Climate Change, Health, and Resilience

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Background

The earth is rapidly getting hotter, with potentially dire consequences for human health. Since the pre-industrial era, greenhouse gas emissions have increased the average global temperature by 1.0°C, and the increase will likely reach 1.5°C between 2030 and 2052 if this trend is unchanged. Although this increase may seem small in terms of day-to-day temperature fluctuations, the sustained temperature increase is a radical change for the planet.

The Intergovernmental Panel on Climate Change (IPCC) estimates that this additional half-degree of warming would expose approximately 31 to 69 million people to flooding from sea level rise worldwide, greatly impacting small island nations and coastal communities. Along with progressively higher temperatures and rising sea levels, climate change is also driving fluctuations in global precipitation, water and food insecurity, as well as surges in the magnitude and frequency of extreme weather events, each of which generate global public health challenges. These challenges should spur increasing attention to disaster preparedness, preventive medicine, rapid diagnostics, and the education of health professionals— but few medical schools and schools of public health are tackling these issues comprehensively.

The health impacts of global climate change are diverse (see Figure 1). The World Health Organization (WHO) estimated the effects of climate change on selected causes of death between 2030 and 2050. Modeling a range of scenarios, in comparison to a future without climate change, WHO estimated that climate change will account for thousands of excess deaths by the year 2030, including: 38,000 from heat exposure in elderly populations, 48,000 from diarrheal diseases, 60,000 from malaria, and 95,000 due to childhood undernutrition. Although this prediction does not account for all causal pathways, WHO estimated that climate change will have a profound adverse impact on future mortality with 250,000 excess deaths per year between 2030 and 2050.

Resilience

Climate change will impact the health of all populations, regardless of socioeconomic status or geography. However, already vulnerable populations will suffer disproportionately. In addition to geographic differences that influence the intensity of environmental changes, climate change exacerbates existing health and social inequities.

― Judge Alice Hill, JD
Former Senior Director for Resilience for the National Security
RESILIENCE IN ACTION

100 RESILIENT CITIES

The 100 Resilient Cities initiative is an organization designed to increase the capacity of urban environments to survive, adapt, and grow regardless of stressors, including ones associated with climate change. For example, as a part of this initiative, San Francisco plans to do the following:10

- Construct disaster-resilient waterfronts by 2040 to adapt to sea level rise
- Enact a 0, 50, 100 plan to reduce carbon emissions
  - 0 waste
  - 50% of transportation by sustainable modalities
  - 100% renewable energy sources

CONCLUSION

While initiatives such as the United Nations’ Paris Agreement strive to slow global temperature rise and reduce the effects of climate change, nations are already dealing with its consequences.11 The development and implementation of strategies to mitigate the effects of climate change must be developed with an eye towards equity to account for all populations, particularly the most vulnerable. The creation of strategies is necessary across sectors and in collaboration with partners at all levels to ensure that countries, communities, and individuals are well equipped to adapt to and withstand impending planetary changes.

2. Ibid
4. CDC 2016 https://www.cdc.gov/climateandhealth/efforts/

ABOUT CPHI

The Center for Public Health Initiatives was founded in 2007 by the University of Pennsylvania to act as an interdisciplinary public health center that brings together faculty, staff, and students from across Penn’s campus. The mission of CPHI is to educate and train new and emerging public health leaders, foster multi-disciplinary collaborations, and promote excellence in public health research and community partnerships.

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