Before the Swarm:
Guidelines for the Emergency Management of Mosquito-Borne Disease Outbreaks

Dan Sinclair
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Four Pressing Questions

- What is an emergency as it relates to mosquito-borne disease?
- Is there even such a thing as emergency mosquito control?
- What can communities do in an emergency?
- What do things like climate change and globalization mean for this problem?

Who We Are

- The Association of State and Territorial Health Officials (ASTHO) is the national nonprofit organization representing the state and territorial public health agencies of the United States, the U.S. Territories, and the District of Columbia.
- Visit us online at www.astho.org.
I. Conceptualizing the Problem

Three Framing Facts

- ≈600 mosquito-borne diseases globally
- A significant worldwide toll:
  - 1 million deaths\(^1\)
  - 700 million sickened annually\(^2\)
- United States is home to many of the same disease-causing mosquitoes found elsewhere

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West Nile virus, 1999

Public Health Confronts the Mosquito (PHCM)

- 2005
- Recommendations of the Mosquito Control Collaborative
- Guidelines for Developing Sustainable State and Local Mosquito Control Programs

Evaluation of PHCM-2006

- Largely helpful as a measuring stick between programs
- Format of the document-excellent
- Need to refine audience and ensure that decision-makers apply the report
- Need for guidance on natural disasters and emergencies

III. Before the Swarm
What is a mosquito-borne epidemic emergency?

- Existing pathogens
- Natural disasters
- Exotic disease agents

The Audience

The Mosquito Control Collaborative (MCC)
Donnene Hollingsworth, Chair – Secretary of Health, South Dakota

Member groups:
- U.S. Air Force Reserve Spray Flight
- American Mosquito Control Association (AMCA)
- Association of Public Health Laboratories (APHL)
- Assoc. of State & Territorial Health Officials (ASTHO)
- Centers for Disease Control and Prevention (CDC)
- Council of State and Territorial Epidemiologists (CSTE)
- Health and Habitat, Inc.
- National Assoc. of Counties (NACo)
- National Assoc. of County & City Health Officials (NACCHO)
- National Association of Local Boards of Health (NALBOH)
- National Assoc. of State Depts. of Agriculture (NASDA)
- National Emergency Management Association (NEMA)
- National Environmental Health Assc. (NEHA)
- State Public Health Vector Control Conference (SPHVCC)
Structure of Before the Swarm

- Plan Ahead
- Involve Others
- Use the Best Science and Data
- Inform the Public
- Responding to a Mosquito-Borne Epidemic Emergency
- Quick Reference Guide for Emergencies

Plan Ahead

- It's hard to plan in the middle of an epidemic or a disaster!
- Training is everything
- NIMS/ICS
- Resource Typing
- Plan A…and B, C, D…
- The 5 Ps: Prior Planning Prevents Poor Performance

Involve Others

- Ensure continuity of communication
- One leader
- Community groups
- Elected leaders
- Academic partners
- Many organizations are involved in mosquito control
Use the Best Science and Data

- Surveillance from a variety of sources
- Prepare resource-sharing agreements in advance (other jurisdictions, contractors, etc.)
  example- EMAC
- Access agricultural extension agents and other experts
- Last resort measures

Inform the Public

- Public Messages
  Should:
  - Be Clear
  - Be Accurate
  - Be Practical
  - Give Concrete Steps to Protection
  - Begin even before an emergency starts
  - Be modified to explain enhanced risk

Inform the Public cont’d

- Translate Important Messages
- All Messages to Public Information Officer(s)
- Incident Command PIO
- Start public dialogue even before an outbreak
- Time is of the essence!
Responding to a Mosquito-Borne Epidemic Emergency

- Integrated Pest Management (IPM)
- Take a broad view of potential partners
- Coordinate with public health labs
- Integrate mosquito control into County Pre-Disaster Mitigation Plans
- Participate in regional mosquito control teams
- Understand federal response partners and their protocol for assistance

Responding to a Mosquito-Borne Epidemic Emergency con’t

- Prioritize targeted pesticide applications that protect vulnerable populations
- Work with public to eliminate habitats
- Consider the costs and benefits of ‘pay for service’ initiatives
- Use GIS/Google maps to track status of important information

Resource and staffing issues

- What resources are available/required to respond?
  - What are the locally important species?
  - What are the key human resources?
  - What are the required laboratory resources?
  - What are the projected costs?
- What is the magnitude of the problem?
- What disease agents are present?
  - Infections, other disease mechanisms
    - Where, when, why are they active?
  - Control technology resources
    - Insecticide resistance
    - Restricted access habitats
- What vector species are present?
  - Taxonomic resources
  - Behavior and ecology resources
    - Where, when are they active?
  - Control technology resources
    - Insecticide resistance
    - Restricted access habitats
  - Epidemiology resources
    - Disease surveillance programs
- What environmental predictors are available (e.g., rainfall, temperature, snow pack, etc.)?
  - Staffing needs
    - Taxonomist
      - able to identify all common species in the area, knows when/where to seek help
    - Biologist/ecologist
      - responsible for habitat mapping, surveillance & trapping, control evaluation, etc.
    - Other (admin., epidemiology, resistance testing, etc.)
- What resources are available for the program?
  - Staffing and budget
  - Equipment and supplies
  - Medical and diagnostic laboratory support
  - Taxonomic resources
  - Behavior and ecology resources
  - Control technology resources
  - Epidemiology resources
  - Staffing needs

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A Quick Reference Guide for Emergencies

- A toolkit for all of your mosquito control, emergency response, and training needs!

Remember: It’s hard to plan in the middle of an epidemic or disaster!

- Newly-introduced pathogen, bioterror event
  - Chaos among planners
  - Inadequate communication
  - Lack of coordinated response

Remember: It’s hard to plan in the middle of an epidemic or disaster!

- Hurricanes or floods
  - No power
  - No communication
  - Loss of staff, equipment, facilities
  - Vulnerable populations and repair teams
IV. Globalization, Climate Change, and Disease

Global Travel

Air travel has increased by approximately 9% each year over the last 50 years and shipping traffic has grown by more than 27% since 1993.

Climate Change and Vectors


A lesson from history? Malaria-U.S., 1882

Where do we go from here?

Save the Date

ASTHO-NACCHO
JOINT CONFERENCE
September 9-12, 2008
Sacramento, California

Questions?

Dan Sinclair
571.527.3172
Dsinclair@astho.org
www.astho.org

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