

# Children are highly vulnerable to health risks of a changing climate

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Young children are far more vulnerable to climate-related disasters and the onus is on adults to provide the protection and care that children need, according to research by Columbia University's Mailman School of Public Health and Columbia University Irving Medical Center. In a paper published in *PLoS Medicine*, researchers set out some specific challenges associated with the impacts of climate change on the world's 2.3 billion children and suggest ways to address their underprioritized needs.

"Because of their anatomic, cognitive, immunologic, and psychologic differences, children and adolescents are more vulnerable to climate change-related events like floods, droughts, and heatwaves than adults," says Madeleine Thomson, Ph.D., a research scholar in the Department of Environmental Health Sciences, faculty member at Columbia's Earth Institute, a guest editor in *PLOS One Medicine's* Special Issue on Climate Change and Health in the International Research Institute for Climate and Society.

Because of their small surface-to-body ratio, infants and children are particularly vulnerable to dehydration and heat stress. During [heat waves](#), children are more likely to be affected by respiratory disease, kidney disease, electrolyte imbalance, and fever. Heat waves have also been shown to exacerbate allergens and air pollution which impact children more severely than adults because of their underdeveloped respiratory and immune systems and because they breathe at a faster rate than adults.

The authors write that hotter temperatures may also expand the range of vector-borne diseases, including the Zika virus which, following the 2015 epidemic, has profoundly affected the lives of children and their families across Latin America and the Caribbean. Even children who were asymptomatic at birth may develop problems later in life.

After Hurricane Maria made landfall in Puerto Rico in September 2017 medical responders encountered increases in gastroenteritis, asthma exacerbations and skin infections. Children were also at increased risk for mosquito-borne diseases such as Chikungunya and Dengue, as well as leptospirosis through the drinking of contaminated water. Flood waters from Hurricane Harvey a few weeks earlier dropped record breaking rain. Most of the Harvey-related toxic releases were never publicized and the long-term implications for children's health is unknown. Studies suggest that climate change is increasing the intensity of North Atlantic hurricanes and the likelihood that the severe consequences for children's health will grow.

In rural households droughts can have significant impacts on child development through increased food insecurity and dietary changes. Droughts may also contribute to conflict and forced migration in resource poor settings, thereby increasing children's vulnerability to a wide range of health issues.

To begin to address the specific needs of children confronted with climate-change related health disasters, Thomson and colleagues are proposing the following:

1. Establish an international consortium of experts to develop adoptable medical and behavioral protocols and to set research agendas to address the unmet child specific needs that arise from climate-related natural disasters.
2. Develop best practice guidelines for [climate-change](#) related event

planning that incorporates strategies for addressing the health-related needs of children.

3. Fund mechanisms designed to help the most vulnerable nations prepare for and respond to climate related disasters must consider funding the development of responses that specifically address the unmet needs of [children's health](#).

**More information:** Lawrence R. Stanberry et al, Prioritizing the needs of children in a changing climate, *PLOS Medicine* (2018). [DOI: 10.1371/journal.pmed.1002627](#)

Provided by Columbia University's Mailman School of Public Health

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