Caribbean Public Health Agency

CARPHA

Preventing disease
Promoting and protecting health
Adapting and Mitigating the Impacts of Climate Change on the Region’s Human Health

Dr. Laura-Lee Boodram
Head CR-FELTP
CARPHA
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### Climate Trends in the Caribbean

**Thus far....**
- Average annual air temp. increases, new highs - 0.5 °C higher than previous
- Sea level rise 10 cm per 100 yrs
- Variations in dry/wet spells
- Increasing hurricane strength

<table>
<thead>
<tr>
<th>Scenarios for the Future</th>
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<tbody>
<tr>
<td>0.5 - 4.2 °C from 2010 to 2099</td>
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<td>Drier mid-year, wetter end of year</td>
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<td>Sea level rise: 35-50 cm over the next 50 years</td>
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<td>More intense tropical storms (10-20% wind speed increase)</td>
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<td>Ocean acidification</td>
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Caribbean Climate and Health Context

- Frequent and intense extreme climatic events in the Caribbean: Hurricanes, floods, droughts, heat waves, Saharan dust incursions
- Effects on human health and social development in the Caribbean region.
- Adverse health outcomes: respiratory complications, heat-induced morbidity, outbreaks of vector-, food- and water-borne diseases, injuries, fatalities.
- Caribbean SIDS have limited capacity to respond presently – current and future focus on building climate resilience with appropriate adaption and mitigation strategies.

Climate change affects human health through multiple pathways.

Adapted from McMichael et al., 2003a.
Impacts to Health from Increased Temperatures

Direct impacts to health:

- **Heat cramps** – muscular pains and spasms
- **Heat exhaustion** – body fluids are lost through heavy sweating
- **Heat stroke** – is life threatening.

Indirect impacts:

- Range of areas that can potentially be affected with gradual and extreme temperature increases
- Includes impacts on ecosystems, water, food, disease-carrying vectors, lifestyle, community resilience.
Health Impacts of Floods

- Immediate deaths and injuries
- Non-specific increases in mortality
- Infectious diseases – leptospirosis, hepatitis, diarrhoeal, respiratory, and vector-borne diseases
- Exposure to toxic substances
- Mental health effects
- Indirect effects
- Increased demands on health systems.
Weather has a major role in the development, transport, dispersion and deposition of air pollutants.

Air pollution episodes are often associated with stationary or slowly moving air masses.

Air pollutants and fine particulate matter may change in response to climate change.
Climatic Change: Drinking Water Supply

Drying climate causes:
- Changes to land cover and run-off patterns (erosion)
- Increased bushfire risk
- Increased sediment, nutrient and debris.

Flooding can also affect drinking water supplies:
- Coastal intrusion
- Contamination.
Mosquito-borne-disease: Environmental Changes

<table>
<thead>
<tr>
<th>Distribution of vectors will change arising from:</th>
<th>Increasing temperature</th>
<th>Changing rainfall:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclones, flooding</td>
<td>Changes in animal host/reservoir populations</td>
<td>• Increase or decrease</td>
</tr>
<tr>
<td></td>
<td>Rising sea levels</td>
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</tr>
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</table>

- Extreme tides
- Loss of coastal margins.
Food Safety

Food borne disease may cause food poisoning:
- May increase the proliferation of bacterial pathogens including Salmonella, Campylobacter and Listeria spp.
- May increase mycotoxins and aflatoxins in seafood.
Social Impacts

Lifestyle and behaviour are likely to be affected in the following ways:

Increased temperatures:
- Increases in crime - particularly involving aggression
- Accidents - workplace and traffic
- Decline in physical health
- Hot nights may cause sleep deprivation
- Recreational opportunities - changes to exercise patterns
- Changes in alcohol consumption
- Stress
- Lack of cold water- reduced ability to cool down

Social Impacts

Mental Health can be impacted as follows:
- Anxiety and depression
- Post traumatic stress disorder
- Insecurity
- Grief
- Stress, self harm and possible suicide
- Drug and alcohol misuse
- Impacts on individuals, communities
- Loss of social cohesion
- Dislocation
- Specific impacts on children, women and elderly.
<table>
<thead>
<tr>
<th>Climate Change Impacts</th>
<th>Examples of Populations Vulnerable to Climate Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extreme Heat</td>
<td>Elderly; children; diabetics, poor, urban residents; people with respiratory diseases; agricultural workers; those active outdoors</td>
</tr>
<tr>
<td>Poor Air Quality/ Air Pollution</td>
<td>Elderly; children; poor, urban residents; people with respiratory diseases; agricultural workers; those active outdoors; people with allergies</td>
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<tr>
<td>Wildfires</td>
<td>People with respiratory diseases; transit-dependent</td>
</tr>
<tr>
<td>Severe weather, extreme rainfall, floods, water issues</td>
<td>Coastal residents and those living in flood-prone areas; elderly, children, low income</td>
</tr>
<tr>
<td>Increased average temperature</td>
<td>Elderly; children; poor, urban residents; people with respiratory diseases; agricultural workers; those active outdoors; people with allergies</td>
</tr>
<tr>
<td>Agricultural changes</td>
<td>agricultural workers; rural communities, low income, elderly; children</td>
</tr>
<tr>
<td>Drought</td>
<td>Low income, elderly, children, agricultural workers, rural communities.</td>
</tr>
</tbody>
</table>
Addressing Climate Change Impacts

Adaptation
- Change in land use, relocation
- Emergency & business continuity planning
- Upgrades or hardening of building and infrastructure
- Residential programs promoting adaptation
- Health programs

Mitigation
- Energy conservation and efficiency
- Renewable energy
- Sustainable transportation, improved fuel efficiency
- Capture and use of landfill and digester gas
- Carbon sinks

Seal Buildings
Green Infrastructure
Water and Energy Conservation
Smart Growth
Health systems strengthening: Definition of an essential public health package

- Comprehensive assessments of climate risks to health and health systems
- Integrated environment and health surveillance
- Delivery of preventive and curative interventions for identified climate-sensitive public health concerns
- Preparedness and response to the public health consequences of extreme weather events
- Strengthening of human and institutional capacities and inter-sectoral coordination
Building Resilience Against Climate Effects

01. Forecasting Climate Impacts and Assessing Vulnerabilities
02. Projecting the Disease Burden
03. Assessing Public Health Interventions
04. Developing and Implementing a Climate and Health Adaptation Plan
05. Evaluating Impact and Improving Quality of Activities

BRACE model
Health Impact Assessment (HIA)

The World Health Organization (WHO) defines a Health Impact Assessment (HIA) as:

“A combination of procedures or methods by which a policy, programme or project may be judged as to the effects it may have on the health of a population.”

- The HIA was initiated worldwide to facilitate the assessment of health issues in new proposals.
Climate Change and Health Vulnerability & Adaptation Components

- **Identify**
  - Identify key stakeholders and project range

- **Determine**
  - Determine sectors and data requirements

- **Establish**
  - Establish climate change scenario

- **Provide**
  - Provide background information for participants

- **Undertake**
  - Undertake workshops:
    - Scope of impacts:
    - Current activities (coping capacity)
    - Risk assessment
    - Adaptation responses.
Stages of Adaptation

Primary – prevent onset of health impact

Secondary – preventative measures taken in response to early evidence of impact

Tertiary – actions to lessen the health effects
Health Impact Pathway

Extreme rainfall and flooding

Overflow of waste from septic tanks into flood waters

Human contact with flood water

Gastro intestinal diseases

Prevent/reduce flooding

Prevent/reduce overflow of waste

Avoid human contact with water

Correct medical treatment
Health Impact Pathway

Each link in the chain is:

- A potential for vulnerability
- An opportunity for adaptation.

In terms of adaptation:

- The higher up the chain the better
- The more links we weaken the better.
Types of Adaptation

Adaptation responses may be of the form:

- Legislative or regulatory
- Public education or communication
- Surveillance and monitoring
- Ecosystem intervention
- Infrastructure development
- Technological/engineering
- Health intervention
- Research/ further information
Increased need for climate services for health in the Caribbean

Need for strong, integrated approach to management of climate risks to human health

Global Framework for Climate Services (GFCS) Health Exemplar (WMO, 2014), which calls for:

• Strengthened communication and partnerships among climate and health actors at all levels
• Increased capacity of the health sector to effectively access, understand and use climate and weather information for health decisions
• Improved health and climate research and evidence of the linkage of climate and health
• Climate and weather data effectively mainstreamed into health operations
Caribbean Climate and Health Context cont’d

- Strong links demonstrated between climate variables and infectious disease transmission and spread

- Incipient work in the region over the past few years – country collaborations with CIMH, CARPHA, CCCCC, UWI/PPCR, Red Cross, PAHO.

- Seeking to strengthen interactions between multisectoral professionals for creation and implementation of early warning systems for health.

- Output: Climate integrated, health tools and services that generate information to support public health decision making and resource allocation.
EU/CARIFORUM Climate Change and Health Project
Strengthening Climate Resilient Health Systems in the Caribbean
Education and Advocacy

Policy makers and general public need to recognize health as a practical and positive argument for climate policy

**Requires:** More effective engagement of major health actors and messages for the climate policy debate

- Production of targeted awareness-raising products for specific audiences.
- Mobilization of health networks on evidence-based advocacy messages.
Relevant evidence accessible to decision-makers

**Requires**: Greater emphasis on applied research, and on knowledge management for practical application.

- Systematic review and guidance of research output to match the needs of decision-makers.
- Specific evidence products, on the benefits and costs of health adaptation interventions, and on health promoting mitigation.
- Translation of research into practical guidance for health protection from climate change, and health-enhancing mitigation policy.
Thank You!