National Institutes of Health

Reducing Health Risks From Warming Temperatures and Weather Disasters

The National Institutes of Health (NIH) is poised to conduct vital research to reduce the health impacts of climate change and to facilitate environmental health equity.

As the climate continues to change, and weather-related events such as floods, hurricanes, tornados, wildfires, and heat waves become more extreme, the risk to human health grows, exacerbating existing health threats and creating new public health challenges around the world.

NIH is uniquely positioned to lead a solutions-focused health research initiative to reduce the health consequences associated with extreme weather events and evolving climate conditions. NIH has a strong history of creating innovative tools, technologies, and data-driven solutions to address global environmental problems.

Because NIH has made modest investments in climate change and health research for several decades, there is already a community of NIH-supported scientists who are qualified, willing, and eager to do more to address this issue.

Progress to Date, and Moving Forward

NIH and its stakeholders worked together to draft the NIH Climate Change and Health Strategic Framework to guide NIH research investments focused on strengthening disaster resiliency at home and globally to develop science-based interventions, with an emphasis on health equity and community-engaged research.

Funding will support multidisciplinary teams of researchers around the world to identify and develop local and regional interventions to reduce adverse health outcomes from climate change.

NIH supports research to understand the direct and indirect health effects of climate change.

Direct Health Effects

- Heat-related illness
- Respiratory disease
- Heart disease
- Food-, water-, and vector-borne diseases
- Injury
- Premature death
- Mental health impacts
- Poor maternal and birth outcomes

Indirect Health Effects

- Chemical releases into environment
- Changes in air, water, food quality and quantity
- Population displacement
- Interruptions to health care
- Infrastructure and supply chain disruption
- Economic impacts – more people living in poverty

NIH Climate Change and Health Initiative

- Reduce health threats across the lifespan and build health resilience, especially among those at highest risk.
- Support and train multidisciplinary teams of researchers across the globe.
- Identify regional impacts from climate change and develop interventions that local communities can use.
- https://nih.gov/climateandhealth

To kickstart the new NIH initiative, two major projects are being funded:

- A **Research Coordinating Center** for NIH-funded scientists to collaborate, share resources, and manage data to advance the priorities established in the NIH Climate Change and Health Strategic Framework.
- **Alliance for Community Engagement focused on Climate and Health (ACE-CH).** ACE-CH builds on the successful community engagement program established by NIH to address COVID-19 and other health disparities. ACE-CH will ensure inclusion of underserved, racial/ethnic minority, and rural populations to build trust in climate science. The first four awards have been made in early 2023 to support community-engaged research focused on climate and health.

NIH Climate Change and Health Initiative

A coalition of seven NIH institute and center directors serve as the Executive Committee, establishing broad support and comprehensive leadership to address this emerging health threat.

Executive Committee

- **Rick Woychik, Ph.D. (Chair)**
  National Institute of Environmental Health Sciences (NIEHS)
- **Diana Bianchi, M.D.**
  Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
- **Gary Gibbons, M.D.**
  National Heart, Lung, and Blood Institute (NHLBI)
- **Peter Kilmarx, M.D. (Acting Director)**
  Fogarty International Center (FIC)
- **Joshua Gordon, M.D., Ph.D.**
  National Institute of Mental Health (NIMH)
- **Eliseo Perez-Stable, M.D.**
  National Institute on Minority Health and Health Disparities (NIMHD)
- **Shannon Zenk, Ph.D, M.P.H., RN**
  National Institute of Nursing Research (NINR)

Important Research Is Needed

- Solution-focused research on **health conditions**, including infectious diseases, injury and trauma, mental health impacts, chronic conditions such as asthma, and health disparities.
- Research that integrates health and climate data to better predict the **communities at greatest risk around the world.**
- Strategies to minimize disruptions to local health care systems that provide services such as **dialysis, chemotherapy**, prenatal care for **pregnant women**, and assistance for **people with disabilities**.
- **Basic laboratory studies** to understand how extreme heat impacts cellular systems such as mitochondrial function.
- Research to identify ways to prevent heat stress among **agricultural workers**.
- Development and evaluation of interventions, such as community cooling stations for **older adults** and other people with no access to air conditioning.
- Tools to forecast **harmful algal blooms** in warming waters and mitigate their toxic effects in lakes, rivers, and coastlines.

- Models to **track mosquito-borne diseases** such as malaria, yellow fever, and dengue, as higher global temperatures extend their geographic ranges and transmission rates. Identify safe and protective measures to reduce mosquito populations and breeding.
- Research to identify interventions that can **reduce asthma rates in childre**n who live in urban settings with poor air quality. For example, a new study shows zero emission vehicles can lower pollution and decrease asthma ER visits.
- Horticultural studies to determine which trees planted in urban settings can **improve air quality** by reducing air pollution.
- Research to understand how natural disasters, like flooding, redistribute **hazardous substances**, and develop tools to clean up these hazardous exposures.
- Use of **precision medicine principles** to evaluate how environmental exposures caused by climate change may influence an individual person's health.

For more information on the NIH Climate Change and Health Initiative, visit https://nih.gov/climateandhealth.