

Dengue Returns

[Announcer] This program is presented by the Centers for Disease Control and Prevention.

[Sarah Gregory] Today, I'm talking with Dr. Tyler Sharp about dengue in southern Texas. Dr. Sharp is an epidemiologist with CDC, located in San Juan, Puerto Rico. Welcome, Dr. Sharp.

[Tyler Sharp] Thank you very much. Thanks for having me on.

[Sarah Gregory] First off, what is dengue and how is it different from malaria, or chikungunya, or even Zika for that matter?

[Tyler Sharp] Dengue is a disease that is common throughout the tropics and sub-tropics, and it's caused by any of four different viruses, called dengue viruses 1 through 4, which are all transmitted through mosquito bites. Zika and chikungunya are also caused by viruses that are transmitted by the same species of mosquitoes that transmit dengue viruses, whereas malaria is caused by an infection with a parasite that is transmitted from a completely different species of mosquito. However, the illnesses caused by all of these pathogens can be difficult for doctors to distinguish since they all consist of fever with aches and pains.

[Sarah Gregory] Your article discusses the comings and goings of dengue in southern Texas. Why is this happening?

[Tyler Sharp] Dengue is a very dynamic disease, both geographically and temporally. Similar to influenza, there are epidemics of dengue in the tropics every 3 to 5 years. Because thousands of people cross the border from northern Mexico into southern Texas every day, when dengue epidemics occur in Mexico it becomes increasingly likely that dengue virus will be imported into Texas, which can potentially result in local transmission of dengue virus.

[Sarah Gregory] What happened in 2013 that was significant? How many people were impacted in Texas?

[Tyler Sharp] In 2013, Mexico experienced a dengue epidemic that resulted in increases in the number of dengue cases in northern Mexico. Around the peak of the epidemic in Mexico, there were concomitant increases in dengue cases in south Texas, including 26 cases that had no history of travel to Mexico. This indicated that the virus had been imported and was circulating locally in Texas. This is significant since similar situations had occurred during several epidemics in Mexico since the 1980s.

[Sarah Gregory] What are the symptoms of Dengue?

[Tyler Sharp] The most common symptoms of dengue are fever, body pain, headache, and bone pain. Because these are symptoms that are also consistent with many other illnesses in the tropics, it's often difficult to distinguish dengue from malaria or chikungunya or even Zika.

Other causes of fever can be bacterial in origin, and the clinical management of all of these diseases can differ widely. Hence, there is an urgent need for clinical tests that doctors and nurses can use to confidently diagnose patients with symptoms consistent with all of these diseases.

[Sarah Gregory] So currently there aren't any reliable tests for dengue?

[Tyler Sharp] Well, yes and no. Very good, FDA-approved tests to diagnose dengue are available in state public health departments and private laboratories across the U.S., but usually it takes a week or more for these results to be received by the physician that requested them, which is not very useful for clinical management of the patient. There are a couple rapid diagnostic tests that could be used at the patient's bedside, but none of them have yet been approved by the FDA for use in the United States.

[Sarah Gregory] Zika seems to be making very rapid inroads into the U.S. Is dengue going to do the same thing?

[Tyler Sharp] Actually, Zika is following the path already taken by dengue. To date, Zika has only been transmitted in the continental United States in southern Florida, whereas previous dengue outbreaks have occurred on multiple occasions in several regions of southern Florida, southern Texas, Hawaii, and there was even one case that was recently infected outside of New York City. It's possible that Zika virus could be transmitted in these or other regions of the United States, since the mosquitos that transmit Zika and dengue are present in a majority of the 50 states.

[Sarah Gregory] So what can public health officials do to protect people?

[Tyler Sharp] Establishing and supporting local mosquito control programs will help us know which states have the mosquitos that transmit dengue and Zika viruses. Public education programs can also help to raise awareness of the risk of local transmission of these viruses, especially the need to remove water containers, like discarded tires and trash that serve as the breeding sites for these mosquitos.

[Sarah Gregory] But I've heard the mosquitos that carry dengue and Zika can lay eggs in as little as a tablespoon of water. Is this accurate?

[Tyler Sharp] Absolutely. I've seen as many as 10 mosquito larvae in the cap of a plastic soda bottle. So these mosquitos really don't need much water at all to breed in, and really just about any container will do, although they do have some preferences like discarded tires, which tend to both fill with water and insulate against changing temperatures. That is part of the difficulty in controlling mosquito populations, and why we need community-wide approaches to eliminate mosquito breeding sites.

[Sarah Gregory] What can people do to protect themselves?

[Tyler Sharp] Whether you live in or are traveling to an area where the mosquitos that transmit dengue and Zika viruses are present, regularly using mosquito repellent is probably the best strategy that people can take to protect themselves. Other strategies can be employed, including wearing long sleeves and long pants and staying in locations with air conditioning or screens on windows and doors. Another resource is the CDC website. It has a lot of information on how people can protect themselves.

[Sarah Gregory] It seems like you have a very interesting job, Dr. Sharp. Would you like to tell us about what you do?

[Tyler Sharp] I agree! My job is super-cool and it's also very rewarding. I get to study emerging infectious diseases, both here in Puerto Rico and in places all across the world, from sub-Saharan Africa to Pacific islands, and I get to use my training in the scientific method and public health to identify a problem, study it, and make recommendations to governments and clinicians and the public that will keep people safe from infectious diseases like Zika and dengue that in some cases can have a devastating health impact. Certainly not always, but often this can all happen in a month or less during outbreak responses, so although it is enormously challenging, it's also amazing to see behaviors change in light of what we and CDC recommend.

[Sarah Gregory] Thank you, Dr. Sharp, for talking with me. Listeners can read the entire June 2016 article, Reemergence of Dengue in Southern Texas, 2013, online at cdc.gov/eid. I'm Sarah Gregory for Emerging Infectious Diseases.

[Announcer] For the most accurate health information, visit www.cdc.gov or call 1-800-CDC-INFO