There may be as many as 4,500 cases (15.8 per 100,000 population) of Invasive Pneumococcal Disease (IPD)<sup>24</sup>, which is especially problematic in children under 5, the elderly and all persons at increased risk because of comorbidity. Another related infectious disease, Legionnaires’ disease, is generally thought to be under-diagnosed and under-reported; it only shows up sporadically and in small numbers (cruise ships, hotels and some hospitals) in Canada.

### **Other Relevant Issues**

A number of issues and considerations relevant to infectious disease and respiratory health were raised through the workshop and surveys.

### **Public Awareness and Complacency**

Despite straightforward and widely available guidelines on hand washing, covering coughs and sneezes, various germ-fighting strategies, flu and pneumonia vaccines, there are still between 10 and 20% of Canadians who acquire infectious respiratory diseases every year. While education and awareness of necessary precautions appear to be rising, evidence suggests that there’s a long way to go even among health care workers. For example, according to a recent study by Dr. Mark Loeb, professor of pathology and molecular medicine at McMaster University health care workers surveyed<sup>25</sup> washed their hands appropriately only 30% of the time. Informants believe that efforts should also be undertaken to increase the knowledge of the general public about the proper maintenance of such appliances as humidifiers, filters and air cleaners.

There is concern among Working Group members and key informants that Tuberculosis has fallen below the public radar and that there is a generalized feeling that this battle has been fought and won. As a result, they note, it is difficult to get sufficient attention to the TB issues within the immigrant and Aboriginal communities. TB programs are also perceived to be inadequately funded at this time. As a result of comparative rarity of TB in many parts of Canada, delayed diagnosis of infectious TB cases is thought to be occurring throughout Canada due to the public and health professionals not considering TB as a cause of illness. Some informants feel that Canada needs to do a better job in the developing world, exporting TB resources and expertise, especially as immigration from many of these countries has become so important to Canada. Experts believe that Aboriginal TB rates will continue to be higher for a variety of socio-economic reasons including: crowded housing/living conditions, high unemployment and failure to systematically detect and treat LTBI in order to prevent future cases.

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<sup>22</sup> “Respiratory Disease in Canada”, Canadian Institute for Health Information, Canadian Lung Association, Health Canada, Statistics Canada, September 2001

<sup>23</sup> *ibid*

<sup>24</sup> *ibid*

<sup>25</sup> “Superbugs...”, The Ottawa Citizen, March 19, 2007, pages A1 and A5

At another level, experts have observed that there seems to be a “disconnect” between Public Health and health care generally and between policy and science. They note, for example, that it seems relatively easy to get public attention for the threat of pandemics, but that it is much more difficult to bring attention to the TB, Community-acquired Pneumonia (CAP) or even flu situations. Similarly, these informants speculate that it is probably easier to fund raise for the bird flu than for TB, while science and evidence would point to the latter as the greater threat.

### **Antibiotic Resistance and “Superbugs”**

Over time and assuming current trends continue, the number of people with multi-drug resistant and extensively drug resistant bacteria causing their TB can be expected to increase. Similarly, pneumococcal resistance has increased in the last 20 years and is currently running between 10% and 20% for what used to be the most common first line treatments. Growing pneumococcus resistance is a worldwide trend and because of asymptomatic nasal carriage, it is believed that the increase in resistant strains in Canada is likely not caused by local prescribing practices. There are similar issues of growing resistance with less common respiratory infections.

### **Aging of the Population**

Growth of the middle-aged and elderly population will increase the prevalence of non-infectious cardiopulmonary disease. This increase in chronic cardiopulmonary disease, along with other major organ disorders and multi-system chronic diseases like diabetes, will mean a greater susceptibility to infectious respiratory illnesses such as influenza and pneumococcus. Maintaining high vaccine coverage of influenza and pneumococcal for those at risk is proving to be an ongoing challenge. Community Acquired Pneumonia (CAP) is often linked to poor housing, and many senior homes present favourable conditions for CAP.

### **Emergence of MDR and XDR Tuberculosis in Endemic Countries**

Even though external aid is increasing, there is reason to believe that control efforts in endemic and epidemic countries will continue to fall short of the efforts needed to control TB. MDR and XDR TB result from inadequate treatment that result in acquired drug resistance. Furthermore, the increase in drug-resistant strains is likely to continue, probably until an effective vaccine for HIV and/or TB becomes available. Given current projections, immigration and refugee admissions to Canada are not likely to diminish; increased travel between Canada and country of origin will, therefore, increase the likelihood of resistant TB acquisition.

### **Immigration**

According to the latest PHAC data, about 1/3 of Canada’s 225,000-250,000 annual immigrants have latent TB infection (LTBI) and 70% of new cases in Canada are from

recent immigrants. There are reported problems with medical assessments in countries of origin and access to medical examinations for refugee claimants (within 30 days) and to insurable benefits for all new arrivals (3 months). 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 CAP among this group.<sup>26</sup> As a result, the Canadian Tuberculosis Committee will be reviewing a proposal to expand the routine TB case notification form for foreign born cases diagnosed within 2 years of arrival in Canada in order to better identify missed opportunities for earlier detection and treatment of active disease and for possible improvements to the formal Immigration Medical Examination which is conducted pre-arrival. Informants point out that the surveillance challenge should not be underestimated however, as cultural and language barriers often make it very difficult to gain the trust of the patients in our health care system.

### **First Nations, Inuit and Métis Communities**

While over 3 million Canadians are coping with serious respiratory disease,<sup>27</sup> evidence indicates that Canada's First Nations, Inuit and Métis communities are disproportionately affected by RSV and Tuberculosis. One study noted that First Nations, Inuit and Métis communities in Alberta were 2.1 times and 1.6 times more likely to have an emergency and office visit for asthma or COPD, respectively, compared to non-aboriginals.<sup>28</sup> A Tuberculosis Elimination Strategy was implemented by Health Canada in 1992 and it is currently under review. While more data are needed, infectious respiratory diseases are thought to be exacerbated in First Nations, Inuit and Métis communities due to housing conditions such as overcrowding and the presence of toxic mould; poverty and substance abuse may also be contributing factors. Moreover, prompt and regular access to fully qualified medical personal and treatment is somewhat problematic in the more remote and isolated of these communities. Despite some advance work by Health Canada's First Nations and Inuit Health Branch (FNIHB)<sup>29</sup> to the matter of promoting and encouraging preparedness in Aboriginal communities for a possible Influenza Pandemic, there is some concern that the mainstream regional or provincial health authorities would be severely overwhelmed if a pandemic were indeed to occur. Furthermore, it is important to note that health workers employed in First Nations and Inuit communities are somewhat unique. This includes, for example, the Community Health Representatives, who play an important intermediary role in health care, whose training and expertise level varies greatly from individual to individual.

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<sup>26</sup> Data indicate that over 90% of cases of active TB occur among foreign born residents who have been in Toronto for less than 5 years. For population trends, see Statistics Canada 2006 Census.

<sup>27</sup> "Respiratory Disease in Canada", Canadian Institute for Health Information, Canadian Lung Association, Health Canada, Statistics Canada, September 2001

<sup>28</sup> Sin D, Wells H, et al. *Asthma and COPD Among Aboriginals in Alberta, Canada*. Chest 2002;121:1841-1846. 2002 American College of Chest Physicians

<sup>29</sup> Pandemic Influenza Planning for On-Reserve First Nations' Communities Fact Sheet from Health Canada Website: [http://www.phac-aspc.gc.ca/influenza/pdf\\_ms/08-nc-Pandemic-Influenza-Planning\\_e.pdf](http://www.phac-aspc.gc.ca/influenza/pdf_ms/08-nc-Pandemic-Influenza-Planning_e.pdf).

## **Governance and Coordination**

Stakeholders and key informants have observed that there are opportunities for better harmonization of efforts and that some of communications mechanisms and clarification of roles and responsibilities could be taken to a more effective level. Part of the problem is seen to lie in the various jurisdictional boundaries, the many disciplines or practice areas, lack of coordinating mechanisms for guidelines dissemination, and a perceived “disconnect” between Public Health and health care in general.

As it stands, PHAC plays a central governance and coordination role. The PHAC Centre for Infectious Disease Prevention and Control's objectives are to decrease transmission of infectious diseases and to improve the health status of those infected. To achieve its objectives, the Centre provides national leadership and conducts, supports and coordinates public health actions on many fronts, including: surveillance and epidemiology, infectious disease outbreak investigations, risk management, research including laboratory science, health promotion, public health policy development, and prevention and care programs. The Centre works in close partnership with Canada's provinces and territories and performs liaison work with international organizations and agencies to actively support global disease eradication initiatives. The Centre's program areas include: immunization and respiratory infections, community acquired infections including Hepatitis C, blood safety surveillance and health care acquired infections, HIV/AIDS policy/coordination/programs, and HIV and retrovirology laboratories. The development of national infectious disease guidelines are also a major activity of this Centre.

The aim of PHAC's Immunization and Respiratory Infections Division (IRID) is to reduce or eliminate vaccine preventable and infectious respiratory diseases in Canada. In partnership with provinces and territories, the Division is responsible for the national surveillance of vaccine preventable and infectious respiratory diseases, including influenza and SARS, surveillance of vaccine associated adverse events and monitoring of immunization status, including the development of an immunization registry network. It provides scientific and administrative support to the National Advisory Committee on Immunization and Pandemic Influenza Committee. The Division also investigates and coordinates investigations of vaccine preventable and infectious respiratory disease outbreaks across Canada, and provides guidance and direction, when requested, by provincial or territorial public health authorities when outbreaks of vaccine preventable or infectious respiratory diseases occur in individual.

Health Canada's Immunization and Respiratory Infections Division collaborates with other national governments and international organizations to prevent and control vaccine-preventable and infectious respiratory diseases, including the Networks of Centres of Excellence (NCE) in the areas of bacterial, viral and vaccine research; i.e., the Canadian Bacterial Disease Network (CBDN) and the Canadian Network for Vaccines and Immunotherapeutics (CANVAC). Canada also has a good vaccine research infrastructure including the presence of a global vaccine manufacturer (Aventis Pasteur Ltd.). Health Canada also manages a world-class level 4 microbiological containment facility in Winnipeg, the only one in Canada.

## **Research for Infectious Respiratory Diseases Research**

The informants indicate that, at present, much of the research is academic and with limited collaborative focus. There is a perceived lack of national focus and a coordinated approach in infectious respiratory diseases research, i.e. no national respiratory health research policy. CIHR has the “Triple-I” Impact factor (Institute of Infection and Immunity) and Institute of Circulatory and Respiratory Health, although its institutes on Aboriginal People’s Health, Child and Youth Health, and Aging all carry out work that includes considerations for respiratory health. Canada has one operational level 4 laboratory (Winnipeg), but because it is the only one, the flexibility to support research across the country is uncertain. There is also a sense among some key informants that the current vaccine research agenda is largely driven by economics.

Changes in population and family definitions present challenges from a more social research perspective. For example, in terms of childhood lung health, some see a need for more research data to identify better where the burden is. There is also thought to be a need for more research in First Nation, Inuit and Métis communities, although there are differences of opinion among researchers, spokespersons and policy makers with respect to how the issues are framed and how research should be conducted. Aboriginal researchers are generally agreed, however, that Aboriginal organizations and communities need to be involved in developing these research strategies. The same issues arise with respect to surveillance, in terms of where these “pockets of un-health” are and how they should be dealt with. Despite these challenges, there appears to be widespread agreement regarding the need to better understand and act on transmission patterns, and overall to do a better job with Aboriginal and immigrant/refugees respiratory health.

## Overall Outcomes

Key outcomes represent the desired “future state” for infectious respiratory health in Canada as articulated by Working Group members and other stakeholders (including leading experts, practitioners and key informants). The outcome statements reflect the world as stakeholders would like it to be with the strategy fully implemented - that is, over the longer term. The key longer-term outcomes defined by Working Group members are as follows:

1. Government agencies involved in immigration and refugee health have a well-coordinated plan, starting with more reliable medical assessments in country of origin for prospective immigrants and extending to faster access to health insurance after arrival, and subsequent monitoring and surveillance. Better enforcement of medical exam within 30 days for refugee claimants.
2. There is a unified voice advocating for lung health through research and knowledge translation, raising awareness with practitioners and the public, and more effective representation to politicians, health agencies and various governance mechanisms (social marketing).
3. New partnerships are defined and contribute to overall and measurable improved health outcomes.
4. All provinces and territories implement respiratory disease recommendations and evidence-based guidelines/best practices Strategies and plans, including Human Resources have been developed and communicated for TB and pandemic. Roles and responsibilities have been clarified for community MD’s, hospitals, public health, Boards of education. We have also developed influenza pandemic information for people with chronic lung disease and other chronic diseases.
5. There is a national surveillance database.
6. Strategies for lung health from prevention/education to care delivery and surveillance target vulnerable populations, including First Nations, Inuit and Métis, children and seniors, new immigrants, inner city and low income Populations.
7. Research value is improved by integrating how major research centres conduct research and interact with other agencies. There is more applied research.
8. There is an increase in the political will of Canadian government to assist developing countries, through expertise and resources, in dealing with infectious lung disease among the immigrant population.

### Map of Outcomes to Key Elements

Logic Model Elements	Public Awareness, Health Promotion & Prevention	Detection and Infectious Disease Management	Supportive Environment (Systems, Human and Community)	Surveillance	Research and Knowledge Translation
Overarching Outcomes	2,7	1,3,4,5,7,9	1,2,3,4,5,7,9	1,3,4,5,6,9	2,3,4,8

## Key Strategies/Activities

Following are preliminary strategies and activities associated with each key element that can potentially lead to the achievement of the overall outcomes specified. The strategies and activities will evolve further as the Framework consultation process unfolds.

### A. Public Awareness, Health Promotion and Prevention

#### S.1 Increase awareness by the public and other stakeholders

- Increase awareness through specific initiatives and communication strategies
- Enhanced communication with general public aimed at prevention of infectious diseases including pneumonia and bronchitis
- Advocate to include lung health issues related to infections (TB) in the curriculum of medical students, RN's and RT's, family practice, respirologist, others
- Complete needs assessment of public awareness of LH issues in Canada and engagement by general public;
- Have advertising campaigns, educational resources in place
- Engage, include, First Nations, Inuit and Métis communities now in LHF
- begin to publish outcomes of lung health strategy and early successes
- Over time, aim to make the public feels safe with respect to infectious lung disease as it becomes less of an issue
- Deal with multicultural differences, immigrants have different values, language, health habits; need to be informed and educated with sensitivity to these differences
- LHF can help to get Lung Health on the radar screen, like HIV/AIDS, Cancer, others with politicians, medical professors, and general public
- Disseminate outcomes and final report from LHF to the public to raise awareness of the issues associated with Lung Health
- We need to bring "non-health" sector into the planning, especially educators (schools, colleges and university). They are part of the front line
- Linkage to CIHR-HPPH initiative to examine issues and barriers related to Canadian public and population health (PPH) knowledge generation, dissemination, exchange and uptake
- Better knowledge among clinicians and front line workers on latest developments on avian influenza and pandemic influenza risks
- Public awareness campaigns underlining infection control and public health measures at the community level
- Improved risk communication at the community level
- Increase awareness that infectious disease can spread globally : vacations, travel, visiting relatives, migrant workers, i.e. no boundaries
- Increase general public's, especially high risk groups, knowledge of Common Cold, Influenza, Pneumonia, TB and overall prevention

- Make sure GP's, Public Health Nurses, Specialists, Community care are aware and knowledgeable and able to inform patients
- Avoid creating panic with sensational news about very resistant TB, incurable, etc. but maintain awareness that TB is not a disease of the past.

### **S.2 Strengthen health promotion and advocacy**

- Speak with a unified voice advocating for lung health through research and knowledge translation, raising awareness with practitioners and public
- Bridge the gap between Public Health and health care, between policy and practice
- Coordination/central resource for available guidelines and policies
- develop a governance structure that includes all stakeholders : education, health providers, environment etc
- Establish effective processes for presenting the framework to politicians, health agencies and partnerships
- Priority setting mechanisms for LHF which is acceptable to all partners
- Participation criteria for core and ad-hoc partners for the LHF need to be clear and transparent
- Need to communicate the impact of this to policy makers, Canadians so develop social marketing
- Increase political will of Canadian government to assist developing countries in dealing with infectious lung disease
- LHF must recognize what health partners are presently doing well; ensure that there is no duplication of activities of other key organizations (i.e. lung association, thoracic society, etc.):
- LHF needs buy-in by government, lung association, health providers, etc. to help identify role of the framework
- LHF can become broad coalition for partnership of public health, private practices, researcher/academe and community, and fund raiser
- Implement the various promises made in the Kelowna Accord by the previous government (at the Canada-Aboriginal Peoples First Ministers Meeting)
- Declare interest, create partnerships with AMMI, CPHA, CSIH

### **S.3 Step up infectious respiratory disease prevention efforts**

- Disseminate pandemic planning and clarify roles of community MD's, hospitals, public health, Board of education
- Develop influenza pandemic information for people with chronic lung disease and other chronic diseases
- Disseminate information about tobacco induced lung disease; increase price of cigarettes, and taxes (use that \$\$ to fund lung health and research)
- Reduce preventable child lung diseases
- Increased prevention and vaccination
- Educate about obesity; obesity rates have high incidence to infectious RD.

- Investments in SE determinants
- Improve air quality
- Better diagnostics for TB and CAP, through awareness and education
- Need better patient education in terms of taking antibiotics, so they don't get re-infected.
- New focus on environmental health
- Elimination of SE factors in lung health
- Secure better funding for TB programs
- Address RSV, is the number 1 killer of children in Inuit populations.
- Implement the various promises made in the Kelowna Accord by the previous government (at the Canada-First Nations, Inuit and Métis communities Roundtable on Health)
- Continued linkage with Canadian Coalition for immunization awareness and promotion (CCIAP) and other organisations.
- Preventive strategies such as handwashing should be widely promulgated

## **B. Detection and Infectious Disease Management**

### **S.1 Better health education and training**

- Education using best practices for lung health
- Coordination/central resource for available guidelines and policies
- Advocate to include lung health issues related to infections (TB) I the curriculum of medical students, RN's, family practice, respi, others
- Over time, ensure availability of effective health human resources to diagnose, screen and treat respiratory infectious diseases because of better training
- Better diagnostics for TB and CAP, through awareness and education.
- Educate about obesity; obesity rates have high incidence to infectious RD.
- Make sure GP's, Public Health Nurses, Specialists, Community care are aware and knowledgeable
- Education regarding management of TB to health care providers.
- Promote education regarding TB in the curriculum of medical and nursing students
- Organize more educational sessions for community physicians

### **S.2 Better treatment**

- Strategies, including Human Resources are developed and communicated for TB and pandemic
- Reduce gaps and disparities in First Nations, Inuit and Métis for LH ; achieve equity of lung heath between First Nations, Inuit and Métis and general population
- Make TB as rare in Canada as smallpox is now

- Reduce rates of TB worldwide, TB rates will decrease by 80% in the world
- Over time elimination of TB globally, not just in Canada
- Major reduction of infectious diseases globally
- Make Canada have the lowest age-adjusted lung health morbidity and mortality
- Improve surge capacity in elimination stage
- Secure better funding for TB programs
- Deal with multicultural differences, immigrants have different values, language, health habits; need to be informed and educated with sensitivity to these differences
- Train community leaders and Community Health Representatives so that they may properly prepare their communities to cope with pandemic illness
- Centralize the care of TB in designated clinics staffed with experienced staff in centres with higher rates of TB (Large urban centres in Ontario, Quebec, BC and Alberta).
- Attempt to channel the care of MDR TB and XDR TB in centres with the ability to manage these patients to a successful outcome

### **S.3 Earlier detection**

- Government agencies involved in immigration and refugee health need to develop a coordinated plan
- Avoid a chaotic situation if a pandemic disease comes (not another SARS-like experience in Toronto), i.e. prepare now!
- Review the process of assessment in their countries of origin of prospective immigrants
- Reinforce adherence to have refugee claimants medically assessed within 30 days of arrival
- Improve performance of medical immigration examinations in countries of origin for prospective immigrants
- Secure better funding for TB programs
- Develop efficient, low cost rapid diagnostics tests

## **C. Supportive Environment (Systems, Human, Community)**

### **S.1 Integrated processes and systems**

- Greater synchronization of resources- common websites, links etc for patient education.
- Shared experiences of business plans for dealing with regional health authorities which would reduce redundancies.
- Avoid a chaotic situation if a pandemic disease comes (not another SARS-like experience in Toronto)
- Improve surge capacity in elimination stage
- Bridge the gap between Public Health and health care, between policy and practice

## **S.2 Supportive care**

- Strategies, including Human Resources are developed and communicated for TB and pandemic
- Deal more effectively with Core lung Health pockets – inner city, poverty housing at both diagnostic and treatment
- Reduce gaps and disparities in First Nations, Inuit and Métis for LH ; achieve equity of lung health between First Nations, Inuit and Métis and general population
- Make TB rates for aboriginal are same as rest of Canada; eliminate TB in FN/Métis/Inuit
- LHF will recognize and address disparities between mainstreams and FN/Métis/Inuit
- Improve surge capacity in elimination stage
- Implement the various promises made in the Kelowna Accord by the previous government (at the Canada-First Nations, Inuit and Métis communities Roundtable on Health)
- Emphasis must be placed on infection control, both in hospital settings and the community.
- Develop strategies to protect the health of immuno-compromised individuals suffering from respiratory diseases. Under current planning, these individuals fall under the category of “not benefiting from critical care”
- Increase surge capacity of current health systems, explore alternative care, continue to develop ethical guidelines for the prioritization of treatment and prophylaxis of patients
- Move towards an integrated approach to emerging infectious diseases – one infrastructure fits all, develop efficient rapid tests, increase global surge capacity, increase global stockpile of antiviral and pandemic influenza vaccines, integrate animal surveillance with human surveillance.

## **S.3 Supportive community environments and programs**

- Shift to outpatient care from inpatient; key is getting information out.
- Deal with multicultural differences, immigrants have different values, language, health habits; need to be informed and educated with sensitivity to these differences
- The LHF should be a multi-stakeholder initiative to monitor and address regional disparities
- All provinces and territories should start to implement infectious disease recommendations from LHF
- Deal more effectively with Core lung Health pockets – inner city, poverty housing at both diagnostic and treatment
- Develop a governance structure that includes all stakeholders : education, health providers, environment etc
- Outlaw cigarettes (impact on TB and tobacco); raise tobacco taxes
- Recognition and resources dedicated to the impact of non-medical determinants

of health

- More resources for FN TB strategy in human resources, housing
- Bring and include all vulnerable communities into the planning process: First Nations, Inuit and Métis, Homeless (including mental health, substance abuse), nursing homes, the foreign-born (less than 5, over 30 years), seniors, in/out correctional services
- Bridge the gap between Public Health and health care, between policy and practice
- Begin to deal with social and economic determinants and issues
- Work with international TB communities to eliminate TB worldwide
- Encourage Canadian federal government to support developing countries with \$\$ and expertise to significantly reduce infectious disease
- Build on CLA partnership with IUTLD, to explore other partnerships and use foreign expertise; recognize that capacity at home is linked to capacity abroad
- Examine social determinants – and links to other departments to cover housing and economic opportunities
- For TB, there is a need to better link with CIC for assessing the health status of landed immigrants. (Similar to SARS border issues where there was no health clearance for immigrants in Toronto)
- Need to better link Public health, health care and Academia/Research and ensure that efforts are driven by burden of health, not by industry
- Better treatment options and alternative care options for immuno-compromised individuals
- Better coordination between communities and different levels of governments
- Improved surveillance at the community level – involving all actors (schools, workplace, public health, etc)
- Increased detection and treatment capacity at the community level
- A set of criteria and guidelines to identify medical conditions for inclusion in the LHF should be established to prevent competing agenda setting by different partners. One recent example is the 10 criteria established for identify national notifiable diseases. [NB These criteria concern communicable diseases only : Diseases of interest to organizations to inform prevention and regulatory programs; Five-year average incidence; Severity; Communicability/ potential spread to the general population; Potential for outbreaks; Socioeconomic burden; Preventability; Risk perception; Necessity for public health response; and Appearing to increase in incidence of change patterns over the past five years]
- Emphasis must be placed on infection control, both in hospital settings and the community.
- Involve a broad range of stakeholders, ensure communities know what to do, focus on risk communication and knowledge translation
- Attempt to channel the care of MDR TB and XDR TB in centres with the ability to manage these patients to a successful outcome: Expertise, Adequate isolation, Adequate infrastructure, Culturally sensitive environment, Reliable laboratory support, Reliable drug supply, Well established links with Public Health: DOT,

- contact tracing, Structured follow-up
- Enhance Public Health resources for a universal DOT program
  - Declare interest, create partnerships with AMMI, CPHA, CSIH

#### **D. Surveillance (Including Guidelines and Best Practices)**

##### **S.1 Analyze trends for better information and results**

- Deal with multicultural differences, immigrants have different values, language, health habits
- launch plan to examine regional disparities in mortality, morbidity, access and quality of care (geographic, care settings, subpopulations)
- Surveillance system includes disparities between mainstream Canadian and aboriginal people
- Avoid a chaotic situation if a pandemic disease comes (not another SARS-like experience in Toronto)
- improved coordination of surveillance of lung health
- Do a better job of monitoring acquired drug resistance
- TB as “Public Health touchstone”, indicator of effectiveness; most certain measure of how well a country manages its health system. So value to the strategy. For example, First Nations, Inuit and Métis in Canada face similar issues as native indigenous people in other countries.
- Initiate human resources and infrastructure: inventory to identify gaps (Asset Map)
- Obtain solid data of lung disease burden and temporal trends for outcome evaluation
- Implement the various promises made in the Kelowna Accord by the previous government (at the Canada-First Nations, Inuit and Métis communities Roundtable on Health)
- Initiate a research plan for examining regional disparities in mortality, morbidity, access and quality of care (geographic, care setting, subpopulations). This applies to other focus areas (chronic diseases, environmental and tobacco control issues) but is probably more easily accomplished for key infectious diseases, and more urgent in relation to emergency preparedness.
- Develop a national inventory of human resources (chest physicians, respiratory technicians, respiratory therapists, as well as infection control personnel) and infrastructure inventory (specialized care facilities, laboratories and imaging equipment), i.e. an Asset Map.
- Improve and enhance surveillance of new comers to Canada

### **S.2 Increase monitoring and use of guidelines**

- Better controls with immigration to reduce medical fraud, e.g. medical assessments in country of origin
- Increase adherence to CTS guidelines (including appropriate diagnosis, management and follow-up) and prescribed therapies
- Implementation of relevant guidelines in all practice settings including a regular method for implementing changes or new knowledge, especially in primary care

### **S.3 Increase support for surveillance mechanisms, build a database**

- Strict control of industries/businesses that contaminate the environment. Establish stiff fines for breaking the rules
- Develop an epidemiological database to monitor trends over time
- Conduct complete surveillance of burden of Lung disease in Canadians to facilitate planning
- Better integrate animal/human surveillance mechanisms
- Improve human surveillance in health care settings
- Establish a common data base for all cases of TB by province and eventually across Canada. It will assist in tracking patients who move to other provinces and jurisdictions.
- Continuation of the respiratory disease surveillance committee with PHAC
- Continue planning with the First Nations and Inuit Health Branch with Aboriginal organizations playing a greater role

## **E. Research and Knowledge Translation**

### **S.1 Increase funding for infectious respiratory disease research**

- Improve research value by integrating how CIHR deals with lung health research and interacts with other agencies
- Funding for respiratory research to equal burden rates
- Increased research funding (coordination) for lung health
- Ensure stable funding for research
- Applied research to be put on CIHR agenda
- Need more applied research, monitor its cost effectiveness
- Better, more effective translation; lots of knowledge but not getting it where it's needed in timely manner
- Increase Canadian spending 5 fold as per Tuberculosis Research and Development: A Critical Analysis published by the Treatment Action Group<sup>30</sup>.

### **S.2 Find a cure for all respiratory diseases**

- Develop efficient, low cost rapid diagnostics tests
- Linkage to CIHR-HPPH initiative to examine issues and barriers related to Canadian public and population health (PPH) knowledge generation,

<sup>30</sup> <http://www.aidsinfonyc.org/tag/tbhiv/tbrandd2.html>

dissemination, exchange and uptake.

- Examine the current “strategic initiatives” of ICRH to ensure that it complements the objectives of LHF.
- Whether through ICRH or other funding mechanisms, there needs to stronger emphasis on evaluative research (of specific interventions) and broader evaluative research (how to institutionalize ideas and interventions).
- Policy makers can best utilize synthesis research such as systematic reviews and meta-analyses, but insufficient synthesis research is being done
- Research for new methods for vaccine development have to be explored, to make sure it can be produced quickly enough in the event of a pandemic.
- Continue with the development of new pandemic influenza vaccines and alternative treatment and prophylaxis options – monitor antiviral resistance in new influenza strains.
- Research impact of environmental change on lung health with respect to respiratory diseases
- Compare clinical management and outcomes of MDR and XDR TB between designated centres and by community physicians.
- Outcome predictors for the successful treatment of TB, DR TB, MDR TB and XDR TB.
- Explore whether Respiratory health should have its own institute. At the time, there was not enough \$\$ in RH to justify its own institute, but perhaps could be revisited under this initiative.

### **S.3 Develop/implement respiratory health norms, standards and guidelines**

- Better dissemination of pandemic guidelines, provincial plans etc. (to avoid repeat of SARS where WHO guidelines were not distributed)
- We have lots of data and research that has been validated. We need to apply these
- Develop comprehensive education, communications, public awareness, R/T infectious, respiratory health
- Synthesis existing best practices and dissemination strategy
- Enhance communication (central clearing house for facilitative communication) e.g. best practices, targeted education
- Needs to improve education to both health providers and the public at large regarding lung health and associated conditions such as tobacco and HIV
- Critical challenge to link evidence-based guidelines with \$\$\$
- Determine normal pulmonary function values (e.g. for First Nations, Inuit and Métis communities)
- Develop evidence-based standards for home testing for OSA
- Determine evidence-based standards for patient education (patient-centred, self-management)
- Support guidelines development or endorsement when good int’l guidelines exist
- Disseminate/implement relevant guidelines in all practice settings including a

<p>regular method for implementing changes or new knowledge, especially in primary care and at the local level</p>
<p><b>S.4 Better measure the impact of services and policies on lung problems and health care utilization</b></p> <ul style="list-style-type: none"><li>• Understand the impact of infectious disease management problems in affecting rates of hospitalization and emergency visits for patients with CRD and asthma; understand the biology of asthma and CRDs</li><li>• Understand the impact of multi-disciplinary specialty clinics as well as the implementation of treatment and management strategies in a variety of practice settings in affecting rates of hospitalization and emergency visits for patients with COPD and asthma</li><li>• Measure the effectiveness of interventions that promote respiratory health</li><li>• Evaluate the effect of the implementation of an integrated strategy</li><li>• Demonstrate that basic research and infectious disease management models such as “home based pulmonary rehab” or “self-management education in primary care setting” are effective</li></ul>
<p><b>S.5 Knowledge translation of research findings</b></p> <ul style="list-style-type: none"><li>• Evaluate barriers of knowledge transfer from clinical trials to community-based practices</li><li>• Determine novel (and improved) ways to communicate “best evidence” to health care practitioners, patients and other stakeholders.</li><li>• Communicate best practices to physicians and health care professionals (utilize established respiratory educator programs)</li><li>• Continue to and improve upon knowledge transfer to respiratory educators (sharing of experiences, mentoring, training, good ideas, research results)</li><li>• Canada assists other countries with infectious diseases</li></ul>

## Conclusions and Next Steps

The Infectious Disease Working Group Report is the culmination of an intensive research and consultation process involving many stakeholders. This Report, along with those from the other Working Groups, will inform the Framework outline being prepared for the Respiratory Health Summit scheduled for April, 2007. The Summit represents a key milestone in the collaborative effort to address the challenge posed by respiratory disease in Canada.

While much has already been accomplished, the Framework development process is still in its early stages. In addition to the upcoming Summit, many more opportunities for building on the efforts of the Working Group and for further stakeholder consultation and participation lay ahead. Members of the Working Group look forward to continued engagement in that process.

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