

# How to Save the Lives of Millions: Rx for Sustainability

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## ABSTRACT

Climate change is the greatest threat to global health in the 21st century. Scientists anticipate that climate change will bring famines, mass displacement, infectious disease, and freshwater shortages—problems that can be reduced, if not avoided, by limiting future greenhouse gas (GHG) emissions. Given a professional duty to do no harm, physicians must do what they can to reduce the impacts of climate change. As health advocates and counselors to their patients, physicians can accelerate the move toward sustainability. By promoting behavioural change, such as active transport and eating unprocessed, plant-based diets, physicians can both improve public health and help reduce GHG emissions.

KEYWORDS: *Climate change, Health, Emissions, Mitigation*



Climate change is the biggest global health threat of the 21st century.<sup>1</sup>

In March 2009, a congress of scientists from over 80 countries raised their concern that current climate data are in line with the worst-case scenarios projected by the Intergovernmental Panel on Climate Change (IPCC).<sup>2</sup> However, the congress maintained that dangerous climate change could still be minimized if dramatic action to reduce global greenhouse gas (GHG) emissions is taken.<sup>2</sup>

The impacts of climate change will be overwhelmingly negative. As sea levels rise and millions of people have their food and water supplies threatened, there will be migrations in unprecedented numbers, exacerbating poverty and violent conflicts.<sup>1,4</sup> The International Organization for Migration estimates that climate change will uproot 200 million people by 2050.<sup>5</sup> A recent study also suggests that people in the tropics and subtropics, which contains half of the world's population, will face severe food shortages by 2100 without extensive adaptive measures.<sup>6</sup>

## LOCAL PHYSICIAN LEADERSHIP

In 2007, the Canadian Medical Association General Council voted 95% in favour of a motion requesting that physicians discuss environmental issues with patients, work with healthcare facilities to reduce waste, green their own homes, and introduce environmental programs to medical education.<sup>7</sup> Promoting environmental sustainability has direct co-benefits for health, fits well within the physician's role, and is simply good preventative medicine.

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## ACTIVE TRANSPORTATION

Transportation causes 23% of global GHGs and makes up 26% of world energy use.<sup>8</sup> In British Columbia, 58% of personal emissions are due to transport: cars and trucks (44%), air travel (12%), and bus and rail (2%).<sup>9</sup> A U.S. study found that the likelihood of obesity increased by 6% with each hour spent in a car each day.<sup>10</sup> Healthcare professionals can help decrease reliance on personal vehicles, not only by promoting active transportation such as walking or cycling, but also by advocating for infrastructure changes that make these activities safer and more appealing.<sup>11</sup> Active transport represents only 12% of all urban trips in Canada, compared with Germany (34%) and the Netherlands (46%) where cities and towns have extensive pedestrian zones, traffic calming, and dedicated bike lanes.<sup>11</sup> These measures reduce traffic speeds and make commuting safer for cyclists and pedestrians. A review of the impacts of cyclist- and pedestrian-friendly infrastructure in Denmark, Britain, Germany, and the Netherlands found traffic injuries reduced by, on average, 53% in traffic-calmed neighborhoods.<sup>12</sup> A recent meta-analysis of prospective cohort and case-control studies also found that active commuting, whether by foot or by bicycle, reduces cardiovascular risk by 11%.<sup>13</sup>

Reductions in motorized transport have measurable and immediate health benefits. A recent study in the *New England Journal of Medicine* found that life expectancy increases by about 0.61±0.20 years for every 10µg/m<sup>3</sup> reduction in fine-particulate concentration (≤2.5µm).<sup>14</sup> A natural experiment occurred during the Atlanta Olympic Games where Olympics organizers took dramatic efforts to reduce traffic congestion.<sup>15</sup> For the duration


of the Games, the number of children seeking emergency care and hospitalization for asthma dropped by 41.6%, with minimal change in the number of children seeking medical attention for other reasons.<sup>15</sup>

### LIMITING CONSUMPTION OF DIGASTRIC GRAZERS

While auto emissions are often at the centre of public attention when discussing climate change, agricultural emissions have an even larger impact. Farming and associated land-use comprise 35% of global GHG emissions.<sup>16</sup> Livestock production makes up 18% of global GHG emissions and uses almost one third of the world's entire land surface.<sup>17</sup> Furthermore, one third of all arable land is devoted to growing animal feed.<sup>17</sup> Dr. R.K. Pachauri, a Nobel Peace Prize recipient and chair of the IPCC, has said that reducing meat, especially beef, is a feasible and immediate way for individuals to significantly reduce their GHG emissions.<sup>21</sup> By encouraging patients to eat less meat and more unprocessed and plant-based foods, doctors can help lessen environmental impacts, simultaneously reducing heart disease, cancer, diabetes and obesity.<sup>19,20</sup> The risk of developing colorectal cancer is found to decrease by 33% for every 100g daily reduction in red and processed meat intake.<sup>21</sup> A prospective study of over half

a million men and women demonstrated that high intake of red and processed meat increased the risk of death from cancer, and cardiovascular disease.<sup>22</sup> The researchers calculated that 11% of male deaths and 16% of female deaths within the quintile with highest red meat consumption (62.6g/1000 kcal/d) could have been prevented if their intake was reduced to that of the lowest quintile (9.8g/1000 kcal/d).<sup>22</sup> There is no risk associated with reducing meat intake as long as there is an adequate intake of necessary nutrients and micronutrients.<sup>1,23</sup> Physicians should support patients who choose to eliminate meat from their diets (and 33% of their food-related GHG emissions), since many studies and major dietetic associations recognize vegetarian diets to be healthy.<sup>23,24</sup>

### PRIMUM NON NOCERE

As future healthcare providers, we accept our ethical duty to first do no harm. In light of the harms posed by climate change, physicians should be compelled to contribute to the effort to limit its severity. With dual benefits for individual and global health, active transport and a plant-based diet are preventative measures that physicians should advocate. 

### REFERENCES

- Costello A, Abbas M, Allen A, Ball S, Bell S, Bellamy R et al. Managing the health effects of climate change: Lancet and University College London Institute for Global Health commission. *Lancet*. 2009 May 16;373(9676):1693-733.
- Climate change. Global risk, challenges and decisions. [Internet]. Copenhagen; 2009 March 12 [cited 2009 June 9]; Available from: [http://climatecongress.ku.dk/newsroom/congress\\_key\\_messages/](http://climatecongress.ku.dk/newsroom/congress_key_messages/)
- Intergovernmental Panel on Climate Change. Parry MI, Canziani OF, Palutikof JP, van der Linden PJ, editors. *Climate change 2007. Impacts, adaptation, and vulnerability. Contribution of working group II to the fourth assessment report of the Intergovernmental Panel on Climate Change*. Cambridge University Press; 2007.
- Warner K, Ehrhart C, de Sherbinin A, Adamo S, Chai-Onn T. In search of shelter: mapping the effects of climate change on human migration and displacement. [Internet]. CARE International 2009 May [cited 2009 June 10]; Available from: [http://www.care.org/getinvolved/advocacy/migration\\_report.asp](http://www.care.org/getinvolved/advocacy/migration_report.asp)
- Brown O. Migration and climate change. [Internet]. International Organization for Migration: Research series No. 31 Geneva; 2008 [cited 2009 June 13]; Available from: [http://www.iom.cz/files/Migration\\_and\\_Climate\\_Change\\_-\\_IOM\\_Migration\\_Research\\_Series\\_No\\_31.pdf](http://www.iom.cz/files/Migration_and_Climate_Change_-_IOM_Migration_Research_Series_No_31.pdf)
- Battisti DS, Naylor RL. Historical warnings of future food insecurity with unprecedented seasonal heat. *Science* 2009;323:240-44.
- Jones, D. Physicians go green. *CMAJ* 2007 Sept 25; 177(7): 709.
- Intergovernmental Panel on Climate Change. Metz B, Davidson OR, Bosch PR, Dave R, Meyer LA, editors. *Climate change 2007. Impacts, adaptation, and vulnerability. Contribution of working group III to the fourth assessment report of the Intergovernmental Panel on Climate Change*. Cambridge University Press; 2007.
- British Columbia Ministry of Environment. *Climate change: BC's greenhouse gas emissions* [Online]. 2007 [cited 2009 Jun 16]; Available from: <http://www.env.gov.bc.ca/epd/climate/reduce-ghg/emissions.htm#household>
- Frank LD, Andresen MA, Schmid TL. Obesity relationships with community design, physical activity, and time spent in cars. *Am J Prev Med* 2004;27:87-96.
- Pucher, J, Dijkstra L. Promoting safe walking and cycling to improve public health: lessons from the Netherlands and Germany. *Am J Public Health* 2003;93:1509-16.
- Preston B. Cost-effective ways to make walking safer for children and adolescents. *Inj Prev* 1995;1:187-90.
- Hamer M, Chida Y. Active commuting and cardiovascular risk: a meta-analytic review. *Prev Med* 2008 Jan;46(1):9-13.
- Pope CA, Ezzati M, Dockery DW. Fine-particulate air pollution and life expectancy in the United States. *NEJM* 2009 Jan 22;360:376-86.
- Friedman MS, Powell KE, Hutwagner L, Graham LM, Teague WG. Impact of changes in transportation and commuting behaviors during the 1996 Summer Olympic Games in Atlanta on air quality and childhood asthma. *JAMA* 2001 Feb 21;285(7):897-905.
- Stern N. *The economics of climate change: the Stern review*. Cambridge: Cambridge University Press: 2006
- FAO. *Livestock's long shadow. Environmental issues and options. Rome: Food and Agriculture Organization: 2006*
- Jowitt J. UN says eat less meat to curb global warming [Online]. 2008 Sept 7 [cited 2009 Jun 13]; Available from: <http://www.guardian.co.uk/environment/2008/sep/07/food.foodanddrink>
- McMichael AJ, Powles JW, Butler CD, Uauy R. Food, livestock production, energy, climate change, and health. *Lancet* 2007; 370:1253-63.
- Hu FB, Willett WC. Optimal diets for prevention of coronary heart disease. *JAMA* 2002;288(20):2569-78.
- Norat T, Lukanova A, Ferrari P, Riboli E. Meat consumption and colorectal cancer risk: dose-response meta-analysis of epidemiological studies. *Int J Cancer* 2002 Mar 10;98(2):241-56.
- Sinha R, Cross AJ, Graubard BI, Leitzmann MF, Schatzkin A. Meat intake and mortality: a prospective study of over half a million people. *Arch Intern Med* 2009;169(6):562-571.
- American Dietetic Association, Dietitians of Canada. Position of the American Dietetic Association and Dietitians of Canada: vegetarian diets. *J Am Diet Assoc* 2003 Jun;103(6):748-65.
- Pimental D, Williamson S, Alexander CE, Gonzalez-Pagan O, Kontak C, Mulkey SE. Reducing energy inputs in the US food system. *Hum Ecol* 2008;36:459-71.