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## Climate Change and Human Health

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### Background

Climate change is increasingly recognized as a significant threat facing society and has the potential to be one of the greatest threats to human health in the 21<sup>st</sup> Century<sup>1</sup>. While the damage is being done now, many of the health effects may arise only decades in the future<sup>2</sup>.

Possible impacts could include some or all of the following:

- Increased mortality, disease and injuries from heat waves and other extreme weather events;
- Continued change in the range of some infectious disease vectors (i.e. 260-320 million more cases of malaria predicted by 2080, with six billion more at risk for dengue fever);
- Effects on food yields- increased malnutrition;
- Increased flooding in some areas and increased droughts in others, along with other impacts on freshwater supply;
- Increases in foodborne and waterborne illnesses;
- Warming and rising sea levels adding to displacement and also impacting water supply through salination;
- Impaired functioning of ecosystems;
- Negative effects on air quality associated with ground level ozone, including

increases in cardio-respiratory morbidity and mortality, asthma, and allergens;

- Displacement of vulnerable populations (especially in coastal areas)<sup>1</sup>; and
- Loss of livelihoods<sup>3</sup>.

Most of the impacts of climate change will result from amplifying the existing health hazards found in populations<sup>4</sup>. How susceptible a population is to the effects of climate change is dependent on their existing vulnerabilities (i.e. disease burden, resources etc.) as well as their adaptive capacity<sup>5</sup>. The World Health Organization has projected that countries that have, and will likely continue to suffer the greatest effects, are those who have contributed the smallest amount to the causes of climate change.<sup>6</sup>

While the vast majority of climate change deaths will occur in developing countries with systemic vulnerabilities, a recent Health Canada report has noted that Canada is likely to experience higher rates of warming in this century than most other countries in the world. Climate change scenarios predict an increased risk of extreme weather and other climate events for all regions of Canada, with the exception of extreme cold<sup>7</sup>. Canadians most vulnerable to climate change include seniors,

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1 Currently a third of the world's population lives within 60 miles of the shoreline and 13 of 20 biggest world cities located on the coast- more than a billion people could be displaced (Costello et.al., 2009)

children and infants, socially disadvantaged individuals, and those with pre-existing medical conditions such as cardiovascular disease<sup>8</sup>. Those living in cities could be especially vulnerable due to the impact of the heat island effect. However, given their greater access to emergency, health, social, and financial resources, they might also have the greatest adaptive capacity<sup>9</sup>.

The health consequences of climate change have the potential to be more severe in far northern regions. Populations in Canada's north including aboriginals have already begun to see differences in their hunting practices as a result of changing ice patterns<sup>10</sup>, and the melting of permanent snowpacks<sup>11</sup>. Changes in ice patterns have also led to increased injuries<sup>12</sup>. In some places in the North, climate changes have led to greater risks from avalanches, landslides and other hazards<sup>13</sup>. Further problems are related to the infrastructure in Northern Canada, with some communities already noticing degradation of structures due to the thawing of the permafrost<sup>14</sup>. Given that much of the Northern infrastructure is already in disrepair, this represents a considerable problem. Geographic isolation, and a lack of resources may further exacerbate the situation<sup>15</sup>.

### **What CMA has done?**

Physicians have a critical role to play in advancing public understanding of the potential impact of climate change on health and promoting health protecting responses.

The CMA has been working on the issue of climate change and human health for a number of years. CMA was supportive of Canada's ratification of the Kyoto Protocol, and urged the Government of Canada to commit to choosing a climate change strategy that satisfied Canada's international commitments while also maximizing the clean air co-benefits and smog-reduction potential of any greenhouse gas reduction initiatives.

In 2007, a number of resolutions were passed at General Council calling on government to properly plan for the health impacts of climate

change and put in place measures to mitigate the impact of climate change on vulnerable populations in Canada's north. In that same year, CMA and the Canadian Nurses Association updated a joint position statement first entered into in 1994 calling for environmentally responsible activity in the health-care sector.

Most recently, the CMA has been an integral part of the drafting of the World Medical Association (WMA) policies on health and climate change. The WMA Declaration of Delhi on Health and Climate Change was adopted at its annual General Assembly in New Delhi, India in October 2009. The declaration calls for action in five main areas; advocacy to combat global warming; leadership-help people be healthy enough to adapt to climate change; education and capacity building; surveillance and research; and collaboration to prepare for climate emergencies. This policy is written to complement the WMA declaration.

### **What needs to be done?**

Climate change may lead to significant impacts on human health. While it is unlikely that these outcomes can be avoided, there are some strategies that can be employed to help limit the negative consequences.

#### *Education and Capacity Building*

There is a need for greater public and health professional awareness and education about climate change in order to gain understanding of the health consequences and support for strategies to reduce green house gases and mitigate climate change effects.

CMA recommends:

1. A national public awareness program on the importance of the environment and global climate change to personal health;
2. Encouraging health sciences schools to enhance their provision of educational programs on environmental health; and fostering the development of continuing education modules on environmental health and environmental health practices.

### *Surveillance and Research*

There are important gaps in our knowledge on the health impacts of climate change as well as the effectiveness of various mitigation and adaptation strategies. Surveillance and reporting functions need to be strengthened to allow for greater accuracy in modeling of future impacts.

CMA recommends:

3. That the federal government must address the gaps in research regarding climate change and health by undertaking studies to
  - quantify and model the burden of disease that will be caused by global climate change
  - identify the most vulnerable populations, the particular health impacts of climate change on vulnerable populations, and possible new protections for such populations;
  - increase the collection and accuracy of health data, particularly for vulnerable and underserved populations;
  - report diseases that emerge in conjunction with global climate change, and participate in field investigations, as with outbreaks of infectious diseases; and
  - develop and expand surveillance systems to include diseases caused by global climate change.

### *Reducing the Burden of Disease to Mitigate Climate Change Impacts*

How susceptible a population is to the effects of climate change is dependent on their existing vulnerabilities. Therefore, work needs to be done to reduce the burden of diseases and improve upon the social determinants of health for vulnerable populations in Canada and globally.

CMA recommends:

4. That the federal and provincial/territorial governments work together to improve the ability of the public to adapt to climate change and catastrophic weather events by
  - Encouraging behaviours that improve overall health,
  - Creating targeted programs designed to address specific exposures,
  - Providing health promotion information and education on self-management of the symptoms of climate-associated illness,

- Ensuring physical infrastructure that allows for adaptation;

5. That the federal government develop concrete actions to reduce the health impact of climate-related emissions, in particular those initiatives which will also improve the general health of the population;
6. That the federal government support the Millennium Development Goals and support the principles outlined in the WHO Commission on the Social Determinants of Health report; and

### *Preparing for Climate Emergencies*

To deal with the future burden of climate change related health issues there is a need to ensure adequate health capacity and infrastructure. Rebuilding of public health capacity globally is seen as the most important, cost-effective, and urgently needed response to climate change<sup>16</sup>. Domestically, there is a need to ensure adequate surge capacity within the health care system to be prepared for an increase in illness related to climate change effects. There is also a need to strengthen not only the health systems, but the infrastructure (i.e. housing) for vulnerable populations including Aboriginals and those in the North.

CMA recommends that the federal and provincial /territorial governments work together to:

7. Strengthen the public health system both domestically and internationally in order to improve the capacity of communities to adapt to climate change;
8. Ensure adequate surge capacity within Canada's health system to handle the increase in climate change related illness;
9. Ensure the health of vulnerable populations is adequate to handle climate change related situations;
10. Develop knowledge about the best ways to adapt to and mitigate the health effects of climate change;
11. Integrate health professionals into the emergency preparedness plans of government and public health authorities so that front-line providers are adequately informed and prepared to properly manage any health emergencies.

### *Advocacy to Combat Climate Change*

Finally, there is a need to take action to reduce the damaging effects of climate change. The global community needs to come together to reduce the levels of green house gases being released in the atmosphere, and focus on safer more environmentally friendly energy sources.

Investments in cuts to greenhouse gas emissions would greatly outweigh their costs, and could help to reduce the future burden of climate change related illness<sup>17</sup>.

CMA recommends:

12. That the government of Canada become a global leader in promoting equitable, carbon neutral economic, industrial, and social policies, and practices that fight global warming and adopt specific green house gas reduction targets as determined by the evolving science of climate change.

13. That health care professionals act within their professional settings to reduce the environmental impact of medical activities and to develop environmentally sustainable professional settings;

14. That all Canadians act to minimize individual impacts on the environment, and encourage others to do so, as well.

### **Conclusions**

The CMA believes that Canada must prepare now for the potential health threat that climate change poses to its population. While many of these effects will take decades to materialize, certain populations, such as those in Canada's north, or those in low lying coastal areas, are already starting to experience the impact of climate change.

A focus on education and health promotion, as well as advocacy for improved public policy and primary health care resources will be a good start in dealing with this issue. Additionally, further research and data collection is necessary to improve our understanding of climate change and the effectiveness of adaptation and mitigation strategies.

Finally, the global community needs to act together to address the health and environmental impacts of climate change. By working together, in an international response, strategies can be implemented to mitigate any negative health effects of climate change.

Canada's physicians believe that: *What is good for the environment is also good for human health.* It is past time for those of us in the health sector in Canada to engage fully in the debate and discussions within our own house, as well as in the broader body politic to ensure that protecting human health is the bottom line of environmental and climate change strategies.

### **Bibliography**

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