How a Focus on Health Can Enhance Climate Resilience: A Federal Perspective

John Balbus, MD, MPH

Senior Advisor for Public Health, National Institute of Environmental Health Sciences
Director, NIEHS-WHO Collaborating Centre for Environmental Health Sciences

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Health is an integrator of many different sectors...

Climate Change and Health

CLIMATE DRIVERS
- Increased temperatures
- Precipitation extremes
- Extreme weather events
- Sea level rise

ENVIRONMENTAL & INSTITUTIONAL CONTEXT
- Land-use change
- Ecosystem change
- Infrastructure condition
- Geography
- Agricultural production & livestock use

EXPOSURE PATHWAYS
- Extreme heat
- Poor air quality
- Reduced food & water quality
- Changes in infectious agents
- Population displacement

SOCIAL & BEHAVIORAL CONTEXT
- Age & gender
- Race & ethnicity
- Poverty
- Housing & infrastructure
- Education
- Discrimination
- Access to care & community health infrastructure
- Preexisting health conditions

HEALTH OUTCOMES
- Heat-related illness
- Cardiopulmonary illness
- Food-, water-, & vector-borne disease
- Mental health consequences & stress

GCRP Climate Health Assessment, 2016
The Interagency Cross-Cutting Group on Climate Change and Human Health (CCHHG)

– Chartered December 2009
– Co-chaired by NOAA, HHS (CDC, NIEHS)
– Agencies represented: EPA, NIH-FIC, USDA, DOD, USDA, DOI-USGS, DHS, NASA, NSF

– 6 workstreams:
  • Research
  • Data/Monitoring
  • Education/Engagement
  • Adaptation
  • International
  • Climate & Health Assessment
TOPICS

- BUILT ENVIRONMENT
- COASTS
- ECOSYSTEMS
- ENERGY
- FOOD
- HEALTH
- MARINE
- TRANSPORTATION
- TRIBAL NATIONS
- WATER

CLIMATE EXPLORER

This visualization tool generates interactive graphs and maps showing climate projections and observations for any county in the contiguous United States. You can also explore historical temperature and precipitation observations at hundreds of climate stations, and view observed and projected days of high-tide flooding at more than 90 coastal tide-gauge stations.

LAUNCH THE CLIMATE EXPLORER
Increases in extreme weather events, poor air quality, and transmittable illnesses threaten human health. Extreme events can also disrupt the delivery of health services and wastewater treatment, potentially leading to further impacts on human health.

Key points:

- Climate variability and change pose significant threats to human health and well-being in the United States. These climate impacts come from higher temperatures, increased extreme weather events, wildfire, decreased air quality, threats to mental health, and illnesses transmitted by food, water, and disease carriers such as mosquitoes and ticks.

- Extreme storms and temperatures can disrupt the delivery of health services and damage hospitals, clinics, wastewater treatment plants, and other facilities. Climate also impacts economic sectors that support health, such as energy, transportation, and agriculture.

- Steps taken to prepare for climate variability and change can improve health and provide other societal benefits, such as sustainable development, disaster risk reduction, and improvements in quality of life.

Adapted from the Third National Climate Assessment,
Adapted from “The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment.”

The health risks of climate change

Climate change is increasing health risks for people in the United States, including respiratory stress from poor air quality, heat stress, and the spread of diseases through food, water, and animals. Extreme weather
“Health” Case Studies from the Toolkit...

- Developing and Using an Index to Guide Water Supply Decisions
- Where Do We Need Shade? Mapping Urban Heat Islands in Richmond, Virginia
- Battling Blazes Across Borders
- Keeping Toxins From Harmful Algal Blooms out of the Food Supply
Resilience (and Sustainability) for Health Care Sector

Primary Protection: Enhancing Health Care Resilience for a Changing Climate

Health care organizations play a key role in community resilience. Increasing incidents of extreme weather represent complex hazards that challenge accepted baseline assumptions for infrastructure capabilities, redundancies, and disaster preparedness and response. Climate change, by increasing the intensity and frequency of some extreme weather events, is introducing new levels of extreme weather threats and forcing a need for new building design thresholds.

Essential health services must remain available to communities and individuals during and immediately following extreme weather events, even during extended utility outages and transportation infrastructure disturbances. Resilient health organizations must adapt to stresses.
During Sandy, critical system failures caused evacuations, closures, and reduced services.

<table>
<thead>
<tr>
<th>Providers</th>
<th>Impact</th>
<th>Building</th>
<th>Equipment (elevators, Imaging)</th>
<th>Utilities (power, water)</th>
<th>Heating/cooling</th>
<th>Commun-ications/IT</th>
<th>Staff</th>
<th>Supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>Evacuations/closures/reduced services</td>
<td>Flooded</td>
<td>Flooded</td>
<td>Back-up failed</td>
<td>Flooded</td>
<td>Phone/internet outages</td>
<td>Staff couldn’t travel</td>
<td>Limited deliveries</td>
</tr>
<tr>
<td>Nursing homes/adult care facilities</td>
<td>Evacuations</td>
<td>Flooded</td>
<td>No back-up power</td>
<td>Back-up failed (NH) / no back-up (ACF)</td>
<td>No back-up</td>
<td>Phone/internet outages</td>
<td>Staff couldn’t travel</td>
<td>Limited deliveries</td>
</tr>
<tr>
<td>Community-based providers</td>
<td>Closures / reduced services</td>
<td>Flooded</td>
<td>No back-up power</td>
<td>No back-up</td>
<td>No back-up</td>
<td>Phone/internet outages</td>
<td>Staff couldn’t travel</td>
<td>Limited deliveries</td>
</tr>
<tr>
<td>Home-based providers</td>
<td>Reduced services</td>
<td>Disruptions in patients’ homes/residences, e.g. loss of power, elevators not working</td>
<td></td>
<td></td>
<td></td>
<td>Phone/internet outages</td>
<td>Staff couldn’t travel</td>
<td>Delayed deliveries</td>
</tr>
</tbody>
</table>

Primary reason for disruption  Secondary reason  Tertiary reason

What is the risk this could happen again to the same number or even more providers?

Source: SIRR interviews
Stories of Success: Healthcare Facility Resilience

Hospital Plans Ahead for Power, Serves the Community Through Hurricane Sandy

Following a Devastating Tornado, Town and Hospital Rebuild to Harness Wind Energy

After Record-Breaking Rains, a Major Medical Center’s Hazard Mitigation Plan Improves Resilience

After Katrina, Health Care Facility’s Infrastructure Planned to Withstand Future Flooding
Some US resources related to resilience

- 4th National Climate Assessment

- Impacts of Climate Change on Human Health in the United States: A Scientific Assessment

- NIEHS Climate Change Literature Portal

- US Climate Resilience Toolkit
  - [https://toolkit.climate.gov/](https://toolkit.climate.gov/)

- CDC’s BRACE framework and guidance documents
  - [http://www.cdc.gov/climateandhealth/default.htm](http://www.cdc.gov/climateandhealth/default.htm)
Thank you for your attention!

John Balbus, MD, MPH
John.balbus@nih.gov
http://www.niehs.nih.gov/geh