

## Hurricanes, Floods, and Mosquitoes: Public Health Risks and Responses – Roger Nasci

- a) Normal control
  - i) IPM
  - ii) Source reduction
  - iii) Larvicides
  - iv) Adulticides
- b) Emergency control
  - i) Need immediate relief
  - ii) Adulticiding generally needed
- c) Arboviruses of public health importance
  - i) EEE
  - ii) WNV
  - iii) WEE
  - iv) LAC
  - v) SLE
- d) Need to understand systems in order to make the correct control decisions
  - i) Aging mosquitoes provide highest risk of disease
  - ii) Timing of control is crucial
- e) Problems after a disaster
  - i) Substandard housing
  - ii) Many people working outdoors
- f) Disaster scenarios
  - i) Epidemic arbovirus transmission in area preceding disaster – disease increase
  - ii) Enzootic arbovirus transmission in disaster area – epidemic occurs
  - iii) Mosquito density increases following disaster
- g) What happens
  - i) # Breeding sites increase
  - ii) Mosquito populations explode
    - (1) Many are nuisance species
    - (2) Virus transmission usually decreases or disappears
  - iii) Zoonotic arbovirus outbreaks are relatively rare and usually focal
  - iv) Disaster events are ecologically disruptive
  - v) Disaster area not conducive to arboviral transmission
  - vi) No evidence of disease increase following a disaster in the disaster area
  - vii) Surrounding areas may be different – needs to be determined
- viii) Surveillance/control
  - (1) No disease risk seen
  - (2) Mosquito densities very high
  - (3) Control needed to keep mosquito population from aging
    - (a) Control resulted in as much as 92% reduction
    - (b) Landing rates dropped from >200/minute to <1
    - (c) Took about 2 weeks to achieve pre-spray mosquito densities
- h) Summary

- i) Natural disasters increase mosquito densities
- ii) Long-term impacts may occur
- iii) National response capacity is able to quickly reduce mosquito population
- iv) Disease potential not realized
  - (1) People left area
  - (2) Good control
  - (3) Other reasons
- i) Preparedness
  - i) Need good surveillance
  - ii) Need to maintain an awareness of mosquitoes and vector-borne diseases
  - iii) PRE-EMERGENCY PLANNING IS VITAL
    - (1) Define nature of problem
    - (2) Continuity of operations plan
      - (a) Command and control
      - (b) Security of assets
      - (c) Emergency resources
      - (d) Emergency funding
    - (3) Communications
      - (a) Important contacts
      - (b) Mechanics – how can it be achieved
    - (4) Training and practice – interface with Incident Command System
- j) Nasci & Moore, Emerging Infectious Diseases 4:333-34, 1998