

Responding to Dengue Fever in the U.S.: Lessons from Three Outbreaks

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Background

Since 2001, three autochthonous dengue fever outbreaks have occurred in the U.S. We sought to characterize and describe the responses to these outbreaks, from the perspectives of public health and vector-control officials at the local, state, and federal levels. The outbreaks studied were: Hawaii (2001); Brownsville, Texas (2005); and Southern Florida (2009-present). Our analysis was aimed at assessing mitigation strategies used during each of these outbreaks, and to identify policy implications for public health departments, vector control agencies, and clinicians in areas vulnerable to dengue and other mosquito-borne diseases.

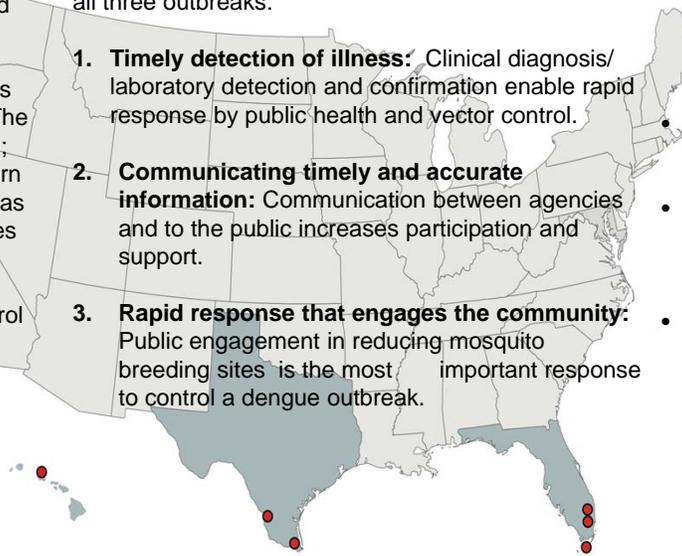
Themes

In analyzing the three outbreaks, 3 prominent themes emerged and were present in the response efforts to all three outbreaks:

- 1. Timely detection of illness:** Clinical diagnosis/ laboratory detection and confirmation enable rapid response by public health and vector control.
- 2. Communicating timely and accurate information:** Communication between agencies and to the public increases participation and support.
- 3. Rapid response that engages the community:** Public engagement in reducing mosquito breeding sites is the most important response to control a dengue outbreak.

Methods

- Conducted a medical literature review via PubMed, and news media searches via Google, to identify individuals involved in managing each outbreak.
- Individuals participated in qualitative, semi-structured interviews.
- 26 people were interviewed in total (9 from Hawaii, 10 from Florida, and 7 from Texas).
- Included heads of local health departments, personnel from the U.S. CDC, vector-control officers, and state and local health department personnel.



Location	Hawaii (2001)	Brownsville (2005)	Florida (2009-present)
Lessons Learned	<ul style="list-style-type: none"> • Populations are not completely homogenous and messages should be tailored to specific locales • Tourism concerns must be balanced with public health response • Community engagement is more productive when non-punitive, actionable initiatives are undertaken by public health • A communication study validated the community engagement approach, with substantial numbers of residents aware of the outbreak and those taking actions performed the correct action • The lack of in-state testing capacity delayed confirmation of the outbreak • While <i>Aedes albopictus</i> is a competent vector, it is unable to sustain a major outbreak, especially with prompt outbreak control efforts 	<ul style="list-style-type: none"> • Nearby foci of endemicity makes dengue a continual threat, including the possibility of DHF • The involvement of CDC/BIDS allows for faster identification of the index case • Awareness of and preparation for the potential threat of dengue pre-outbreak, enhances the ability to respond to an actual outbreak 	<ul style="list-style-type: none"> • The public is more engaged by an aggressive multi-modal campaign than by simply putting brochures in mailboxes • Door-to-door vector control activities are essential and the ability to inspect property without homeowner permission improves response • Clear communication with tourism officials diminishes possibility of oppositional viewpoints • Collaboration between different agencies and between different counties can improve response