

## Puerto Rico Braces for Its Own Zika Epidemic

Intensive efforts to stop the virus have begun on the island, where a quarter of the population will get it within a year, the C.D.C. predicts.

By DONALD G. McNEIL Jr. MARCH 19, 2016

SAN JUAN, P.R. — On an inexorable march across the hemisphere, the Zika virus has begun spreading through Puerto Rico, now the United States' front line in a looming epidemic.

The outbreak is expected to be worse here than anywhere else in the country. The island, a warm, wet paradise veined with gritty poverty, is the ideal environment for the mosquitoes carrying the virus. The landscape is littered with abandoned houses and discarded tires that are perfect breeding grounds for the insects. Some homes and schools lack window screens and air-conditioning, exposing residents to almost constant bites.

The [economy is in shambles](#), and thousands of civic workers needed to fight mosquitoes have been laid off. The chemical most often used against the adult pests no longer works, and the one needed to control their larvae has been pulled from the market by regulators.

A quarter of the island's 3.5 million people will probably get the Zika virus within a year, according to the [Centers for Disease Control and Prevention](#), and eventually 80 percent or more may be infected.

"I'm very concerned," Dr. Thomas R. Frieden, the C.D.C. director, said in an interview after a recent three-day visit to Puerto Rico. "There could be thousands of infections of pregnant women this year."

The epidemic is unfolding in one of the country's most popular vacation destinations, where planes and cruise ships disembark thousands of tourists daily. Anyone could carry the virus back home, seeding a mosquito-borne outbreak or transmitting it sexually.

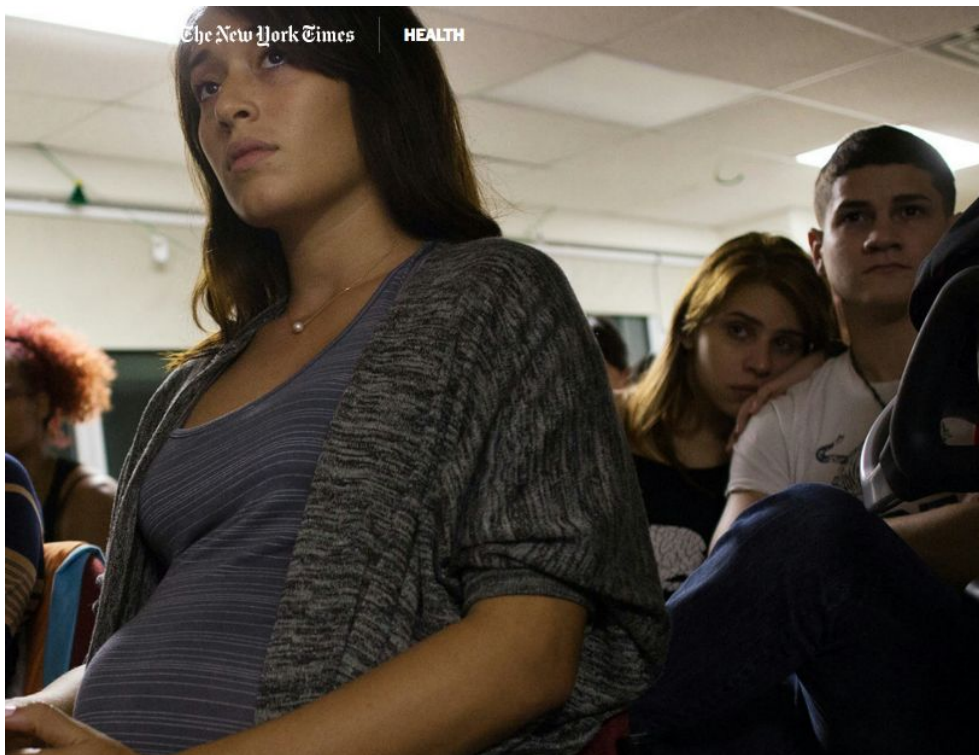
Trucks are rumbling through communities, shrouding them in [insecticide](#). Schools are being outfitted with screens to protect children, and hundreds of thousands of old tires have been retrieved and disposed of. Officials have warned scores of island towns that they must clean up the detritus in which standing water collects, incubating new mosquitoes. And the C.D.C. is preparing to spend tens of millions of dollars to blunt the spread of the virus.

Still, officials are not optimistic that they will succeed.

"I'm not going to oversell this," said Dr. Johnny Rullán, a former Puerto Rico secretary of health who has come out of retirement to advise the governor. "It's not a perfect world. We'll do as much as we can."

In desperation, officials are focusing much of their effort on protecting one group in particular, pregnant women, instead of trying to shield the entire population.

"Zika has shaken us to our core," said Dr. Brenda Rivera, chief of the [Puerto Rico Health Department](#)'s response.



Anxious women come to a class to learn about their risk of infection of the Zika virus

### A ‘Mystery Disease’ Arrives

The epidemic arrived earlier than predicted. The territory’s first Zika case was confirmed in December, and the governor declared a health emergency on Feb. 5.

Even though there are just 249 confirmed cases — 24 of them in pregnant women — doctors assume many more are going unreported.

In the next six months, the environment will get hotter, wetter and bugger, and the number of infections will rise.

At the moment, the island is where northeast Brazil was in late 2014, when cases of a “mystery disease” with a rash, low [fever](#) and [red eyes](#) began appearing. By spring 2015, cases of Zika infection began overwhelming hospital emergency rooms.

A temporary paralysis, called [Guillain-Barré syndrome](#), struck a few patients soon afterward. Babies with misshapen heads and brain damage — a defect called [microcephaly](#) — did not appear [until that August](#).

In Puerto Rico, there has thus far been only one case of Guillain-Barré paralysis linked to Zika infection. If [microcephaly](#) appears here, it will probably not be until fall, Dr. Rullán said.

In some respects, Puerto Rico is lucky. Virtually every doctor and nurse here has been alerted and knows what to look for.

The C.D.C. has a permanent lab on the island, and is importing staff and equipment to do 100,000 blood tests a year, five times as many as it can do now. The agency has committed \$25 million to the fight and has asked Congress for \$225 million more as part of [President Obama’s \\$1.8 billion Zika package](#), now [stalled in Congress](#).

The island’s emergency response and health care systems are flawed but well organized. Teams usually on call for hurricanes are now being trained to visit homes, empty standing water and spray for mosquitoes.

Perhaps most important, the government operates dozens of mother-and-child nutrition clinics, which are used by more than 90 percent of pregnant women here. Clinic staff members are calling pregnant clients, inviting them to attend 20-minute lectures about the Zika virus. About 5,000 women have already attended.

“Ladies, this year’s fragrance is [DEET](#),” said Ismarie Morales, the head nutritionist at the [Women, Infants, and Children clinic](#) in Carolina, a suburb of San Juan, as she held up a green can of repellent at a recent class.

“We all should smell like this.”

Her seven listeners reacted with varying degrees of concern. Everywhere on the island there are women so tired of scary messages about mosquitoes, and so used to being bitten, that some do not take the warnings seriously.

Monica Rivera, 30, who is in her third trimester of [pregnancy](#), said she used citronella candles at home to ward off mosquitoes. She arrived wearing a small pink top and shorts.

“I know I should cover up more,” she said, “but it’s hot.”

Family and friends were pitching in to protect her, she said. Her father had cleared her rain gutters, and a neighbor who owned a “flea machine” had fumigated her house for free.

Ashley Vega, 21, who is 10 weeks pregnant, said she was scared. She wore an ankle-length dress and repellent on her sandal-shod feet.

“I take baths in the stuff,” she joked. “I put it on in the morning and in the afternoon, and again when I sleep. And my mother is crazy with the bug spray.”

Outside class, Ms. Morales, the teacher, who wore a striped minidress, was asked if she was wearing repellent to set an example.

“Oh, not today,” she said. “It smells. I usually wear pants.”

Each attendee was supposed to get a kit containing insect repellent, a mosquito net and, because new research shows the virus may be spread by sexual contact, [condoms](#). But Ms. Morales said she had received only 30 kits.

“They ran out the first day,” she said.

## **Junkyards and Old Tires**

To stanch the spread of the virus, officials must stop [Aedes aegypti](#), the yellow-fever mosquito. Yet the island failed to control two previous mosquito-borne epidemics.

“There’s a fair amount of pessimism about this among the people who tried to fight [dengue](#) and [chikungunya](#),” Dr. Frieden said. “Really intense efforts to control mosquitoes have made very little impact.”

The mosquito can reproduce in as little as a bottle cap’s worth of water, “and you just can’t remove all the standing water in Puerto Rico,” Dr. Frieden said.

The governor’s office recently announced detailed plans to attack mosquito hot spots: cemeteries, abandoned houses, auto junkyards, unsealed septic tanks and piles of old tires.

Each of the island’s 78 municipalities has until April 1 “to clean up their acts,” Dr. Rullán said.



A technician testing blood samples for the Zika virus at a Centers for Disease Control in San Juan

As of Friday, 900,000 of an estimated one million discarded tires had been picked up and moved to depots far from residential areas.

Much of the work was done by convicted drug abusers living in a network of halfway houses who can earn early release through public service, Dr. Rullán said.

Many of the island's hundreds of schools have no screens or air-conditioning. Since high school girls account for about 20 percent of all pregnancies here, officials plan to screen the windows to keep out mosquitoes.

That alone is a big job. "That means measuring each window," Dr. Rullán said. "And what are you going to do about doors if you have 50 kids running in and out?"

As a first step, the public school dress code has been changed so girls can wear pants, and teachers are supposed to give mosquito repellent to all girls.

In the island's 109 cemeteries and its many auto junkyards and public dumps, mosquito-control teams have begun spraying [pesticides](#) that kill the insect's larvae. But the work is never-ending because rain washes the pesticides away.

Moreover, the island is dotted with hundreds of abandoned homes with water-collecting bird baths and pools. Puerto Rico has 500,000 septic tanks, each of which can produce up to 1,500 mosquitoes a day if left unsealed.

Teams cannot enter an abandoned property or screen a septic tank when the owner is absent, "so we're asking for a new law letting us enter," Dr. Rullán said.

<http://www.nytimes.com/2016/03/20/health/zika-virus-puerto-rico.html? r=0>