A virus with links to birth defects sends fear through the Americas

By Bryan Walsh and Alexandra Sifferlin

Isabel and Moises Albuquerque with their son at a rehab center in Recife that helps children with microcephaly

Zika’s Toll

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Recife, Brazil

PHOTOGRAPH BY SEBASTIAN LISTE FOR TIME
Dr. Vanessa Van Der Linden didn’t think much of it when, last August, she saw a newborn baby boy with a birth defect called microcephaly. The abnormally small head and stunted brain development seen in microcephaly is often disabling and sometimes life-threatening. But it is fortunately rare—Van Der Linden, a neurologist at Rato de Lucena hospital in the northeastern Brazilian city of Recife, estimates she had seen it in about one infant per month, on average, prior to that August.

Yet that boy’s microcephaly was particularly serious, and when brain scans on the infant ruled out genetic or common infectious causes, like rubella, Van Der Linden’s suspicions began to rise. As the months wore on, she saw more and more cases, including three one day in a single hospital shift. “It’s not normal,” she says now. “Sometimes we go four months and don’t see a baby with microcephaly. It was very strange.”

Van Der Linden wasn’t the only doctor in Recife noticing something was odd. Her mother Ana, a neurologist who works at a different hospital, called her daughter to tell her that she had seen seven babies with microcephaly in a single day. And there was something else. Most of the mothers reported that they’d come down with a strange rash early in their pregnancy. It was nothing serious, nothing they would have thought to tell their doctor about had they not been desperate to figure out what had happened to their babies. But to Van Der Linden, who wondered if a new infectious agent might have been causing the microcephaly, it was a clue. Since then, over 4,000 cases have been reported in Brazil.

Dengue and chikungunya—two mosquito-borne diseases that Van Der Linden had considered—cause symptoms much more severe than what the mothers had reported. But there was another mosquito-borne disease, one that was new to Brazil but had hardly registered with doctors, in part because its symptoms rarely added up to more than a rash. It was called Zika.

On Feb. 1, the World Health Organization (WHO) declared the cluster of birth defects linked to Zika a public-health emergency of international concern. In just a matter of days, the fourth time the global health body had made such a declaration—the first since Ebola in 2014 and the first for a non-deadly disease. But by that time the fear and Zika itself—was already spreading. Since the country’s first reported case in May 2015, an estimated 1.5 million Brazilians have caught Zika, which is chiefly spread by the bite of the tenacious Aedes aegypti mosquito—active throughout much of the western hemisphere—while the number of microcephaly cases in 2015 increased 20-fold.

The virus has since spread to all countries and territories in Latin America, according to WHO, and there have been more than 30 scattered cases so far in the U.S.—though no evidence yet of sustained transmission within the country. Though the link between Zika infection and microcephaly has yet to be conclusively proved, and though it appears that not every pregnant woman who contracts Zika gives birth to a baby with microcephaly, the Centers for Disease Control and Prevention (CDC) has already warned pregnant women to postpone traveling to countries with ongoing Zika transmission—which is virtually everywhere south of the U.S.

Some of those affected countries have gone even further. Hard-hit El Salvador, with more than 3,000 suspected cases of Zika in 2016, has recommended that women put off getting pregnant for two years. This is not the first time scientists have witnessed the connection between the birth defect and Zika; they saw it, in retrospect, in French Polynesia, where there was a small number of cases in 2013. But it’s the first time it’s been seen in such large numbers.

“The evidence is growing, and it’s getting strong,” said Dr. Margaret Chan, director-general of WHO, at a press conference on Feb. 1. “So I accepted, even on microcephaly alone, that it is sufficient to call an emergency. We need a coordinated international response.”

That’s when the machinery of the international health system—which proved clumsy during the first months of 2014’s Ebola outbreak in West Africa, an outbreak that ultimately killed more than 11,000 people—began to move into place. The stakes are high. There’s no vaccine for Zika, nor even a widely available diagnostic test. Zika, which was discovered in forest of the same name in Uganda in 1947, was never considered much of a threat. No...
of insecticide into any sitting water so important. If Brazil—and the rest of Latin America, and even the U.S.—is going to win the battle against mosquito-borne viruses, it needs to beat the bug. “This kind of mosquito is a survivor,” says Jailson Correia, health secretary of Recife, who estimates that at one point, nearly 5% of houses in the city tested positive for mosquito larvae. “They have adapted to the urban environment.”

In fact, A. aegypti mosquitoes have adapted to live almost anywhere that’s warm and wet and close to people. From the point of view of a mosquito, these conditions are perfect: human dwellings, especially in urban areas, provide plenty of standing water in which they can lay eggs, while humans themselves provide the nourishment. So it shouldn’t be surprising that the viruses carried by those insects—which exchange fluids with humans every time they bite—came to adapt themselves to human beings as well.

The result is a health catastrophe that long predates Zika. Mosquito-borne diseases like malaria, dengue and yellow fever kill over half a million people a year worldwide. In 2014, Bill Gates, whose foundation has spent billions fighting mosquito-borne diseases, dubbed the insect “the deadliest animal in the world.”

In recent years, aided by climate change, urbanization and the growth of international travel, mosquito-borne diseases have made repeated incursions into new areas. This includes the Dengue virus, yellow fever, West Nile virus—diseases historically confined to tropical Asia or Africa or, in some cases, even the western hemisphere, where they’ve been defeating control efforts, especially in crowded, poor and hot cities like Recife.

Dengue in particular has been on the rise—WHO estimated that dengue infected people globally 30 times more frequently in 2015 than it did in the 1960s. Even before Zika, Recife was experiencing a massive dengue outbreak, with an 800% increase in cases in 2014 compared with 2013. Symptoms include fever, rashes and muscle pain so intense that the virus is also known as “breakbone fever”—which is why, unlike with Zika, you’re not likely to forget you contracted it.

Still, it took researchers a while to suspect that some of the illnesses that were chalked up to dengue last year may have been Zika, spreading under the radar. It would have been easy to miss. It’s not clear exactly when Zika was introduced to Brazil, or even to how many people it was brought by infected travelers from Africa or Oceania—two regions where Zika was endemic—visiting for the 2014 World Cup. Although Recife’s health director Correia estimates that 50,000 to 100,000 people in the city may have been exposed to Zika—out of a population of 1.5 million—most would never have shown symptoms. And confirming Zika infections is difficult. “We can only show that infection is present in the person when infection is ongoing, five or seven days after symptoms appear,” says Dr. Lavinia Schuler-Faccini, president of the Brazilian Society of Medical Genetics. That’s left the infants born with microcephaly to function as accidental send-up texts for the questions that have women—especially in Recife—so frightened from one end of the Americas to the other. But that anxiety won’t dispel the uneasiness that women—it is difficult to watch.” That uncertainty is shared by troubled scientists, who have seen strong epidemiological evidence but not yet proof that Zika in an expectant mother can cause microcephaly in an infant. Ideally, doctors would be able to test mothers of infants with microcephaly to see whether they had antibodies to Zika, which would indicate past infection—but such a test for mothers doesn’t exist yet, and the test for currently infected people is slow. So instead, researchers are trying to infer whether the mothers contracted Zika while pregnant by gauging their medical history, looking for symptoms from the past that might be Zika-like. “As far as we can tell right now, there is an association between them, but we can’t prove it,” says Dr. Mauricio Lacerda, a dengue researcher based in the Brazilian city of São José do Rio Preto.

Brazilian scientists like Nogueira, aided by researchers at the CDC, are conducting studies to answer some of those questions.

FOR THE MOTHERS of infants with microcephaly, what has happened to their children is less important than what will happen to them next. Gabriela Alves de Azevedo, who is 40 years old, had what she remembered as a “perfect” pregnancy before she gave birth to Anna Sophia three months ago, but the baby girl’s head was abnormally small. She was confirmed with microcephaly; instead of coming home, she remained at the hospital for 26 days.

Even now, doctors can’t say whether Anna Sophia will be able to walk or talk, or even how long she will live. “You have a severe destruction of the central nervous system,” says Dr. Pedro F.C. Vasconcelos, a Brazilian researcher working on a Zika vaccine. “These kids will need support for the rest of their lives.”

With the number of people expected to contract Zika in the Americas this year projected at up to 4 million, even the chance that the virus could lead to thousands more cases of microcephaly is enough to raise alarm. “If indeed the scientific linkage between Zika and microcephaly is established, can you imagine if we do not do all this work now and wait until the scientific evidence comes out?” WHO’s Chan said. “Then people will say, ‘Why didn’t you take action?’”

WHO came under some criticism for not being more prepared, and they still aren’t, but they are trying to prepare for the next blow, which will be the diagnostic tests and a vaccine. But stopping Zika will fall to the affected countries themselves—and that’s a problem. Brazil, the biggest economy in Latin America, is suffering through a major recession and political turmoil while simultaneously preparing to host the Olympics in Rio de Janeiro this summer. The government has said Zika will pose no risk to Olympic visitors unless they’re pregnant and has noted the Games will take place during Brazil’s cooler winter season. But athletes are still expressing concern, while some airlines are already offering refunds to travelers canceling trips to Zika-affected regions. “Now we have an extra burden on that,” says Schuler-Faccini.

The U.S., fortunately, should be mostly shielded from the direct spread of Zika for now. The range of the A. aegypti mosquito tends to be limited to the hottest and most humid parts of the South, and the ubiquity of air-conditioning keeps them separate from humans. But infectious diseases don’t respect national borders, and Zika is already establishing itself in Latin America. There’s no more hospitable habitat for an A. aegypti than a hot and poor city, and Latin America—the most urbanized region on the planet, where 80% of the population lives in cities—will be the first one to feel the brunt of full of them. The Brazilian state of Pernambuco, which includes Recife, is one of the poorest in the country, with 650,000 households living on less than the minimum wage of $220 a month. The rapid spread of dengue there has been a worry for many years for how the disease will behave in Latin America—most of all, our unspoken fears for our children.

In the meantime, scientists will work on a vaccine—but that will likely take years—and try to find conclusive answers to the questions that have women frightened from one end of the Americas to the other. But that anxiety won’t dispel the uneasiness that women—it is difficult to watch.” That uncertainty is shared by troubled scientists, who have seen strong epidemiological evidence but not yet proof that Zika in an expectant mother can cause microcephaly in an infant. Ideally, doctors would be able to test mothers of infants with microcephaly to see whether they had antibodies to Zika, which would indicate past infection—but such a test for mothers doesn’t exist yet, and the test for currently infected people is slow. So instead, researchers are trying to infer whether the mothers contracted Zika while pregnant by gauging their medical history, looking for symptoms from the past that might be Zika-like. “As far as we can tell right now, there is an association between them, but we can’t prove it,” says Dr. Mauricio Lacerda, a dengue researcher based in the Brazilian city of São José do Rio Preto.

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