

Yellow fever threatens South Florida after Zika scare

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The Zika scare of 2016 could lead to a yellow fever panic this year if South Florida residents let down their guard when it comes to protecting themselves from disease-carrying mosquitoes.

There hasn't been a [yellow fever](#) outbreak in the United States in more than 100 years, but state health officials are concerned that a large outbreak in Brazil and others in South and Central America could lead to infected travelers bringing the [disease](#) to South Florida, which has the right mosquitoes and climate for it to spread.

The disease is deadlier than the Zika virus. Zika raised alarms because many infected pregnant women gave birth to infants having microcephaly, a condition that causes abnormally small heads and developmental defects. Yellow fever can kill. Brazil reported 1,131 cases and 338 deaths attributable to yellow fever from July to March.

Most people infected with yellow fever will get symptoms so minor they won't realize they have been infected. Even for those who do notice, the symptoms such as fever, chills and headaches don't make it stand out from many other illnesses.

But for about 15 percent of the infected, the initial symptoms pass and then come back with a vengeance within a day, causing internal bleeding and jaundice—the yellowing of the skin that gives the fever its name—the failure of the liver and other organs. Of those, up to half die, usually within a week or two.

The U.S. Centers for Disease Control and Prevention warned travelers in March not to go to yellow fever hotspots in Brazil unless they were vaccinated.

South Florida officials hope the stepped-up mosquito control efforts already in effect to curb Zika will help contain any potential yellow fever outbreak. Yellow fever and Zika are carried by the same *Aedes aegypti* mosquito, which can also transmit dengue and chikungunya.

"If yellow fever is introduced into South Florida, and I suppose it will be, you're not going to see the same explosive outbreak we did with Zika," said Justin Stoler, an assistant professor of geography at the University of Miami who has done global health research with a focus on mosquito-borne illnesses. "There hasn't been prior exposure, but we've kept mosquito populations down, which is a good thing."

Broward County began its first truck spraying of the year April 30 to kill infant mosquitoes that are expected to multiply as the region's heavy rains increase, said Anh Ton, who oversees Broward's mosquito control.

South Florida's rainy season runs from May 15 to Oct. 15, according to the National Weather Service. The truck spraying is designed to kill mosquito larva in standing water, as opposed to aerial spraying that targets adult mosquitoes.

Aedes aegypti doesn't travel far from where it breeds. The mosquito, one of more than 40 types in South Florida, gravitates to urban areas and can breed in as little as a bottle cap full of standing water. It bites during the daytime and not just at dusk and dawn, officials said.

Yellow fever is a rare disease in the United States, with only one reported case between 2004 and 2016, according to the Centers for Disease Control.

Outbreaks killed thousands in Philadelphia in 1793, in Memphis, Tenn., in 1878 and in New Orleans throughout the 19th century, and in other places.

It wasn't until 1900 that the Yellow Fever Commission formed by the U.S. military proved that the disease was spread by mosquitoes, which led to practices such as fumigation and the covering of open water cisterns where the mosquitoes bred. The last U.S. outbreak occurred in New Orleans in 1905.

Most of the reported Zika cases came from travel abroad, especially in Brazil where there was a large outbreak, but local transmissions also surfaced in 2016: 287 cases in Miami-Dade, five in Palm Beach and one in Broward, according to the state health department.

The Zika virus is still out there. Although there is no vaccine for Zika, the number of cases has reduced significantly dramatically in the past two years as South Florida counties increased mosquito control and more people were protected because of previous exposure to the virus.

Florida recorded 1,469 Zika cases in 2016, with 298 infected locally. The state numbers dropped to 265 cases in 2017, with only two locally transmitted. There have only been 30 cases and no local transmissions so far this year.

South Florida is susceptible to such diseases not only because of its climate and mosquitoes, but also because it is a major hub attracting visitors from throughout the Americas for education, tourism, business and commerce, said Bindu S. Mayi, an associate professor of microbiology at Nova Southeastern University.

That's why a World Health Organization report in April identified Miami as one of the global cities susceptible to the spread of yellow

fever because the United States doesn't require people arriving from abroad to be vaccinated against the disease. Infected travelers arriving in South Florida could be bitten by [mosquitoes](#) here, which could then spread the disease through bites to other people.

"It was inevitable we would get these diseases," Mayi said. "It's remarkable how well we responded."

The proliferation of a disease can be worse if it is new to an area, because there is no natural immunity, she said.

"These flare-ups happen, especially when you have a large chunk of population that has never seen this virus," Mayi said. "There is nothing initially stopping the body from hosting the virus."

Most people in the U.S. haven't been vaccinated for yellow fever because the disease is so uncommon. With the recent Brazil outbreak and efforts there to vaccinate large portions of the population, the available supply in the U.S. is limited and the sole U.S. manufacturer doesn't expect to have more available until year-end.

The vaccine is recommended for people traveling to areas known to have yellow fever. It is not recommended for everyone. The vaccine could cause worse problems for infants under 9 months old, adults older than 60 and people with compromised immune systems.

A factor that could limit South Florida's exposure to yellow fever from travelers is the size of the outbreak in Brazil. The number of cases there in recent years has been a few thousand, while Zika infected hundreds of thousands there. That means there's a much smaller pool of people with the potential for bringing the virus to the U.S., said Larry Bush, an affiliate professor of clinical biomedical sciences at Florida Atlantic University.

Dr. Lyle Petersen, the CDC's director of diseases transmitted through insect bites, also said there was low risk of a yellow fever outbreak in Florida.

"We learned with Zika, thousands of people came to the United States with Zika virus which is carried by the same mosquito—the *Aedes aegypti* mosquito—and only saw very limited transmission down in parts of southern Texas and in the Miami area," Petersen said in a March teleconference.

That's still not a guarantee against the disease.

"The fact that the (*Aedes aegypti*) mosquito is widespread in the country, all you need is a person infected with the virus to be the source of the virus," Bush said. "Mosquito control and mosquito bite prevention with repellent is really crucial. We can't overdo it."

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