Climate Change: The Public Health Response

North Carolina Climate Change Adaptation Workshop
2 March 2010

Howard Frumkin, M.D., Dr.P.H.
Special Advisor to the Director for Climate Change and Health
Centers for Disease Control and Prevention
Potential Health Effects of Climate Change

Climate change:
• Temperature rise
• Sea level rise
• Hydrologic extremes

- HEAT
  - Heat stress, cardiovascular failure
  - Severe weather
  - Injuries, fatalities
  - Air pollution
  - Asthma, cardiovascular disease
  - Allergies
  - Resp allergies, poison ivy
  - Vector-borne diseases
  - Malaria, dengue, hantavirus, encephalitis, Rift Valley fever
  - Water-borne diseases
  - Cholera, cryptosporidiosis, campylobacter, leptospirosis
  - Water and food supply
  - Malnutrition, diarrhea, harmful algal blooms
  - Mental health
  - Anxiety, post-traumatic stress, depression, despair
  - Environmental refugees
  - Forced migration, civil conflict
Public Health Action on Climate Change: An Apparent Contradiction

• The health threat is unprecedented
• The health threats are familiar
Public Health Action on Climate Change: A Matter of Scale

- Climate change is **global**
- Effects will manifest **locally**
- Much public health action must be local
Building State and Local Capacity

NACCHO
National Association of County & City Health Officials

astho
THE ASSOCIATION OF STATE AND TERRITORIAL HEALTH OFFICIALS

American Public Health Association
Climate Change: The Public Health Response

There is scientific consensus that the global climate is changing, with rising surface temperatures, melting ice and snow, rising sea levels, and increased climate variability. These changes are expected to have substantial impacts on human health. There are known, effective public health responses for many of these impacts, but the scale, timeline, and complexity of climate change are unprecedented. We, the essential public health services are state, and local, and we need to consider the impact of climate change accordingly. We propose a set of actions to address climate change.

IN PERSPECTIVES ON AGE

Weather and climate events have affected human health since prehistoric times. Heat waves cause hyperthermia or famine. Injuries, deaths, and forest fires are among the tropical diseases that have spread due to climate change.

INTEGRATION OF PUBLIC HEALTH WITH ADAPTATION TO CLIMATE CHANGE

Lessons learned and new directions

Edited by Kristie L. Ebi, Joel Smith and Ian Burton

Preparing the U.S. Health Community for Climate Change

Richard Jackson and Kyra Naumoff Shields

Key Words

physicians, hospitals, cities

Abstract

In society’s effort to address and prepare for climate change, the health community must ensure that it is prepared. Health personnel will require flexible and iterative action plans to address climate change at the individual, hospital, local health department, state, and national levels. This requires that health workers analyze the impact of climate change with a view to human health, and then formulate robust policy and demonstrate authentic leadership. In this review, we summarize the status of the health community’s preparation for climate change and provide specific recommendations for action at each level. Although preparation status and recommendations vary, our observation is that it is not enough for public health and medical care agencies and departments to develop policies and advocate change. They have a direct responsibility to demonstrate substantive leadership.
Public Health Action on Climate Change

1. Forecasting, Modeling, Vulnerability Assessment
2. Surveillance
3. Outbreak Investigations
4. Research
5. Preparedness Planning
6. Decision Support
7. Health Sector Mitigation
8. Training
9. Climate Communication

The diagram outlines the various components of public health action on climate change, emphasizing the need for comprehensive strategies that include forecasting, surveillance, research, preparedness, and decision support.
1. Forecasting, modeling, vulnerability assessment

- Utilize standard climate models
- Downscale
- Extend to health outcomes
- Focus on vulnerable populations
- Acknowledge and manage uncertainty
2. Surveillance

- Standard public health function
- Multiple data sources
  - Climatologic
  - Ecosystem
  - Health
- Need to integrate data
3. Outbreak investigations

- 1999-2003: 38 cases of *C. gattii* infection on Vancouver Island (Kidd et al. 2004)
- 2003-05: 3 cases in off-island BC, 2 cases in Oregon (MacDougall et al. 2007)
- By 2008: 239 cases in BC, 8 deaths (BCCDC, 2008)

A rare genotype of *Cryptococcus gattii* caused the cryptoccocosis outbreak on Vancouver Island (British Columbia, Canada)

Datta et al., EID 2009
4. Research

Key areas:

• Methods development
• Impact of climate on specific health outcomes
• Impact of mitigation strategies on specific health outcomes
• Efficacy and cost-effectiveness of various adaptation and mitigation strategies
5. Preparedness planning

Vulnerability Assessment

Preparedness

Assessment

Drilling
6. Decision Support: Health Impact Assessment

Health Impact Assessment (HIA)

HIA provides decision makers with information about how any policy, programme or project may affect the health of people. HIA seeks to influence decision makers to improve the proposal. WHO supports the use of HIA because of its ability to influence policies, programmes and/or projects. This provides a foundation for improved health and wellbeing of people likely to be affected by such proposals.

In this web site, we provide information:

About HIA
- Why use HIA
- Short guide
- Definitions of HIA
7. Health Sector Mitigation: “Green Health Care”
8. Training and capacity-building

- Need a multidisciplinary workforce
  - Earth and atmospheric sciences
  - Ecology
  - Health sciences
  - Modeling
- Undergraduate, graduate, and postgraduate training
9. Climate communication

Potential Health Effects of Climate Change

- Heat
- Severe weather
- Air pollution
- Allergies
- Vector-borne diseases
- Waterborne diseases
- Food supply
- Mental health
- Environmental refugees

- Heat stress, cardiovascular failure
- Injuries, fatalities
- Asthma, cardiovascular disease
- Resp allergies, poisonivy
- Malaria, dengue, hantavirus, encephalitis, Rift Valley Fever
- Cholera, cryptosporidiosis, campylobacter, leptospirosis
- Malnutrition, diarrhea, harmful algal blooms
- Anxiety, post-traumatic stress, depression, despair
- Forced migration, civil conflict

Climate change:
- Temperature rise
- Sea level rise
- Hydrologic extremes
Health communication principles

- Recognize different audiences
- Balance threatening news with actionable recommendations
- Appeal to self-interest
- The importance of good news
Public Health Action on Climate Change

1. Forecasting, Modeling, Vulnerability Assessment
2. Surveillance
3. Outbreak Investigations
4. Research
5. Preparedness Planning
6. Decision Support
7. Health Sector Mitigation
8. Training
9. Climate Communication
Summary

- Climate change is a major public health threat
- Adaptation to climate change can protect public health
- Public health adaptation measures are well defined
Thank you!