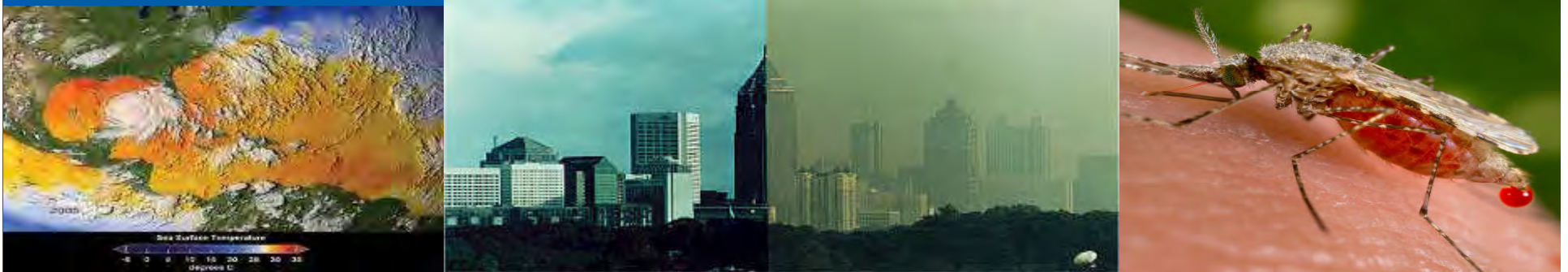


Climate Change Adaptation in the Public Health Sector: The BRACE Framework



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*EPA Region 2 Webinar: The Public Health Effects of
Climate Change, October 2011*



First the bad news...

- Despite existing breadth of organizations and sectors with initiatives on climate change
- Despite the likelihood of anticipated health effects of climate change

Public health effects of climate change remain largely unaddressed



Potential Health Effects of Climate Change

Climate Change:

- **Temperature rise**
- **Sea level rise**
- **Hydrologic extremes**



HEAT

SEVERE WEATHER

AIR POLLUTION

ALLERGIES

VECTOR-BORNE DISEASES

WATER-BORNE DISEASES

WATER AND FOOD SUPPLY

MENTAL HEALTH

ENVIRONMENTAL REFUGEES

- ➔ Heat stress, cardiovascular failure
- ➔ Injuries, fatalities
- ➔ Asthma, cardiovascular disease
- ➔ Respiratory allergies, poison ivy
- ➔ Malaria, dengue, encephalitis, hantavirus, Rift Valley fever
- ➔ Cholera, cryptosporidiosis, campylobacter, leptospirosis
- ➔ Malnutrition, diarrhea, harmful algal blooms
- ➔ Anxiety, despair, depression, post-traumatic stress
- ➔ Forced migration, civil conflict

CDC's Priority actions for Climate Change

- A set of “priority actions” that guide the public health approach
- Emerged from recommendations to the CDC Climate Change Workgroup during the January 2007 meeting
- Forms the cornerstone for CDC's policy on Climate Change

<http://www.cdc.gov/nceh/climatechange/>



CDC's Priority health actions for climate change

Track data on environmental conditions, disease risks, and disease occurrence related to climate change.

Will require *enhancement and expansion* of national disease surveillance systems and the *integration* of infectious and environmental disease information systems



CDC's Priority health actions for climate change

Enhance the science base to better understand the relationship between climate change and health outcomes.

Sponsor Research:

- FOA: Climate Change: Environmental Impact on Human Health: 7 awards
- Internal RFA to Enhance CDC's Capacity : 17 awards

LA Times 12/29/08



Research Priorities and Gaps for Climate Change and Health



Categories of human health consequences of climate change:

1. Asthma, Respiratory Allergies, and Airway Diseases
2. Cancer
3. Cardiovascular Disease and Stroke
4. Foodborne Diseases and Nutrition
5. Heat-Related Morbidity and Mortality
6. Human Developmental Effects
7. Mental Health and Stress Related Disorders
8. Neurological Diseases and Disorders
9. Vectorborne and Zoonotic Diseases
10. Waterborne Diseases
11. Weather-Related Morbidity and Mortality

http://www.cdc.gov/climatechange/pubs/HHCC_Final_508.pdf



CDC's Priority health actions for climate change

Identify locations and population groups at greatest risk for specific health threats, such as heat waves.

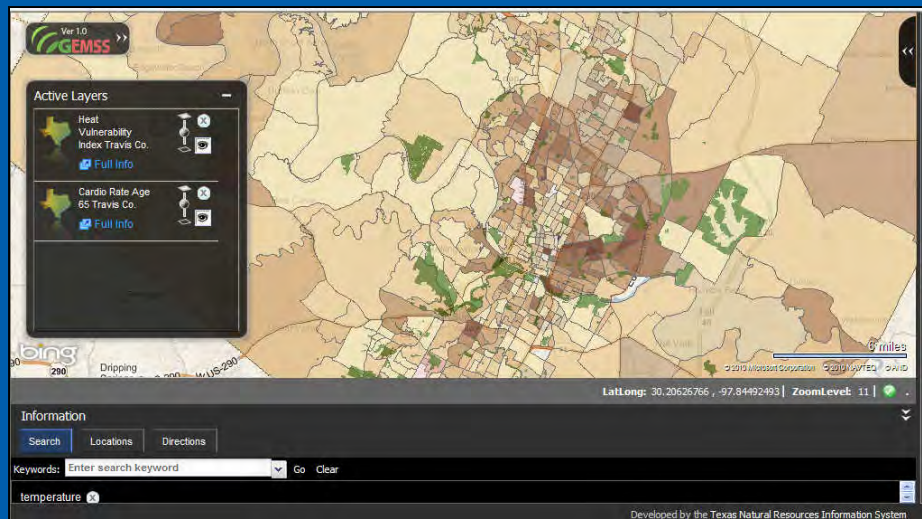
Examples:

Epidemiologic investigations

Vulnerability mapping

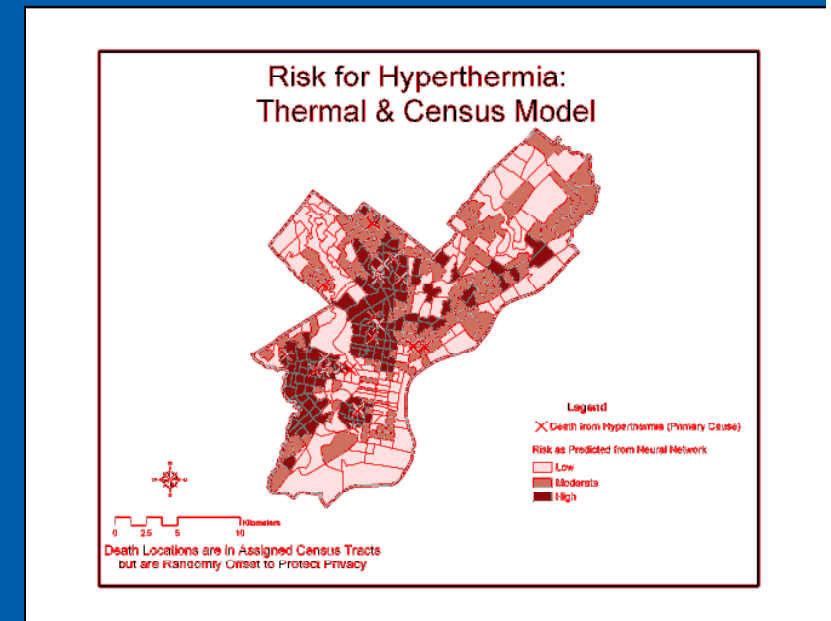


Vulnerability Assessments and Mapping



Local Environmental Public Health Indicators for Climate Change

Using NASA Data and Models to Improve Heat Watch Warning Systems for Decision Support



CDC's Priority health actions for climate change

Expand capacity for modeling and forecasting health effects that may be climate-related.

Urgent need for “downscaled” regional and even urban models



CDC's Priority health actions for climate change

Communicate the health-related aspects of climate change, including risks and ways to reduce them, to the public, decision makers, and healthcare providers.

Extreme Heat Media Toolkit

IT'S HOT OUTSIDE

STAY COOL.
STAY HYDRATED.
STAY INFORMED.

WATCH FOR THE SIGNS
Seek medical care immediately if you or someone you know experiences symptoms of heat sickness.

STAY COOL.
Keep your body temperature cool to avoid heat-related illness.

- Spend time in air-conditioned buildings.
- Find an air-conditioned shelter.
- Do not rely on a fan as your primary cooling device.
- Avoid direct contact with the sun.
- Wear lightweight, light-colored clothing.
- Take cool showers or baths.
- Check on those most at-risk twice a day.

STAY HYDRATED.
You can become dehydrated during times of extreme heat as your body loses fluids through sweat.

- Drink more water than usual.
- Don't wait until you're thirsty to drink more fluids.
- Drink two to four cups of water every hour while working or exercising outside.
- Avoid alcohol or liquids containing high amounts of sugar.
- Remind others to drink enough water.

STAY INFORMED.
Stay informed of local weather forecasts so you can plan safe activities when it's hot outside.

- Check local news for extreme heat alerts and safety tips.
- Find an air-conditioned shelter.
- Sign up for free weather alerts to your phone or email.
- Share heat safety information with others.
- Learn the symptoms of heat sickness.

WATCH FOR THE SIGNS
Seek medical care immediately if you or someone you know experiences symptoms of heat sickness.

INFORMATION IN YOUR AREA
Find local information, health department contacts and air-conditioned shelters in your area.

FREE MATERIALS

CDC

HEAT-RELATED ILLNESS

What is a Heat-related Illness?

The three main types of HRI are: heat cramps, heat exhaustion, and heatstroke. They can occur when individuals are exposed to extreme heat.

HRI may lead to death if not properly diagnosed and treated. Athletes playing in extreme conditions are especially vulnerable. HRI has accounted for complications—and even death—among athletes on the playing field. It is currently the third leading cause of death among high school athletes.



Preventing and Treating Heat Related Illness: an e-learning course

Priority health actions for climate change

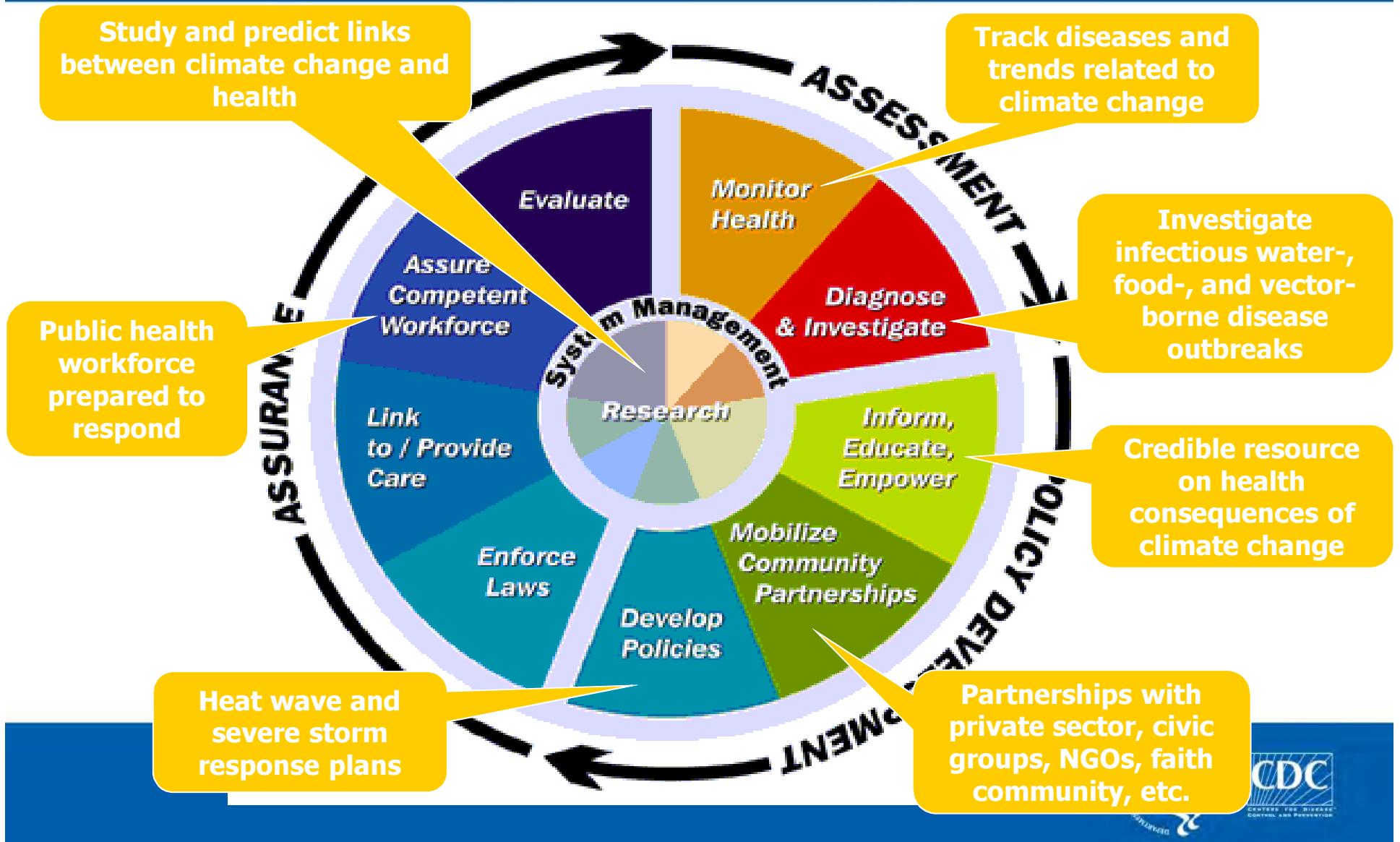
Promote workforce development by ensuring the training of a new generation of competent, experienced public health staff to respond to the health threats posed by climate change.



EIS



The Public Health Response to Climate Change



Types of Climate Change Adaptation

Two general types*

- Anticipatory / planned
 - Reactive / autonomous.
-
- A recent survey of several sectors found few anticipatory adaptation activities though there is considerable evidence of intention to act (e.g. vulnerability assessments) (Berrang-Ford, Ford et al. 2010).
 - Extreme events are a relatively common stimulus for adaptation (i.e. much adaptation to date is at least in part reactive)

* Carter, T., M. Parry, et al., Eds. (1994). [Technical Guidelines for Assessing Climate Change Impacts and Adaptations, Report of Working Group II of the Intergovernmental Panel on Climate Change.](#)



Climate-Ready States and Cities Initiative: An example of an Anticipatory Approach

Objective: To enhance the capability of state and local health agencies to deal with the challenges associated with climate change

Cooperative Agreements with State and Local HDs:

“Developing Public Health Capacity and Adaptations to Reduce Human Health Effects of Climate Change”

Developing Decision Support Tools:

Communications and Educational Tools

Vulnerability Mapping Tools



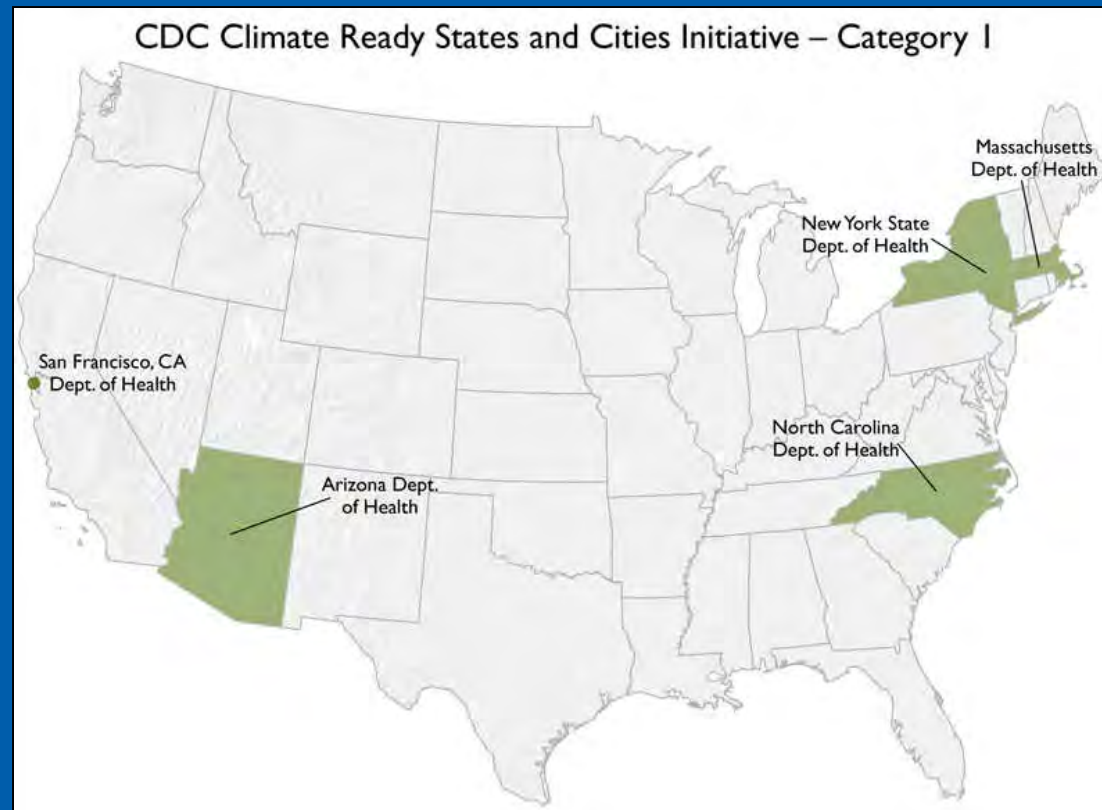
Program Highlight #2: Climate-Ready States and Cities Initiative

Category 1: Assessment and Planning to Develop Climate Change Programs

4 States and 1 City HD

Activities

- Agency needs assessment
- Early strategic plan implementation
- Partnership building & engagement with other initiatives
- Strategic plan development



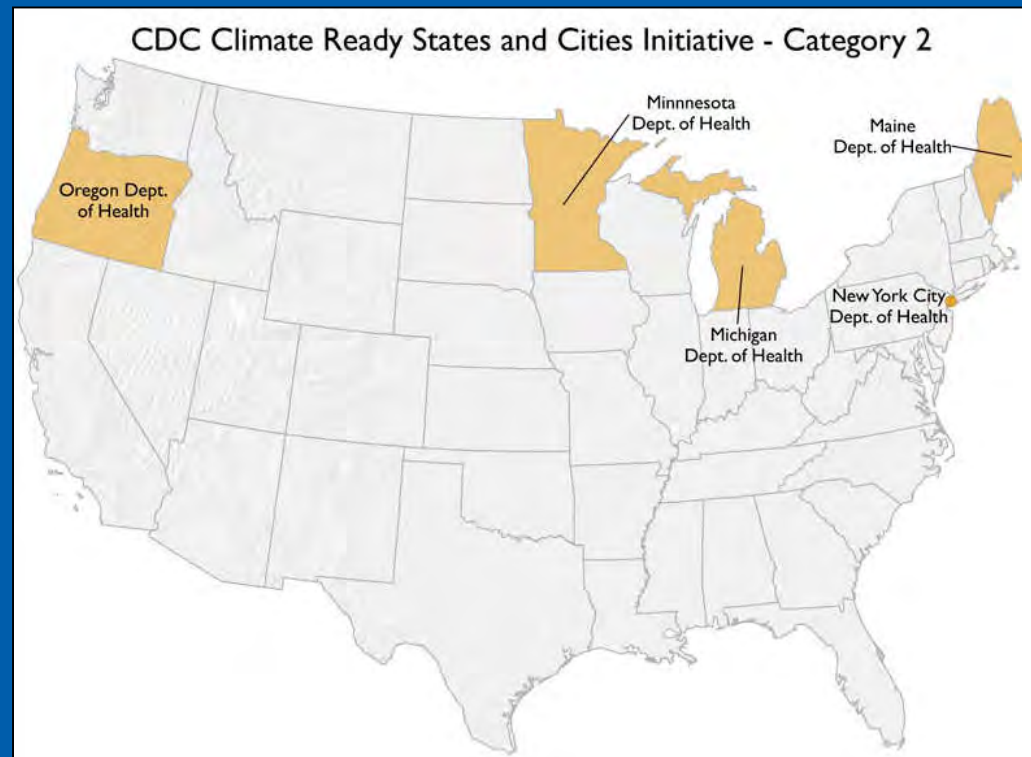
Program Highlight #2: Climate-Ready States and Cities Initiative

Category 2: Building Capacity to Implement Climate Change Programs and Adaptations

4 States and 1 City HD

Activities

- Strategic Plan Implementation
- Identification and prediction of health impacts & population & system vulnerabilities
- Develop & tailor health programs
- Identify co-benefits and intended consequences of policies, programs and projects in other sectors (HIA)





Towards and Anticipatory Framework for Climate Change Adaptation Planning



- The BRACE (Building Resilience Against Climate Effects) Framework.
- A series of actions for Health Departments to take that will lead to a formal Climate Change Adaptation Plan.



BRACE's 5 Steps



- Forecasted Impact & Vulnerability Assessment
- Health Risk Assessment
- Intervention Assessment
- Health Adaptation Planning & Implementation
- Evaluation



Step 1. Forecasted Impact & Vulnerability Assessment



Goal: Identify the range of climate impacts, associated potential health outcomes, & vulnerable populations and locations within a jurisdiction

- Determine the geographic and temporal scope of the assessment
- Assess localized forecasted climate impacts
- Assess health outcomes sensitive to these climate impacts



Step 2: Health Risk Assessment



Goal: Estimate/quantify the additional burden of health outcomes due to Climate Change

- Identify data sources for climate related mortality/ morbidity assessment
- Employ qualitative and quantitative approaches to assessing the data
- Quantify potential magnitude of individual health risks (absolute or relative)



Step 3: Intervention Assessment



Goal: Identify the most suitable health interventions

- List the range of health interventions available for each health outcome
- Assess capacity to deliver each intervention
- Prioritization of health interventions deemed most suitable for the jurisdiction



Step 4: Health Adaptation Planning & Implementation



Goal: Develop and implement a plan that introduces health system program changes that address the health impacts of climate change

- Applying agency procedures to developing a unified plan of action
- Disseminating the plan to stakeholders that play a part in executing the interventions
- Incorporating adaptations into executing the interventions



Step 5. Evaluation



- Process evaluation goal: Periodic review to ensure that the projections continue to be sound and the adaptations are still suitable.
- Outcome evaluation goal: Ensure that climate change is considered in broader PH planning and implementation activities. To ensure that PH is considered in broader climate change planning and implementation activities.



Key Points to Consider



- Stakeholder Engagement
 - ◆ Critical throughout
 - ◆ Appropriate stakeholders may change by stage.
- Prioritization of health impacts
 - ◆ Can occur at Stage 1, 2 or 3
 - ◆ Dependant on level of prior analysis
 - ◆ Available evidence
 - ◆ Political considerations

Thank You

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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