

GLOBAL HEALTH SECURITY THREATS IN AMERICA

**Dengue Fever in Yuma County,
Arizona, 2014**

2018



Contents

Description and Methods	i
Introduction	2
Description of the Outbreak	3
Impact of the Outbreak	4
Observations from the Field	5
Implications for the Future	6
References	8



If we truly want the border to be safer, then in my eyes, we need to work that much closer with our colleagues on the Mexican side.

The important thing here is, there's got to be something in this for Mexico, or else they're going to see this as 'just U.S.-driven.'



Experts believe that dengue has the potential for severe health and economic consequences in the United States, with many unaware of the risk of the disease.^x Local health authorities need to engage with the public about the possibility of dengue in the population, and invest in mosquito control efforts. Clinicians should also be more aware of the disease and how symptoms present, especially in summer and autumn when mosquitoes are most commonly active. A survey of Arizona health providers following the 2014 dengue outbreak found that 58% of providers lacked confidence to treat mild dengue, and 73% lacked confidence to treat severe dengue,^{xi} emphasizing the need for awareness among health care staff in areas where the disease could be present. Additionally, given the changing climate, this threat is not limited to just places like Arizona and Texas and other border states. Many more states are becoming home to *Aedes aegypti*, where they are likely to live and reproduce, which in turn brings the threat of disease (see Figure 1).

Guerrero emphasized the importance of continued support for binational planning and surveillance programs like EWIDS. “If you can push surveillance further south, then that keeps the United States safer, and by that I mean, if my colleagues in Sonora can better detect infectious disease, and I have strong communication with them, then I’m going to know sooner, and then I’m safer.” Guerrero noted that “if we truly want the border to be safer, then in my eyes, we need to work that much closer with our colleagues on the Mexican side. The important thing here is, there’s got to be something in this for Mexico, or else they’re going to see this as, ‘It’s just U.S.-driven.’” Komatsu emphasized the important role of federal partners in distinguishing the signal from the noise: “How do you do your own work and watch your own state and counties and also watch other countries, which is difficult to do?”

The infectious diseases that threaten the health, welfare, and security of communities throughout the United States are in large part determined by interrelated global factors. No single nation can be protected if other nations remain unprepared to counter threats. Strong and sustainable public health surveillance, prevention, and control efforts across the globe are the first line of defense against infectious disease, often stabilized by ongoing international diplomacy. Yet, these protections are often the first to be neglected, both in terms of resourcing and political will, resulting in the degradation or absence of necessary infrastructure and capacities. Given the speed at which diseases travel in the 21st century, continued investment in building capacity at the source of an outbreak, as well as sustainable workforce and infrastructure capabilities in the United States will be essential to protect U.S. communities. As demonstrated in this report, cross-border collaboration, including coordinated planning, real-time information sharing, leveraging the assets of each partner, and respecting differences in approach, is essential to halting the spread of infectious disease across borders.

References

- i Bhatt, S., Gething, P. W., Brady, O. J., Messina, J. P., Farlow, A. W., Moyes, C. L., Drake, J. M., Brownstein, J. S., Hoen, A. G., Sankoh, O., Myers, M. F., George, D. B., Jaenisch, T., Wint, G. R., Simmons, C. P., Scott, T. W., Farrar, J. J., Hay, S. I. (2013). The global distribution and burden of dengue. *Nature*, 496(7446), 504-507. doi:10.1038/nature12060
- ii Beaumier, C., Garcia, M. N., & Murray, K. O. (2014). The History of Dengue in the United States and its Recent Emergence. *Current Tropical Medicine Reports*, 1(1), 32-35. doi:10.1007/s40475-013-0008-1
- iii Jones, J. M., Lopez, B., Adams, L., Galvez, F. J., Nunez, A. S., Santillan, N. A., Plante, L., Hemme, R. R., Casal, M., Hunsperger, E. A., Munoz-Jordan, J., Acevedo, V., Ernst, K., Hayden, M., Waterman, S., Gomez, D., Sharp, T. M., Komatsu, K. K. (2016). Binational Dengue Outbreak Along the United States-Mexico Border - Yuma County, Arizona, and Sonora, Mexico, 2014. *MMWR Morb Mortal Wkly Rep*, 65(19), 495-499. doi:10.15585/mmwr.mm6519a3
- iv Bouri, N., Sell, T. K., Franco, C., Adalja, A. A., Henderson, D. A., & Hynes, N. A. (2012). Return of Epidemic Dengue in the United States: Implications for the Public Health Practitioner. *Public Health Reports*, 127(3), 259-266.
- v Jones, J. M., Lopez, B., Adams, L., Galvez, F. J., Nunez, A. S., Santillan, N. A., Plante, L., Hemme, R. R., Casal, M., Hunsperger, E. A., Munoz-Jordan, J., Acevedo, V., Ernst, K., Hayden, M., Waterman, S., Gomez, D., Sharp, T. M., Komatsu, K. K. (2016). Binational Dengue Outbreak Along the United States-Mexico Border - Yuma County, Arizona, and Sonora, Mexico, 2014. *MMWR Morb Mortal Wkly Rep*, 65(19), 495-499. doi:10.15585/mmwr.mm6519a3
- vi Kelly, J. C. (2016, May 20, 2016). Dengue Spread From Mexico to Arizona; Local Transmission Feared. *Medscape Medical News*.
- vii Walker, K. R., Williamson, D., Carrière, Y., Reyes-Castro, P. A., Haenchen, S., Hayden, M. H., Jeffrey Gutierrez, E. Ernst, K. C. (2018). Socioeconomic and Human Behavioral Factors Associated With *Aedes aegypti* (Diptera: Culicidae) Immature Habitat in Tucson, AZ. *Journal of Medical Entomology*, tjy011-tjy011. doi:10.1093/jme/tjy011
- viii NASEM. (2017). *Global Health and the Future Role of the United States*. Washington, DC: National Academies Press.
- ix CDC. (2017, February 23, 2018). Zika Virus: Potential Range in US. Retrieved from <https://www.cdc.gov/zika/vector/range.html>
- x Bouri, N., Sell, T. K., Franco, C., Adalja, A. A., Henderson, D. A., & Hynes, N. A. (2012). Return of Epidemic Dengue in the United States: Implications for the Public Health Practitioner. *Public Health Reports*, 127(3), 259-266.
- xi Jones, J. M., Lopez, B., Adams, L., Galvez, F. J., Nunez, A. S., Santillan, N. A., Plante, L., Hemme, R. R., Casal, M., Hunsperger, E. A., Munoz-Jordan, J., Acevedo, V., Ernst, K., Hayden, M., Waterman, S., Gomez, D., Sharp, T. M., Komatsu, K. K. (2016). Binational Dengue Outbreak Along the United States-Mexico Border - Yuma County, Arizona, and Sonora, Mexico, 2014. *MMWR Morb Mortal Wkly Rep*, 65(19), 495-499. doi:10.15585/mmwr.mm6519a3

Copyright 2018 by SGNL Solutions, LLC; LAR Consulting, LLC; and Council of State and Territorial Epidemiologists. All Rights Reserved.

We would like to acknowledge the following people and organizations for their contributions to this project: Laura Runnels, MPH; Megan Snair, MPH; Justin Snair, MPA; Alexa Edmier; Chris Mills; Ovaitt, LLC; the Council of State and Territorial Epidemiologists; the Centers for Disease Control and Prevention; and the key informants that dedicated their time to speaking with us.

This publication was supported by Cooperative Agreement Number 5U38OT000143-05S from the Centers for Disease Control and Prevention (CDC). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC.

For further information, contact:

Justin Snair, MPA

CEO and Principal Consultant

SGNL Solutions

jsnair@sgnl.solutions

Jordan Peart, MPH

Program Analyst

Council of State and Territorial Epidemiologists

jpeart@cste.org

