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

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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

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Potential Health Effects of Climate Change

Climate Change:

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

HEAT	Heat stress, cardiovascular failure
SEVERE WEATHER	Injuries, fatalities
AIR POLLUTION	Asthma, cardiovascular disease
ALLERGIES	Respiratory allergies, poison ivy
VECTOR-BORNE DISEASES	Malaria, dengue, encephalitis, hantavirus, Rift Valley fever
WATER-BORNE DISEASES	Cholera, cryptosporidiosis, campylobacter, leptospirosis
WATER AND FOOD SUPPLY	Malnutrition, diarrhea, harmful algal blooms
MENTAL HEALTH	Anxiety, despair, depression, post-traumatic stress
ENVIRONMENTAL REFUGEES	Forced migration, civil conflict

Adapted from J. Patz

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/

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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

National Climatic Data Center
U.S. Department of Commerce

NATIONAL Environmental Public Health Tracking Program

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

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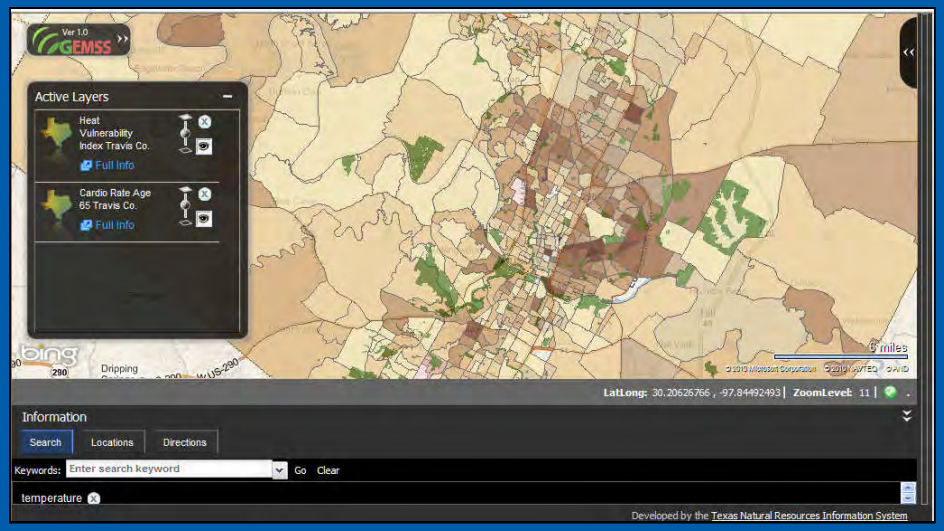
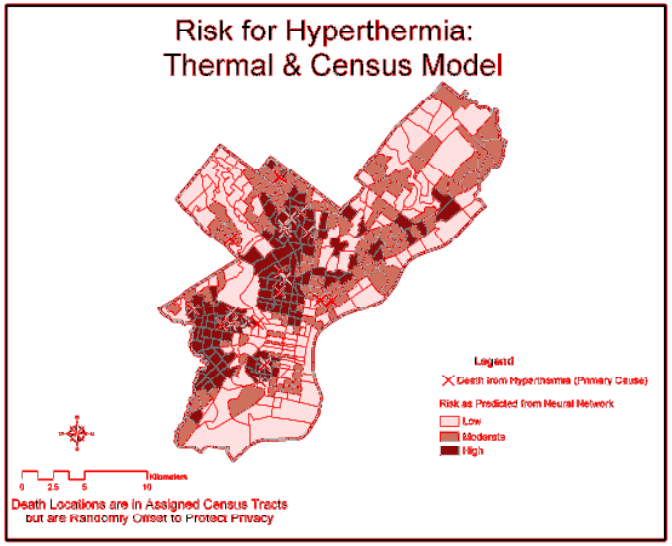
Vulnerability Assessments and Mapping



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

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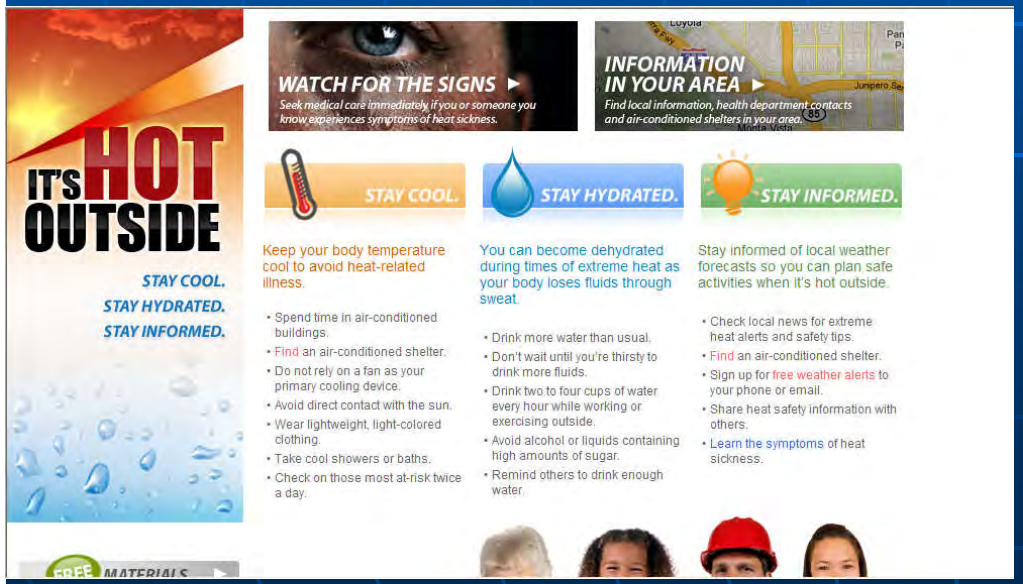
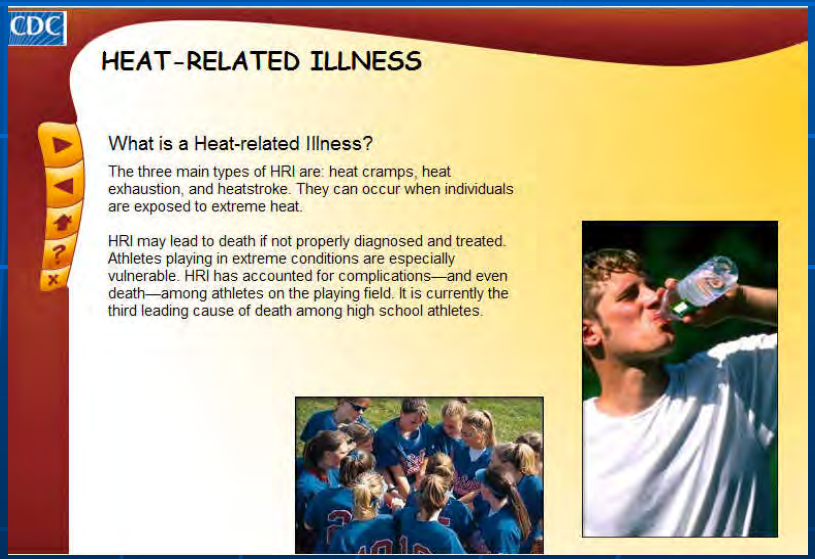
CDC's Priority health actions for climate change

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





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

Priority health actions for climate change

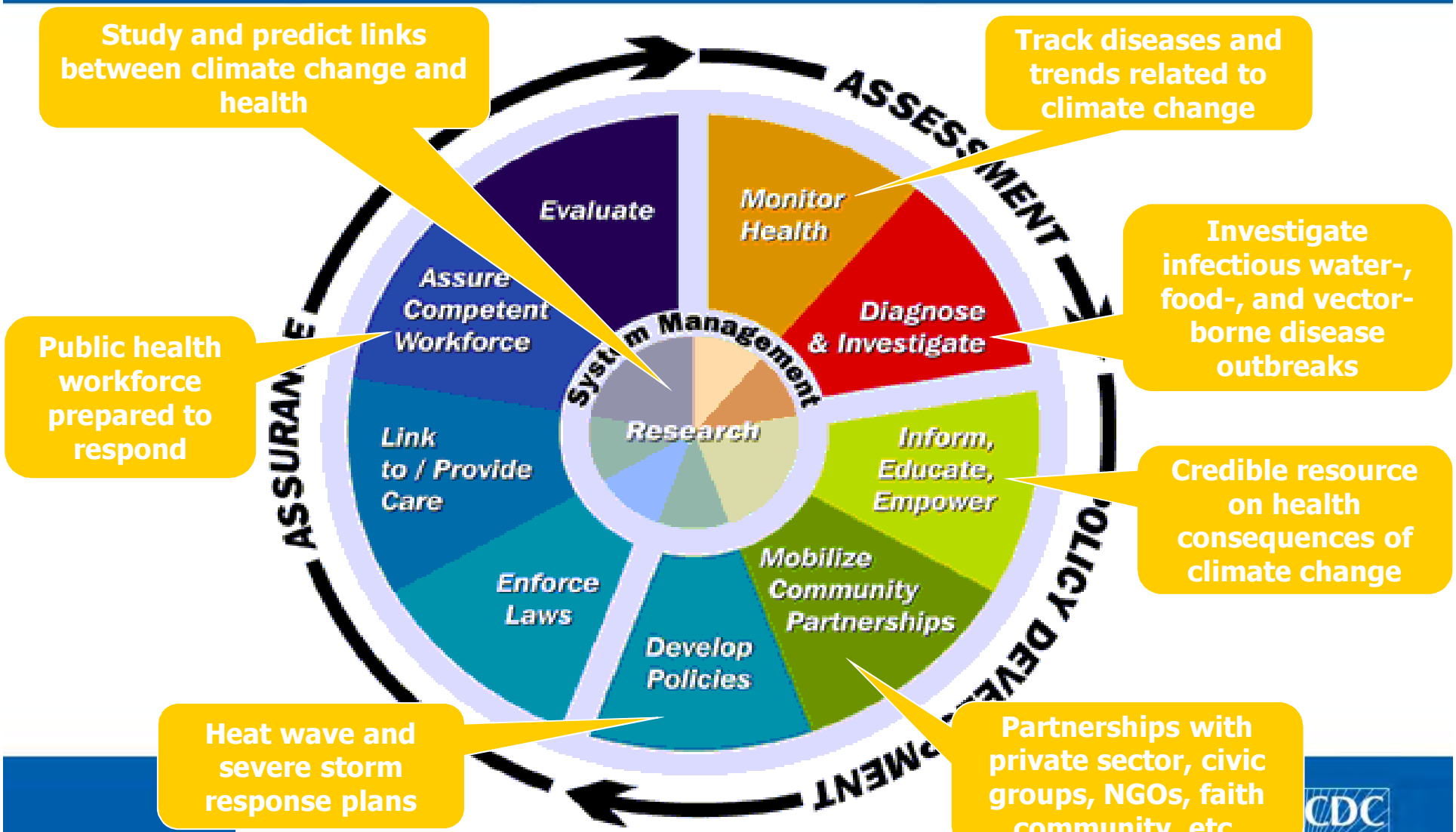
Promote workforce development by ensuring the training of a new generation of competent, experienced public health staff to respond to the health threats posed by climate change.

ASPH
ASSOCIATION OF SCHOOLS OF PUBLIC HEALTH

EIS

The National Center for Atmospheric Research
NCAR
managed by UCAR to serve the community

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

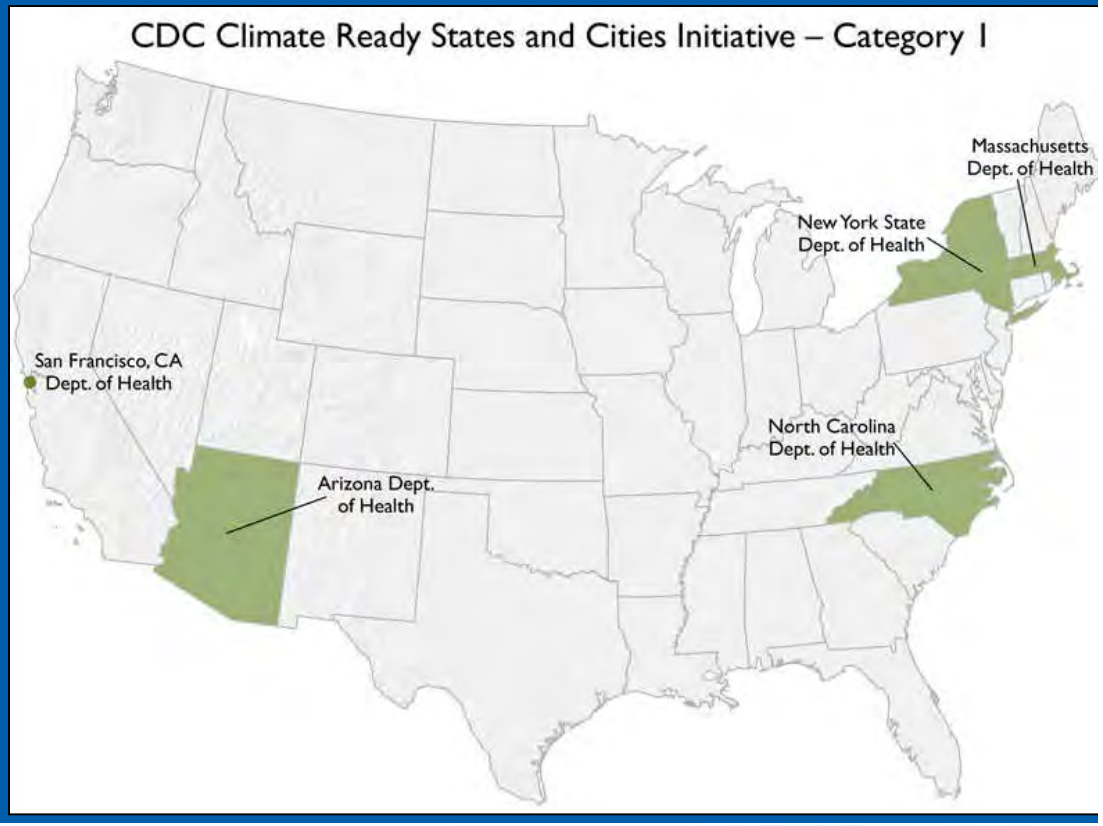
Program Highlight #2:
Climate-Ready States and Cities Initiative

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



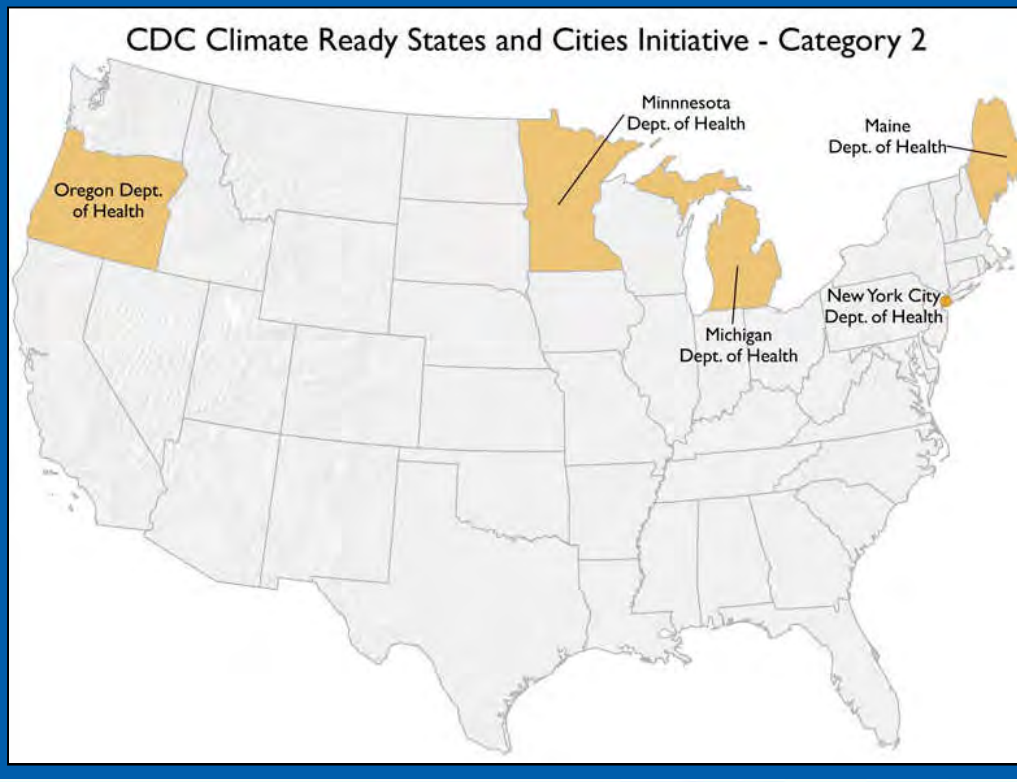
Program Highlight #2:
Climate-Ready States and Cities Initiative

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 Resiliance 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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