



CANADIAN NURSES ASSOCIATION
ASSOCIATION DES INFIRMIÈRES ET INFIRMIERS DU CANADA

Climate Change Workshop Proceedings

Canadian Nurses Association

www.cna-aiic.ca

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Contents

Executive Summary	1
Introduction.....	4
Detailed Proceedings: Nursing and Climate Change	5
Detailed Proceedings: Plenary Speakers.....	8
Human Health in a Changing Climate: A Canadian Assessment of Vulnerabilities and Adaptive Capacity <i>Jacinthe Séguin, Safe Environments Programme, Health Canada</i>	8
Turning the Corner: An Action Plan to Reduce Greenhouse Gases and Air Pollution <i>James Clarkson, Environment Canada</i>	9
The Public Health Approach to Preparing for Heat Waves in Montreal <i>Norman King, Louis Drouin and Luc Lefebvre, Public Health Department, City of Montreal</i>	11
Air Quality and Human Health <i>Dr. Quentin Chiotti, Climate Change Programme Director and Senior Scientist, Pollution Probe</i>	13
Climate Change Adaptation <i>Carrie Spencer, Climate Change Impacts and Adaptation Division, Natural Resources Canada</i>	15
Nursing and Climate Change <i>Nicki Sims-Jones, Canadian Nurses Association</i>	16
Appendix A: Workshop Agenda.....	18
Appendix B: Participants	19
Appendix C: Participants' Comments.....	21

Executive Summary

As part of its centennial celebrations in 2008, the Canadian Nurses Association (CNA) launched a project to support work on environmental health in the domains of nursing practice, education, research and policy. One component of that project was a full-day workshop on climate change, which CNA, with funding from the federal government, hosted in Ottawa in February 2008. The objectives of the workshop were to:

- provide information on climate change and health from a Canadian perspective, as well as an overview of adaptation and mitigation activities;¹
- identify potential roles of nurses in addressing climate change;
- begin to prioritize next steps for nurses in adaptation and mitigation activities; and
- prepare a report to share information with others.

Workshop participants included members of CNA's Environmental Health Reference Group, which consists of 35 nurses representing every region of Canada who have volunteered their time to guide the association's environmental work.

The workshop provided a unique and critically important opportunity to identify the roles of nurses in addressing climate change by bringing together a key group of nurses who are leaders and champions in environmental health in Canada. Participants at the workshop discussed the leadership role that Canadian nurses can play in addressing climate change, specifically considering what nurses can do to support adaptation to and mitigation of climate change.

Several themes arose from these deliberations, and the group made a number of important recommendations. Participants talked in particular about leadership, education, planning, advocacy, and the tools nurses need to do this work.

Leadership and education

The participants agreed that CNA, other nursing associations and all nurses have an important leadership role in increasing awareness of the health impacts of our changing climate and in supporting adaptation to and mitigation of climate change. They recommended that CNA develop a position statement on climate change and health as part of its leadership in this area. Participants also identified a need to educate students and practising nurses about climate change within a broader focus on environmental health. They recommended both the implementation of professional development for nursing staff and the integration of information on climate change and health into nursing curricula. Finally, they cautioned that changes to curricula would necessitate faculty development, because many nursing faculty members are not yet adequately informed about this issue.

Planning

Participants felt that nurses could also be involved in planning for adaptation activities by participating in emergency preparedness for extreme weather events, by setting up systems to contact elderly patients as part of an overall warning system during a heat wave and by including adaptation advice and education in

¹ The human response to global climate change and climate variability can be characterized in two ways: adaptation and mitigation. Adaptation involves developing ways to protect people and places by reducing their vulnerability to climate-related impacts. Mitigation involves attempts to slow the process of global climate change by lowering the level of greenhouse gases in the atmosphere.

routine care plans for clients. In terms of the planning required to reduce greenhouse gas (GHG) emissions, nurses could incorporate advice on reducing emissions and having a healthier lifestyle into care plans, become involved in urban planning to decrease the need for lengthy commutes and make communities more walkable, and establish or participate in Green Teams within their agencies to reduce energy use.

Advocacy

Participants identified nurses' role in advocacy to reduce GHG emissions. Given that the nursing constituency is large, the potential exists for nurses to have broad influence. Participants recommended that nurses get involved politically to effect change at a systems level. Such high-level change is needed to address social and economic inequities, so that people will be able to cope with changes in their environment; it can also generate policies supporting lower GHG emissions. Participants recommended that nurses receive support and education about policy development and ways of engaging politicians to foster advocacy at this level. Finally, they stressed building on success in advocacy work.

Tools

Participants identified the need for a variety of tools, many based on the clinical nursing process, to support nurses' work in climate change and health. Fact sheets, checklists, and toolkits should be developed to allow nurses to educate their colleagues, their clients and their communities about climate change.

Plenary sessions

The workshop was structured around a series of plenary sessions, during which representatives from the federal government, the public health sector and non-governmental organizations presented evidence-based information on climate change and its implications. In their presentations, these experts considered the impact of climate change on human health and the importance of both adaptation and mitigation activities. The plenary sessions provided the basis for further discussions by participants.

A number of the presenters shared data pertinent to the discussion of climate change, including data showing a gradual increase in global temperature, melting of the permafrost and reduction of snow and ice cover in the North, increased coastal erosion, reduced glacial coverage, earlier onset of spring in some parts of Canada, lower lake and river levels in the South and reduced air quality.

The presenters also stressed the global consensus on climate change that has emerged in recent years. According to the Intergovernmental Panel on Climate Change (IPCC), the evidence of the impact of human activities on climate is unequivocal. The IPCC experts have also concluded that evidence of climate change is apparent on all continents and that even if global GHGs are held constant at current levels, additional changes to the climate will occur.

The presenters told participants that climate change can be expected to have far-reaching impacts, including influences on economies, environments, human health and human safety. These impacts must be addressed through a combination of mitigation and adaptation strategies.

The IPCC has pointed out that vulnerability to climate change can be exacerbated by other stresses that a community or population is dealing with and that adaptive capacity is intimately connected to social and economic development. The impacts of recent hurricanes in the United States and heat waves in Europe have shown that even high-income countries may not be well prepared to cope with extreme weather events. The presenters shared many examples of populations and geographic regions within Canada with relatively greater vulnerability to climate change.

Climate change has many implications for public health and health services, and nurses have a critical role to play. Areas for adaptation include but are not limited to education and awareness; food security and nutrition; water and air quality; disease monitoring and surveillance; disaster preparedness and relief; and housing, community health and provision of social services. The presenters provided specific examples of strategies that have been undertaken by federal government departments and local health agencies to facilitate the adaptation of individuals, communities and populations to the effects of climate change. They also stressed that anticipatory and precautionary public health adaptation is more effective and far less costly than last-minute emergency measures.

The presenters concluded that we must all do our part to encourage behaviours by consumers that will support both adaptation to and mitigation of climate change. For example, health professionals can encourage patients to walk for exercise and transportation, which will mean leaving their cars at home and reducing GHG emissions; they can advise patients on the dangers of air pollution and what to do on “smog days”; they can counsel elderly patients on what to do during a heat wave; they can become educated about new diseases that may become prevalent in their communities with a changing climate; and they can take steps to ensure that clinic and hospital operations are as energy-efficient as possible. Consumers can be encouraged to use their purchasing power to buy “green” products, switch to energy-efficient appliances, take advantage of rebate and incentive programs offered by governments and use government processes to advocate for environmental concerns. Parents can encourage their children to get involved, teach them about the importance of the environment and lead by example.

Introduction

As part of its centennial celebrations in 2008, the Canadian Nurses Association (CNA) launched a project to support work on environmental health in the domains of nursing practice, education, research and policy. One component of that project was a full-day workshop on climate change, which CNA, with funding from the federal government, hosted in Ottawa in February 2008 (see Appendix A for the workshop agenda). The objectives of the workshop were to:

- provide information on climate change and health from a Canadian perspective, as well as an overview of adaptation and mitigation activities;
- identify the potential roles of nurses in addressing climate change;
- begin to prioritize next steps for nurses in adaptation and mitigation activities; and
- prepare a report to share information with others.

Workshop participants (listed in Appendix B) included members of CNA's Environmental Health Reference Group, which consists of 35 nurses representing every region of Canada who have volunteered their time to guide the association's environmental health work. Participants' comments on the workshop are recorded in Appendix C.

This report is a synopsis of the information presented at the climate change workshop. It summarizes participants' discussions on the role of nurses in addressing climate change, the ways in which climate change will affect the various areas of nursing practice, and strategies that nurses can use, individually and collectively, to reduce the negative effects of climate change on health and well-being. It also details each presenter's main messages about climate change, its impacts on health and well-being, supporting evidence, and strategies for addressing mitigation of and adaptation to climate change.

Detailed Proceedings: Nursing and Climate Change

The workshop provided a unique and critically important opportunity to identify nursing's role in addressing climate change by bringing together a key group of nurses who are leaders and champions in environmental health in Canada. They discussed the leadership role that Canadian nurses can play in addressing climate change, specifically considering what nurses can do to support adaptation to and mitigation of climate change.

Several themes arose from these deliberations, and the group made a number of important recommendations. Participants talked in particular about leadership, education, planning, advocacy and the tools needed to help nurses do this work.

The participants spent time in small groups and plenary discussions addressing the following questions:

- What can nurses do to support adaptation to climate change in the places where they work: hospitals, academic institutions, the community, patients' homes and long-term care facilities?
- What can nurses do to help with mitigation of climate change in each of those settings?

Adaptation

Adaptation to climate change refers to strengthening the capacity of individuals, communities and populations to deal with their changing climate.

Education

Participants identified a critical need to educate both practising nurses and nursing students about adaptation to climate change. They recommended professional development to help nurses understand climate change and its impact on health and to provide information on how to support effective adaptation. To prepare nursing students to deal with climate-related issues, workshop participants recommended that information on adapting to climate change be incorporated into nursing curricula at both the undergraduate and postgraduate levels. They also cautioned that changes to curricula would necessitate faculty development, since many nursing faculty members are not yet adequately informed about this issue.

The participants recommended that nurses provide education on climate change within their agencies and their communities. However, we need to build capacity and equip nurses with the knowledge they need so they can do this type of work. Participants recommended the development of social marketing campaigns linking healthier lifestyles with reduced GHG emissions as an adaptation strategy that would also mitigate climate change. Other activities could include participating in emergency planning within institutions and at all levels of government; setting up systems to contact elderly community residents as part of an overall warning system during heat waves; and promoting behaviour changes to support positive adaptation to the effects of climate change, such as being aware of smog alerts and wearing insect repellent in the evenings to prevent infection by West Nile virus.

Roles and collaboration

Nurses are in a position to communicate adaptation techniques to clients and colleagues in hospital, long-term care and community settings. For example, they could arrange for in-service sessions on incorporating adaptation strategies into care planning. Subsequent client teaching could routinely include advice and education on adapting to a changing climate. Given the vulnerability of their patients, long-

term care nurses could monitor temperature changes within their respective facilities during heat waves and could provide education for other staff. During discharge planning, nurses could educate clients and families on what they need to be aware of to cope with climate change.

Nurses in all settings could survey their respective facilities and agencies to find out what adaptation initiatives already exist. In times of disaster, nurses could work in triage or in outreach to vulnerable populations, in addition to caring for the sick. Participants also recommended that nurses take a leadership role on Green Teams within their agencies to promote energy conservation in both design and operations. Finally, participants recommended that nurses engage in surveillance of diseases that might be affected by climate change, to support early awareness of changes in the health status of the population.

Planning

Participants had many suggestions about the involvement of nurses in planning related to adaptation to climate change. They recommended that nurses become involved in emergency preparedness planning within their agencies and their communities and advocate for updates of emergency plans. They recommended that CNA work with other stakeholders to develop a template for action and planning for weather-related disasters that could be adapted to various settings such as the hospital, community and long-term care.

Advocacy

Participants saw an important role for nurses in advocacy for the public in general, with a specific focus on addressing the social and economic inequities experienced by vulnerable populations, who typically have a lower capacity to adapt to change of any type, including climate change. Nurses can also advocate for changes in policies that will directly affect health outcomes related to climate change, for example, regulations aimed at improving temperature control in public housing or a reduction in the sales tax on “green” products.

Tools

To support the involvement of nurses in adaptation initiatives, participants saw the need for a variety of tools, such as fact sheets that nurses could use to educate their colleagues, clients and families. Participants also recommended that stakeholders work together to build a toolkit containing evidence-based information, model policies, patient/client guidelines, implications for nursing curricula, and other appropriate materials. The toolkit should include information about adaptation strategies being implemented in other sectors and should build on positive changes that have already been made.

Mitigation

Mitigation of climate change refers to actions taken to reduce GHG emissions. Many of these actions also lead to healthier lifestyles.

Leadership

Participants recommended that CNA develop a position statement on climate change and health as part of its leadership in this area. They felt that the evidence on the health impacts of climate change in Canada and around the world was compelling, and they strongly encouraged CNA to develop a statement that clearly indicates the association’s values and beliefs on the issue.

Education

Participants recommended that information on mitigation activities as a way to both reduce GHG emissions and promote healthy lifestyles be included in both nursing curricula and professional development materials. They also saw a role for nurses in public education and social marketing strategies to support consumer behaviours that will reduce GHG emissions. Cable television, news, newsletters and public service announcements are all community resources that could be used for this purpose. Participants stressed the importance of reinforcing positive messages that link reductions in GHG emissions to both healthy lifestyles and the long-term health of the environment, on which health depends. They suggested engaging all stakeholders, including students, in activities to decrease energy use. Finally, they agreed that it will be important to identify current champions in all sectors and to work with them.

Advocacy

Participants indicated that nurses have an important role in advocating for policy to support reductions in GHG emissions. The nursing constituency is large, so there is a widespread network available to disseminate messages. Participants recommended that nurses work collaboratively with others who are already engaged in this issue. To increase their success in advocacy, nurses need support and education about policy development and ways of engaging politicians. Nurses can learn from each other and can build on the successes that professional nursing organizations have achieved around the world.

Tools

Participants again stressed the need for tools for nurses to use in advocacy and education about mitigation, including checklists for patient discharge information, fact sheets on reducing GHG emissions and “enviro tips.” Because context is so important, the tools must be developed in a way that will allow them to be adapted to different settings.

Detailed Proceedings: Plenary Speakers

Human Health in a Changing Climate: A Canadian Assessment of Vulnerabilities and Adaptive Capacity

Jacinthe Séguin, Safe Environments Programme, Health Canada

During the first plenary presentation, Jacinthe Séguin provided an overview of climate change and human health, covering:

- basic concepts relating climate change to human health;
- an assessment of vulnerabilities in Canada;
- the implications for public health and health care; and
- a look ahead.

Jacinthe provided the following definition of climate change:

A long-term shift or alteration in the climate of a specific region or the entire planet measured by changes in some or all of the features associated with average weather: wind patterns; cloud cover and patterns; precipitation; temperature; extreme weather frequency and intensity; and snow and ice cover.

She went on to summarize recent findings of the IPCC, which concluded that vulnerability to climate change is highly variable within individual countries. Even in developed countries, certain population groups are vulnerable, which means that adaptive capacity needs to be developed around the globe. The impacts of recent hurricanes and heat waves have shown that even high-income countries are not well prepared to cope with extreme weather events.

Jacinthe described a number of recent extreme weather events in Canada, including the 2006 boil-water advisory that was implemented in Vancouver as a result of rainstorm turbidity; the 2005 heat wave in Toronto, Montreal and surrounding areas; Hurricane Juan, which brought record-breaking amounts of rain to Atlantic Canada in 2003; the 1997 Red River flood; and the 1998 ice storm. In the North, rising temperatures are causing the ice to thin, which is making travel dangerous for hunters, and melting permafrost is causing building foundations to shift. Boating is more difficult because fall storms are more frequent and more severe. The quality of drinking water has been affected by lower water levels.

Health Canada has completed an assessment of Canada's vulnerability to climate change and adaptation. A soon-to-be-released report will detail the assessment, which involved establishing a baseline inventory of the current impacts of climate on health in Canada and projecting the impacts of future climate change. The assessment considered socio-economic and demographic factors as well as population health status and technological trends to determine coping capacity and vulnerabilities. The report will examine adaptive capacity and will recommend future directions for adaptation.

Implications for public health and health services

Jacinthe stressed the many implications for public health and health services, noting that the role of agencies and professionals in these fields is critical in addressing climate change issues. These implications touch on:

- food security and nutrition;
- water and air quality;
- disease monitoring and surveillance;
- disaster preparedness and relief;
- housing and shelter for homeless people;
- education and awareness (e.g., sun protection);
- healthy child development;
- social services (e.g., community health centres, help lines); and
- mental health services.

Looking ahead

Jacinte left participants with a number of “take-away messages.” She described the “adaptation imperative,” stressing that adaptation efforts can save lives. She also described “adaptation challenges,” people’s perception of their own vulnerability, which may prompt them to respond adequately to avoid impending consequences.

Finally, she outlined Health Canada’s role in adaptation, indicating that this federal government department uses a collaborative model to facilitate development of knowledge about the health impacts of climate change. The department is developing an understanding of current coping strategies and adaptive capacity and is also identifying populations at risk. It promotes adaptation strategies, both within the health sector and in other sectors, to reduce the risks to human health and well-being. It also disseminates information on climate change and health within the health and other sectors.

Summary

- Climate affects health in many ways; therefore, changes in the climate can also be expected to affect health.
- Anticipatory and precautionary adaptation through public health measures is more effective and less costly than last-minute, emergency adaptation.
- Immediate public health benefits can be gained from better adaptation to climate variability and extreme atmospheric events.
- Assessing population vulnerabilities from a local or regional perspective is crucial.
- Climate change brings public health opportunities as well as threats. Future benefits can be realized if planning begins now.

Turning the Corner: An Action Plan to Reduce Greenhouse Gases and Air Pollution

James Clarkson, Environment Canada

James Clarkson’s presentation emphasized that climate change is expected to have far-reaching impacts, including economic influences. For example, water shortages are limiting economic growth for prairie agriculture and hydroelectric utilities, and thawing of the permafrost is causing costly damage to infrastructure in the North. As well, there are environmental influences such as harm to ecosystems and species that are unable to respond rapidly to climate change. Warming allows the spread of invasive species like the mountain pine beetle, and prolonged drought increases the threat of forest fires. These influences also affect health and safety through, for example, an increasing incidence of heat waves and “smog days” and the introduction of new diseases.

James indicated that these impacts must be addressed through a combination of adaptation and mitigation activities. In particular, he suggested that GHG emissions must be lowered to reduce the risks of catastrophic climate change. However, adaptation and mitigation must go hand in hand: even if all GHG emissions could be stopped today, we will be feeling the effects of previous emissions for decades. James stated that we cannot adapt to all of the predicted changes in our climate and that there will be economic spin-offs from mitigation measures.

James stressed that actions to reduce emissions need to recognize that Canada is a vast country, where citizens and goods must travel great distances, and that it is also a major oil and gas exporting country. Canada is a leader within the G8 in terms of its economic and population growth. The environment continues to be a top priority for Canadians, and even though we are heavily invested in oil and gas, Canada has one of the most stable political climates in the world.

Internationally, the Kyoto Protocol, which was ratified in 2002, commits Canada to reduce emissions by 6% from 1990 levels between 2008 and 2010; however, the federal government has signalled that this objective cannot be achieved. At the same time, negotiations on the second phase of the protocol have begun. The government of Canada has agreed to the Bali roadmap, including references to hard targets, but the level of those targets remains to be determined. The government wants a plan that would include all major emitters and is considering further linkages to the international carbon market as that market matures.

What is Canada doing?

James described the Canadian government's approach as a "balanced plan." In April 2007, the Government of Canada, as part of the Turning the Corner initiative, announced the Regulatory Framework for Air Emissions, which sets targets to reduce air emissions from industry. The GHG emission intensity target requires an 18% improvement from 2006 levels by 2010, followed by an ongoing 2% annual improvement. Firms will have options for meeting their legal obligations, including in-house reductions, contributions to a technology fund, and domestic emissions trading, and they could also receive a one-time recognition for early action.

James stated that the government is committed to reducing total GHG emissions by 20% by 2020 and by 60%-70% by 2050 (relative to 2006 levels). In addition, the government's plan includes regulatory action on air pollution. National emissions caps will be set for smog and acid-rain-forming pollutants to make the following percentage reductions from 2006 levels: 40% for nitrogen oxides, 55% for sulphur oxides, 45% for volatile organic compounds (VOCs) and 20% for particulate matter. These targets will come into force as early as 2012, with firms having two options to meet their obligations: in-house reduction of emissions and emissions trading of nitrogen and sulphur oxides across Canada.

The Canadian government has also taken regulatory actions supported by program investments in clean energy; for example:

- \$1.5 billion for the ecoENERGY Renewable Initiatives, to increase Canada's renewable energy supplies, including the ecoENERGY for Renewable Power incentive;
- \$1.5 billion for the Climate Change Trust Fund, to help provinces and territories develop projects to lower air pollutants and GHG emissions;
- \$300 million for the ecoENERGY Efficiency Initiatives, to promote smarter energy use, including the new ecoENERGY Retrofit Initiative; and
- \$230 million for the ecoENERGY Technology Initiative.

The government has also taken regulatory actions supported by billions of dollars of investments in programs for clean transportation, including production of renewable fuel in Canada, improved public transit infrastructure, tax credits for the purchase of monthly transit passes to increase public transit use, a long-term transportation action plan for the Greater Toronto Area, the Eco-freight program to address the effects of freight transportation and incentives for the purchase of fuel-efficient vehicles.

What can we do?

James concluded by stressing the variety of things that health-care professionals can do. They should encourage patients to exercise by leaving their cars at home and walking whenever possible, advise patients on the dangers of air pollution and the anticipated increase in “smog days” caused by climate change, become educated about new diseases and ensure that clinic and hospital operations are as efficient as possible. As consumers, health-care professionals can encourage and practise using purchasing power to buy “green” products, switch to energy-efficient appliances and products and take advantage of rebate and incentive programs offered by governments. As individuals, we can lead by example and can encourage partners, grandchildren, children and siblings to get involved in advocating for and teaching about the importance of our environment.

Summary

James stated that the government is implementing a balanced plan that will achieve real results. It is focused on:

- taking strong regulatory action;
- encouraging the development and deployment of clean transportation and energy technologies;
- supporting provincial and territorial initiatives; and
- helping communities and Canadians to reduce their own emissions.

James concluded by saying that ultimately success will depend on a collaborative, systematic, united, societal approach.

The Public Health Approach to Preparing for Heat Waves in Montreal

Norman King, Louis Drouin and Luc Lefebvre, Department of Public Health, City of Montreal

Norman King made this presentation on behalf of himself and his colleagues, Louis Drouin and Luc Lefebvre. The presentation provided a general description of the role of public health departments in Quebec, with a more detailed description of the approach adopted by Montreal’s Public Health Department in dealing with climate change, specifically heat waves.

The mandate of the regional public health departments in Quebec is to inform the population about priority health problems, vulnerable groups, risk factors and efficient interventions; to follow health trends in the population; and to conduct appropriate research to ensure that any required preventive measures are adopted. The management of the public’s health follows a process of surveillance, analysis, interventions and evaluation.

Background to the program on preparing for heat waves

Before 2002, only general information was available to the public about the impact of heat on elderly people. In 2002, a decision was taken to better document the public health impact of heat waves, such as the direct effects of heat stroke, a relatively rare event that typically affects those doing strenuous work

during a heat wave. It was also deemed important to document the indirect effects of heat waves, such as exacerbation of pre-existing diseases among elderly people, which occurs more frequently. These indirect effects were highlighted during the 2003 heat wave in Europe, which resulted in close to 15,000 deaths in France over a 2-week period. Temperatures rose to over 35°C and did not fall below 25°C over a 2-day period. Thirty-five per cent of these excess deaths occurred at home. This catastrophe showed the necessity of reaching out to elderly people living at home and to their families and support persons, which is a mandate of the public health sector and its partners. The presenters pointed out that the occupational health and safety commission covers workers who may be at risk during periods of extreme heat.

Norman described the Montreal Public Health Department's program to address the impact of heat waves on health. The basic components of the program are performing research and health surveillance, educating the public, diminishing the effects of urban "heat islands," working toward sustainable development by promoting the reduction of GHG emissions and creating a heat health warning system (HHWS), which consists of seasonal readiness, heat warnings, heat alerts and a mobilization plan.

Public education

Norman outlined the objective of the public education component of the program: to inform the general and vulnerable populations of the health risks posed by heat waves, so that people understand the basic preventive measures that are necessary and the importance of ensuring that chronically ill and elderly people are not left on their own for extended periods during a heat wave. The public education component also informs those who are responsible for outreach of their role in conveying these messages.

The campaign begins in late spring with the distribution of pamphlets to a variety of outreach groups, such as medical clinics, pharmacies, public health centres, municipal organizations, community groups, private residences and low-cost housing projects for elderly people. Throughout the season, interviews are granted to the media, to provide regular reminders.

The Heat Health Warning System

Norman outlined the components of the HHWS: seasonal preparation, the "Weather Watch: Warning," the "Weather Watch: Alert" and the mobilization plan.

Seasonal preparation involves developing and distributing promotional material and reminders to partners (the civil security centre of the City of Montreal, borough services and the public health network) to highlight the need to get ready for the heat season. "Weather Watch: Warnings" and "Weather Watch: Alerts" are based on monitoring of the weather forecast. When Environment Canada forecasts a maximum temperature of 30°C or higher and a humidex level of 40 or more, the heat warning comes into effect. Through dissemination of information by the media and various websites, the population is informed and reminded of the importance of preventive measures and outreach toward those who are vulnerable to heat.

"Weather Watch: Alerts" are based on thresholds developed through analysis of excess mortality during heat episodes between 1984 and 2003 in Montreal and during 2003 in France. The criteria for an alert are prediction of three consecutive days with an average maximum temperature of 33°C or more and an average minimum temperature of 20°C or more or prediction of two consecutive nights with a minimum temperature of 25°C or more. During an alert, the Montreal Public Health Department informs its partners to be prepared to put the mobilization plan into effect and continues to inform the population and outreach partners about the necessary preventive measures.

The mobilization plan is activated when the meteorological criteria of the alert phase (described above) are reached or when health surveillance indicates that excess morbidity and mortality are occurring. Mobilization requires close collaboration with outreach partners, which include community groups as

well as the municipal and public health groups mentioned above. The actions include outreach to vulnerable populations, extending opening hours of public swimming and wading pools and air-conditioned shopping centres, opening temporary air-conditioned shelters, organizing transportation to and from these shelters, and ensuring that public drinking water facilities are fully operative.

An evaluative research project is currently under way to determine the impact of the public education component of the program.

Norman stressed that long-term preventive interventions are essential. To address this need, the Montreal Public Health Department is now identifying urban “heat islands,” sectors of the city that are particularly vulnerable to heat, and will develop preventive strategies accordingly. The department is also engaged in sustainable development activities, such as the Montreal Sustainable Development Plan and encouraging increased use of public transportation, walking and cycling.

Summary

Norman concluded the presentation by looking to the future, noting that the program is well structured and that collaboration with all partners is well established. Periodic fine-tuning is achieved through a regional committee of the public health network. Evaluation of the public education program could lead to changes in that component, and continued surveillance of health data could lead to modifications of the HHWS.

Air Quality and Human Health

Dr. Quentin Chiotti, Climate Change Programme Director and Senior Scientist, Pollution Probe

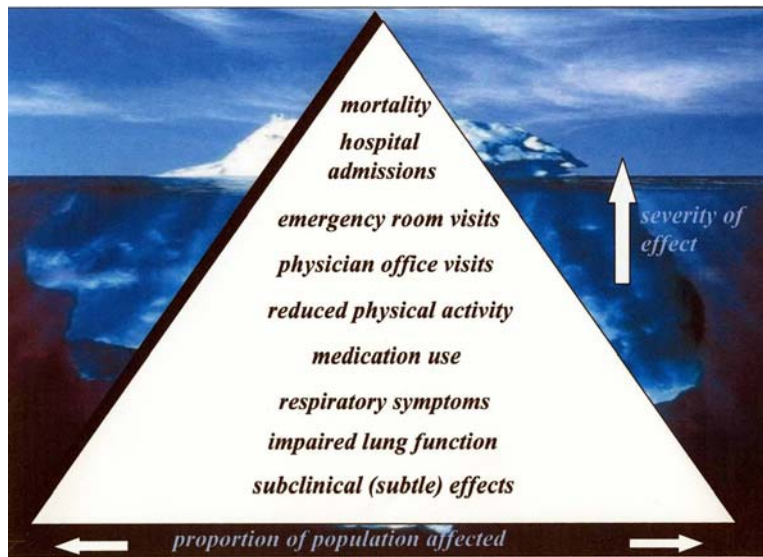
In this presentation, Quentin Chiotti discussed the health problems related to pollution of outdoor air. He explained the components of smog and their effects on human health. He also compared air pollution in Canada with that occurring elsewhere, trends in air pollution, what governments are doing and emerging issues.

What is smog?

The key constituents of smog are ozone and fine particulate matter. Ozone is formed from nitrogen oxides and VOCs in sunlight. Fine particulate matter can be emitted as a primary pollutant, but it can also be formed from precursor gases such as sulphur dioxide, nitrogen oxides and VOCs. Summer smog is made of particulate matter and ozone, whereas winter smog consists primarily of fine particulate matter.

What are the health effects?

Quentin emphasized that more than 100 studies conducted in as many cities have examined the relation between air pollution and mortality, whereas others have studied the effects of smog on morbidity. He stated that “while individual studies may lack precision, the combined weight of evidence is compelling – air pollution kills, but mortality is the tip of the iceberg.”



He stated that air pollution can make it harder to breathe; can irritate the respiratory system; can trigger episodes of asthma, chronic obstructive pulmonary disease, chronic bronchitis and emphysema; and can exacerbate cardiovascular disease. These conclusions are supported by several studies. For example, a 2005 study by the Ontario Medical Association estimated that 5,829 premature deaths, 16,807 hospital admissions, 59,696 emergency room visits and 29,292,100 minor illness days occurred annually in Ontario as a result of air pollution. A joint study by Health Canada and Environment Canada in the same year found that 5,800 premature deaths in eight Canadian cities resulted from poor outdoor air quality. In a 2004 study, Toronto Public Health found that 1,700 premature deaths and 6,000 hospital admissions annually were attributable to air pollution.

Air pollution in Canada: How bad is it?

Quentin drew attention to data indicative of air quality problems in Canada. He noted that in some places, air quality is getting worse. For example, very fine particulate matter levels are above the Canada-Wide Standards in a number of cities, and at least 40% of Canadians live in communities that at some point during the year have ozone levels above these standards. From 2001 to 2003, 16 Ontario cities had ozone levels that did not meet the standard.

What are governments doing?

Quentin outlined a number of government initiatives dealing with air pollution, including federal initiatives such as *Canada's Clean Air Act*, the Regulatory Framework for Air Emissions, the Industry Emissions Reduction Plan and Ontario's Plan for Clean Air. Work continues on developing a new air standard, and some municipalities have developed smog and climate change plans.

Emerging issues

Quentin concluded by describing a number of emerging issues that need to be addressed, including the transboundary, hemispheric nature of the air pollution problem, local sources and personal exposure, Toronto's Air Quality Health Index and the relation between climate change and air quality.

Climate Change Adaptation

Carrie Spencer, Climate Change Impacts and Adaptation Division, Natural Resources Canada

Since 1998, the Climate Change Impacts and Adaptation Division of Natural Resources Canada has funded over 300 research projects on impacts and adaptation. The agency has also funded and coordinated a research network in this area. Future programming will focus less on research and more on facilitating adaptation decisions. Carrie's presentation addressed a number of major topics:

- Fundamentals of adaptation to climate change
- State of the science of adaptation
- Policy environment
- Lessons learned from adaptation experiences

Fundamentals of adaptation to climate change

Carrie shared the IPCC's definition of adaptation as "Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects" (Working Group III Report "Mitigation of Climate Change," p. 809). She also reminded participants of an ancient definition of adaptation: "Adaptation means not clinging to fixed methods, but changing appropriately according to events, and acting as is suitable" (Zhang Yu, Sung Dynasty 960-1278).

State of the science of adaptation

The IPCC has stated that the warming of the climate system caused by human activity is unequivocal, that all continents show evidence of climate change, and that even if global GHGs were held constant at 2000 levels, additional warming would still occur. Adaptation is therefore the only way to deal with the impacts, which will be unavoidable. The IPCC has pointed out that vulnerability to climate change can be exacerbated by other stresses and that adaptive capacity is intimately connected to social and economic development. However, there are adaptation options that can be implemented at low cost. It must also be remembered that some societies have high adaptive capacity but remain vulnerable to climate change.

In Canada, resource-dependent communities and Aboriginal communities are particularly vulnerable to the impacts of climate change. More than 1,600 Canadian communities obtain at least 30% of their income from agriculture, forestry, fishing or hunting. Aboriginal communities have strong connections to the land for economic and cultural well-being.

Carrie shared some of the costs of climate change that Canadians have already borne. She cited the Saguenay flood in Quebec in 1996, which cost \$1.7 billion and resulted in 10 deaths; the ice storm in eastern Canada in 1998, which cost \$5.4 billion and resulted in 28 deaths; the Red River flood in the Prairies in 1997, which totalled \$817 million in damages; the wildfires in British Columbia and Alberta in 2003, which cost \$700 million and caused 3 deaths; and, finally, Hurricane Juan on the East Coast in 2003, which caused \$100 million in damages and 5 deaths.

Policy environment

Adaptation involves many players, including all levels of government, the private sector and civil society. Adaptation is characterized by managing risk. The risks and uncertainties associated with climate change are not much different from those related to other issues that planners routinely address. This means that integrating climate change into existing planning processes, using risk management methods, is an effective approach to adaptation.

Lessons learned from adaptation experiences

Carrie gave a number of examples of adaptation, such as limiting development in vulnerable areas such as coastal regions, adapting infrastructure design by incorporating features like thermosyphons to induce artificial cooling of permafrost, generating vulnerability maps for permafrost terrain and building on pylons to reduce damage from flooding.

She also shared an example of adaptation: the Tidal Surge Project in Annapolis Royal, a small coastal community that is vulnerable to flooding. A citizen's group assessed the town's vulnerability to climate change with the goal of putting appropriate emergency-response plans in place. They analyzed information on past events and made predictions for the future. One of their key findings was that the small rise of land on which the fire department was located would become an island during an extreme flooding event. In response, the town modified its emergency response plan to include a new location to house the rescue equipment, and the fire department acquired a boat.

Carrie summarized the lessons that have been learned about adaptation. One is that a strategic approach may be more important than a "strategy". However, some common barriers to adaptation approaches include lack of awareness, limited access to information and lack of decision-support tools. She noted that engagement of local stakeholders is critical, and collaboration across sectors/jurisdictions is often necessary. Social networks are also important.

Summary

- Climate change is an economic, environmental and social issue.
- Scientific evidence is definite. Climate change is an issue of today, not of tomorrow.
- We need to reduce GHG emissions to address the global causes of climate change, while adapting to the local impacts of these changes.
- Effective adaptation will involve all levels of government, business, industry, community groups and individuals.
- There are many examples of climate change adaptation from which we can learn.
- We know enough about the impacts of climate change to act now.
- Local leadership and action are critical.

Nursing and Climate Change

Nicki Sims-Jones, Canadian Nurses Association

Climate change is not just an environmental issue, as too many people still believe. It is an all-encompassing threat.

– Kofi Annan, 2006

In her presentation, Nicki Sims-Jones offered reasons why nurses should consider becoming involved in reducing the impact of climate change on health:

- Climate change is going to affect the health of the people with whom nurses work.
- Climate change is a social justice issue because people in developing countries, who generate low emissions compared with those in developed countries, bear the greatest burden resulting from the changes in climate.
- Nurses have the skills to support people in adapting to their changing climate.

Whereas Jacinthe Séguin's presentation (see page 8) provided information on the ways in which our changing climate affects the health of Canadians, Nicki stressed that climate change is also a social justice issue, since the countries producing the most carbon dioxide do not bear the greatest burden of its effects.

This imbalance means that the developed world benefits from the use of carbon-intensive technologies, while the developing world experiences the consequences of excess carbon. For example, per capita emissions of GHGs in the United States and Canada are 19 times higher than in Africa, yet Africans are feeling the impact in terms of the reduced precipitation and crop yields and the increased flooding of low-lying areas that have resulted from climate change.

Nicki pointed out that, worldwide, humans have always adapted to the weather; our clothing, housing and other measures all help to keep us healthy. What is different today is the scope of the changes that populations are facing. It is known that the capacity to adapt to climate change depends on the stresses that the population is already experiencing. These stresses result from population density, level of economic development, food availability, income level and distribution, local environmental conditions, pre-existing health status and the quality and availability of public health care. When a population is already facing these types of stresses, it has difficulty adapting to a changing climate. Public health practitioners have proposed “no regrets” responses to climate change: these responses address the stresses without climate change being the determining factor in decision-making. This approach will increase the capacity of populations to adapt to climate change.

In Canada, a “no regrets” response to climate change would involve strengthening the public health system to both support adaptation to climate change and address other health issues. Planning for emergencies such as extreme weather events also supports adaptation and is another area where nurses need to be involved within institutions and at every level of government.

Nurses are uniquely qualified to bring to the public information about adapting to the changing climate. They have the assessment skills and scientific background to identify potential hazards as well as the communication skills to explain the exposure, and how to reduce its risk, in an understandable way. Nurses could also use their considerable expertise in health promotion to support consumers in making choices that will both improve their health and reduce GHG emissions.

In conclusion, Nicki stressed that our climate is changing in response to human activities and that these changes will have an impact on health in Canada and worldwide. As nurses, we have a very real choice of whether to become involved now with climate change or to wait until we are dealing with even more significant effects on individuals, families and communities. Climate change will not go away on its own, and nurses have the skills to make a difference.

Courage my friends; 'tis not too late to make the world a better place.

– Tommy Douglas

Appendix A: Workshop Agenda

Time	Topic	Speaker
8:00-8:30	Coffee	
8:30-8:45	Welcoming Remarks	Nicki Sims-Jones
	Review Agenda	Facilitator
8:45-9:45	Human Health in a Changing Climate: A Canadian Assessment of Vulnerabilities and Adaptive Capacity	Jacinthe Séguin Health Canada
9:45-10:30	Turning the Corner: An Action Plan to Reduce Greenhouse Gases and Air Pollution	James Clarkson Environment Canada
10:30-11:00	Break	
11:00-11:30	The Public Health Approach to Preparing for Heat Waves in Montreal	Norman King, Louis Drouin and Luc Lefebvre Department of Public Health, City of Montreal
11:30-12:00	Air Quality and Human Health	Quentin Chiotti Pollution Probe
12:00-13:00	Lunch	At CNA House
13:00-13:45	Climate Change Adaptation	Carrie Spencer Natural Resources Canada
13:45-14:15	Nursing and Climate Change	Nicki Sims-Jones Canadian Nurses Association
14:15-15:00	Nursing and Climate Change: Facilitated Discussion	Facilitator
15:00-15:15	Break	
15:15-16:15	Nursing and Climate Change: Facilitated Discussion Continued	Facilitator
16:15-16:30	Wrap-Up and Next Steps	Nicki Sims-Jones

Appendix B: Participants

Chelsee Albo
Western Regional Director
Canadian Nursing Students' Association
Calgary, Alberta

Paul Boudreau
Policy Analyst
Association of Registered Nurses
of Prince Edward Island
Charlottetown, Prince Edward Island

Nancy Brookes
Nurse Scholar
Royal Ottawa Health Care Group
Ottawa, Ontario

Andrea Chircop
Assistant Professor
School of Nursing, Dalhousie University
Halifax, Nova Scotia

Candace Frank
Staff Nurse
Saskatoon Surgicentre Inc.
Saskatoon, Saskatchewan

Gloria Fraser
Co-ordinator
Environmental Health Clinic, Women's College
Hospital
Toronto, Ontario

Sandra Gear
Professional Practice Consultant – Nursing
Rural Avalon, Newfoundland

Fiona Hanley
Lecturer
McGill University
Montréal, Quebec

Jean Harrowing
Lecturer and Theory Courses Coordinator
University of Lethbridge
Lethbridge, Alberta

Roberta Heale
Assistant Professor
School of Nursing, Laurentian University
Sudbury, Ontario

Cindy Hunt
Associate Dean, Nursing, School of Health
Sciences
Humber Institute of Technology and Advanced
Learning
Toronto, Ontario

Kristine Hutchison
Rep. Community Health Nurses Association of
Canada
Manager, Public Health
Department of Health and Social Services,
Government of Nunavut
Iqaluit, Nunavut

Sarah Liberman
Policy Analyst
Saskatchewan Registered Nurses' Association
Regina, Saskatchewan

Priscilla Lockwood
Rep. Canadian Association for Rural and
Remote Nursing
Staff Nurse
Tofino General Hospital
Tofino, British Columbia

Jo-Anne Macdonald
PhD Student
University of Ottawa
Ottawa, Ontario

Bonnie McLeod
Rep. Operating Room Nurses Association of
Canada
Clinical Nurse Educator – Perioperative
Fraser Health Authority
Maple Ridge, British Columbia

Eileen Owen-Williams
Associate Professor
Coordinator, Family Nurse Practitioner Program
University of Northern British Columbia
Prince George, British Columbia

Janet Purvis
National Practice Consultant
VON Canada
New Glasgow, Nova Scotia

Nicki Sims-Jones
Manager, Office of Environment
Canadian Nurses Association
Ottawa, Ontario

Hilda Swirsky
Rep. Registered Nurses' Association of Ontario
Clinical Nurse
Mount Sinai Hospital
Toronto, Ontario

Joyce Woods-Surrendi
Nursing Educator
Mount Royal College
Calgary, Alberta

Appendix C: Participants' Comments

What will you do in your jurisdiction/organization as a result of this workshop?

- Survey, then act.
- Bring back the report and plead our case again.
- Meet with legislative representatives re: current/future policy. Develop fact sheets with ways to mitigate climate change.
- Incorporate into curriculum.
- Try and speak the word. Read, read, read. Brief my association president and president elect.
- Share the videos at local and regional nursing meetings. Also request inclusion in nursing paper. Share video at every opportunity.
- The tools will be useful and the information provided can be translated to increase awareness and activities in our membership.
- Engage in agency efforts re: mitigation.
- Complete an inventory on information available around environmental health issues.
- Complete a poster display which can be used in clinics and other facilities.
- More information sharing.
- Attend municipal meetings.
- Pass along DVD/CD to highest level administration to see – disseminate through health authority.
- Summarize findings from our environmental health conference for colleagues and manager. Also provide to professional association practice adviser.
- Suggest RNs in own facility choose environmental health issue to follow on-site in the coming months.
- Bring forward to the Canadian Association for Rural and Remote Nursing specific rural context of environmental health, adaptation/mitigation of climate change.