Update on Maine CDC Climate and Health Program

Norman Anderson

norman.anderson@maine.gov

December 11, 2013

Maine Medical Association
Major Components of Maine’s Climate and Health Program

• Part of Federal CDC Initiative

• Current emphasis on
  • Identifying/assessing climate related health impacts
  • Projecting important climate indicators
  • Developing/enhancing intervention strategies
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
  - Cholera, cryptosporidiosis, campylobacter, leptospirosis

- WATER-BORNE DISEASES
  - Malnutrition, diarrhea, harmful algal blooms

- WATER AND FOOD SUPPLY
  - Anxiety, despair, depression, post-traumatic stress

- MENTAL HEALTH
  - Forced migration, civil conflict

- ENVIRONMENTAL REFUGEES

Adapted from J. Patz
Air temperatures
- Warmer winters
- Hotter summers
- More heat waves

Precipitation

Water temperatures

↑ Heat-related morbidity and mortality

↑ Vector-borne diseases (Lyme, EEE, West Nile)

↑ Pollen, Ozone, Particulates

↑ Asthma, Allergies, CVD

↑ Frequency of severe storms, flooding

↑ Frequency of waterborne disease Outbreaks (Cryptosporidium, E. coli, Giardiasis); Mold

↑ Algal blooms (Red tide, Cyanobacteria)
Relationship between High heats and Heat Illness ED Visits
ED and EMS: July, 2013 Heat Event

**Early Aberration Reporting System (EARS)**

**State**

ED Visits

EMS Runs

* C = total count (last three digits)  **F = flags 1-C1 2-C2 3-C3 4-C03 5-C2C3 6-C1C2C3*
Projected High Heat Days – Selected Weather Stations

Projected Increase in Number if High Heat Days Per Year by 2056-2060

- York
- Waterville
- Sanford
- Presque Isle
- Portland
- Millinocket
- Lewiston
- Eastport
- Biddeford
- Bethel
- Bar Harbor
- Bangor
- Augusta

Number of Days with HI at or Above 95 Degrees F

2056-2060
2006-2010
Lyme Disease: Maine Distribution

Lyme disease is becoming more widespread
Correlation between Deer Tick Prevalence and Lyme Disease

Figure 2. Maine Lyme disease case rates (cases per 100,000) by town, 1983-2010 average.

Figure 3. Maine I. scapularis nymph submissions by town, 1989-2010.
By Mid Century, Conditions will be favorable to deer tick spread throughout Maine
Interventions

• Public Health/Emergency Preparedness
  – Hazard Vulnerability Assessments
  – All hazards planning
• Cumberland County Pilot Heat Response Plan
• Lyme Disease Forums/Needs Assessments
• Educational Interventions Vector borne disease prevention in Maine Schools
Next Steps

• Continue development of heat response and vector borne disease prevention strategies
• Expand scope of project to address impacts of extreme precipitation and pollen
• Increase emphasis on water-borne diseases
National Research Council, 2013

- Significant climate impacts predicted for this century could happen abruptly (e.g., several years)
- Even gradual changes in the physical environment could cross critical thresholds in human and ecological systems (e.g., crop failures, mass extinctions)
- We are not prepared for what lies ahead
  - Recommends an abrupt change early warning system