Climate Change and Health: Global Risks and Responses

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Global Climate Change and Human Health

- What is happening to the global climate?

- What does this have to do with health?

- How should we respond?
Temperatures are increasing...

Global Temperature Land-Ocean Index

Temperature Anomaly (°C)

- Annual Mean
- 5-year Mean

1880 1900 1920 1940 1960 1980 2000

(NASA, 2008)
Anthropogenic warming is likely discernible on all inhabited continents...
Precipitation is more variable – but also changing

Precipitation has increased in eastern parts of North and South America, northern Europe and northern and central Asia – and decreased in the Sahel, Mediterranean, southern Africa and parts of southern Asia (IPCC, 2007)
Future warming partly depends on development choices— but some is inevitable.
Water availability is projected to increase by 10-40% at high latitudes and decrease by 10-30% over some dry regions.

Increased variability (more flood and drought) is expected over many areas.

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Mapping links between climate change and health

Some expected impacts will be beneficial but most will be adverse. Expectations are mainly for changes in frequency or severity of familiar health risks.

- **Human exposures**
  - Regional weather changes
    - Heat waves
    - Extreme weather
    - Temperature
    - Precipitation

- **Health effects**
  - Temperature-related illness and death
  - Extreme weather-related health effects
  - Air pollution-related health effects
  - Water and food-borne diseases
  - Vector-borne and rodent-borne diseases
  - Effects of food and water shortages
  - Effects of population displacement

Based on Patz et al, 2000
Many of the major killers are affected by climate

Each year:

- Weather–related disasters kill over 60,000
- Undernutrition kills 3.5 million
- Diarrhoea kills 2.2 million
- Malaria kills 900,000

- (WHO, 2003, 2008)
Floods, droughts and storms are increasing

Health impacts include:

- Deaths and injuries
- Infections: leptospirosis, hepatitis, diarrheal, respiratory, vector-borne
- Exposure to toxic substances
- Mental health effects
- Destruction of health services
Diseases such as diarrhoea are highly climate sensitive

Incidence of diarrhoeal disease is strongly related to climate variables. In Lima, Peru, diarrhoea increased 8% for every 1°C temperature increase.

(Checkley et al, Lancet, 2000)
Small changes to large disease burdens are important

Malaria: Climate change is estimated to increase the population at risk in Africa by about 13% (84 million) by 2015 (with wide uncertainty, and against a background of other changes).

- Hay et al, 2006
WHO Comparative Risk Assessment estimated that by 2000, climate change that had occurred since the 1970s was causing over 150,000 additional deaths per year (WHO, 2002, McMichael et al 2004)

Cumulative emissions of greenhouse gases, to 2002

WHO estimates of per capita mortality from climate change, 2000

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Climate change and health

The Executive Board,

Having considered the report on climate change and health,¹

RECOMMENDS to the Sixty-first World Health Assembly the adoption of the following resolution:

The Sixty-first World Health Assembly,

Recalling resolution WHA51.29 on the protection of human health from risks related to climate change and stratospheric ozone depletion and acknowledging and welcoming the work carried out so far by WHO in pursuit of it;

Recognizing that, in the interim, the scientific evidence of the effect of the increase in atmospheric greenhouse gases, and of the potential consequences for human health, has considerably strengthened:

Noting with concern the recent findings of the Intergovernmental Panel on Climate Change that the effects of temperature increases are already being observed on some aspects of human health; that the net global effect of projected climate change on human health is expected to be negative, especially in developing countries, small island developing States and vulnerable local communities which have the least capacity to prepare for and adapt to such change, and that exposure to projected climate change could affect the health status of millions of people, through increases in malnutrition, in death, disease and injury due to extreme weather events, in the burden of diarrhoeal disease, in the frequency of cardiorespiratory diseases, and through altered distribution of some infectious disease vectors;

Noting further that climate change could jeopardize achievement of the Millennium Development Goals, including the health-related Goals, and undermine the efforts of the Secretariat and Member States to improve public health and reduce health inequalities globally;
Some basic principles

Choose "no regrets" interventions.
Climate is just one of many determinants of health, and projections of future climate are uncertain – so need to choose interventions that should be effective in any plausible future climate.

Invest in preventive health strategies:
Many "good deals now" (e.g. water and sanitation) will protect health immediately - and reduce vulnerability to climate change.

Take opportunities to promote health:
The health sector needs to describe the health implications of climate change mitigation decisions, e.g. in energy and transport.
Main objectives for international public health

1) **Raising awareness**: of the health implications of climate change

2) **Strengthening partnerships**: to place health at the centre of climate change policy

3) **Generating evidence**: on the health effects of adaptation and mitigation policies

4) **Strengthening public health systems** to cope with additional threats posed by climate change
1) Raising awareness:

Climate change and health: preparing for unprecedented challenges.

WHO Director General Margaret Chan.

December, 2007

With impoverished populations in the developing world the first and hardest hit, climate change is very likely to increase the number of preventable deaths. The gaps in health outcomes we are trying so hard to address right now may grow even greater.

This is unacceptable.
Health is neglected in the climate change debates, but should be central:

- Main reasons for concern (e.g. disasters, food shortage, displacement, disease) are health and wellbeing issues

- Most energy and environment decisions (e.g. choice, use of fuel sources) have major direct health implications
3: Providing Evidence

- Describing risks from national to global level
- Measuring the effectiveness of interventions
- Evaluating health effects from decisions in other sectors
- Improving decision-support tools
- Assessing the financial costs

Protection of handwashing against diarrhoea, highlighting studies in water-stressed situations.
Adapted from Curtis V, Cairncross S. 2003; Lancet Inf Dis 3:275-281
4. Strengthening public health systems (= adaptation)

Much of "adaptation" is basic, preventive public health:

Improved surveillance and response: E.g. heatwave warnings, compliance with International Health Regulations to prevent international spread of disease.

Strengthened action on diseases of poverty: Including wider coverage with vector control and vaccination programmes.

Better management of environmental health determinants: Provision of safe water and sanitation, control of air pollution.
Conclusions

• The climate is changing, and some effects on health are inevitable

• This is no longer academic – countries are requesting help

• We already know much of what to do: invest now in proven, preventive public health measures, and support healthy development choices

• Applied research can help to support more effective public health action
More information on WHO work on Health and Climate Change

http://www.who.int/globalchange/climate