

## Climate change will affect public health -- a call to action

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Extreme heat events (EHE), or heat waves, are the most prominent cause of weather-related human mortality in the United States, responsible for more deaths annually than hurricanes, lightning, tornadoes, floods and earthquakes combined. These events, and other climate-related changes in the worldwide environment that directly affect public health, are examined in the November issue of the American Journal of Preventive Medicine. This special issue provides a crucial state-of-the art overview of many of the issues at the intersection of climate change and health.

Guest Editors — Howard Frumkin, MD, DrPH, and Jeremy J. Hess, MD, MPH, National Center for Environmental Health, Centers for Disease Control and Prevention, Atlanta; and Anthony J. McMichael, PhD, National Centre for Epidemiology and Population Health, Australian National University, Canberra — and their colleagues issue a call to action. Dr. Frumkin observes that "a decade ago there was active debate about whether climate change was real, and whether human contributions have played a major causal role in the recently observed global warming. That debate is largely over, although the inherent complexities of climate system science and various uncertainties over details remain.

A corollary question — whether climate change would have implications for public health — also has been settled. The answer is yes. A range of possible effects has been identified, some now fairly well understood and others yet unclear. ...Public health and preventive medicine, as applied disciplines, share a common mission: to prevent illness, injury



and premature mortality, and to promote health and well-being. This mission therefore carries a mandate to address climate change. Fortunately, the basic concepts and tools of public health and preventive medicine provide a sound basis for addressing climate change...

Climate change, an environmental health hazard of unprecedented scale and complexity, necessitates health professionals developing new ways of thinking, communicating, and acting. With regard to thinking, it requires addressing a far longer time frame than has been customary in health planning and it needs a systems approach that extends well beyond the current boundaries of the health sciences and the formal health sector. Communicating about the risks posed by climate change requires messages that motivate constructive engagement and support wise policy choices, rather than engendering indifference, fear, or despair.

Actions that address climate change should offer a range of health, environmental, economic and social benefits. The questions at present, then, are not so much whether or why, but what and how? What do we do to prevent injury, illness and suffering related to climate change, and how do we do it most effectively?"

This issue of the American Journal of Preventive Medicine offers a range of articles by a group of experts who helps answer these questions. Meanwhile, there also remains for health researchers the extremely important task of assisting society in understanding the current and future risks to health, as part of the information base for policy decisions about the mitigation of climate change itself.

Beginning with an overview, Frumkin and McMichael emphasize the broad challenges climate change poses to our customary ways of thinking, communicating, and acting to protect health. Four commentaries address specific concerns to preventive medicine: research (Andy Haines); local public health (Mayor Michael Bloomberg



and Rohit Aggarwala); world health protection (Maria Neira); and medical education and training (Robert Lawrence and Peter Saundry).

Irrespective of the extent to which human activity accounts for climate change, the next five papers present evidence of health impacts of climate change, including the direct effects of heat (George Luber and Michael McGeehin); vectorborne diseases (Kenneth Gage and colleagues); waterborne diseases (Jon Patz and colleagues); and air quality (Pat Kinney). The authors of the final paper in this section (Jeremy Hess and colleagues) describe the way these and other health effects vary by location, emphasizing the importance of geographic thinking in health.

Discussions of climate change involve scientific complexity, considerable uncertainty, ample misinformation and many vested interests — with the resulting potential to frighten, confuse and/or alienate people. Health communication has therefore emerged as a key discipline in preventive medicine. The papers by Jan Semenza et al. and Ed Maibach et al. provide both empirical data and theoretical background on climate change communication, grounded in the insights of health communication.

Much public health activity will have to focus on adaptation — reducing harm from the effects of climate change. Key principles of adaptation are discussed by Kristie Ebi and Jan Semenza, and lessons learned from public health disaster preparedness are described by Mark Keim. Margalit Younger et al. expand on the ways in which policies and actions can both address climate change and yield additional health, environmental, and other benefits. Finally, Michael St. Louis and Jeremy Hess expand the discussion to global health, an appropriate focus since some of the most pressing challenges to health are expected to occur in the world's poorest nations.



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