

# The New York Times

© 2013 The New York Times

WEDNESDAY, FEBRUARY 20, 2013

## Fast New Test Holds Promise To Halt Leprosy

By DONALD G. McNEIL Jr.

A simple, fast and inexpensive new test for leprosy offers hope that, even in the poorest countries, victims can be found and cured before they become permanently disabled or disfigured like the shunned lepers of yore.

American researchers developed the test, and Brazil's drug-regulatory agency registered it last month. A Brazilian diagnostics company, OrangeLife, will manufacture it on the understanding that the price will be \$1 or less.

"This will bring leprosy management out of the Dark Ages," said Dr. William Levis, who has treated leprosy patients at a Bellevue Hospital outpatient clinic for 30 years.

Many consider leprosy, formally called Hansen's disease, a relic of the past, but annually about 250,000 people worldwide get it; Brazil is among the hardest-hit countries, as are India, the Philippines, Indonesia and the Democratic Republic of Congo. The United States has 150 to 250 new diagnoses each year, mostly in immigrants. Leprosy is curable, so better detection may mean that someday it could join the short list of ailments, like polio and Guinea worm disease, on the brink of eradication, experts say.

The new test gives results in

*Continued on Page A3*

## Fast New Test's Promise: Nipping Leprosy in the Bud

From Page A1

under 10 minutes and is far simpler than the current diagnostic method of cutting open nodules, often in the earlobe, and looking for the bacteria under a microscope.

"It works like a pregnancy test and requires just one drop of blood," said Malcolm S. Duthie, who led the test's development at the Infectious Disease Research Institute in Seattle. "I can teach anyone to use it."

Even more important, he said, it is expected to detect infections as much as a year before symptoms appear. And the earlier treatment begins, the better the outcome. Leprosy is caused by a bacterium, *Mycobacterium leprae*, related to the one that causes tuberculosis, but reproducing so slowly that symptoms often take seven years to appear.

"We're definitely excited about this," said Bill Simmons, president of the American Leprosy Missions, a Christian medical aid group that has been fighting the disease since 1906.

Dr. Levis said that if the test eventually became available in this country he would use it to test the families of his Bellevue patients.

*M. leprae* is transmitted only after prolonged, close contact. The bacteria spread under the skin in the coolest parts of the body: the hands, feet, cheeks and earlobes.

The first visible signs are usu-

ally numb, off-color patches of skin, which are often misdiagnosed as fungus, psoriasis or lupus.

The victim may get repeated cooking burns or cuts. Feet develop sores from something as simple as a stone they cannot feel in a shoe.

"Finally, when it gets bad enough," Mr. Simmons said, "they go to a big city. And that's where they get the bad news: 'Yes, you have leprosy — and we wish you'd come here six months ago.'"

After about six months, the nerve damage is permanent. So even if a patient is cured — and a cure normally requires taking three kinds of antibiotics for six to 12 months — there is still a life-long risk of developing ulcers that can become infected. The standard antibiotics are provided free through the World Health Organization.

The disease has historically been hard to diagnose, despite the popular, but inaccurate, image of fingers and toes dropping off victims. As the bacteria kill nerves, muscles atrophy and those digits curl into claws. After disuse and repeated injuries, the body reacts protectively by absorbing the bone calcium in the bones, shrinking the digits.

For centuries, some observant doctors have noticed early signs: the numb skin patches, missing eyebrows, drooping earlobes, bulging neck nerves, the flat "lion face" caused by nasal cartilage dissolving.

Since nothing could be done for them before the age of antibiotics, victims lost the use of their hands and had to beg. Some also went blind as the blinking muscles degenerated and their eyes dried out. In the Middle Ages, some towns banned lepers, while others required them to ring bells to warn of their approach. Religious charities created "leper colonies."

And they still exist, even in the United States. A few elderly residents have chosen to stay on in

### *A long-feared ailment is now easy to cure, but not to diagnose.*

Carville, La., and Kalaupapa, Hawaii, despite having been cured. Several thousand live at one in northeast Brazil, said John S. Spencer PhD, a leprosy researcher at Colorado State University who has worked there. "People say things like 'People outside won't understand what's wrong with my face,'" he said.

Nowadays, he said, most patients are cured before their faces are severely disfigured. Still, he said, he had read a survey in which health experts asked Brazilians whether they would rather have the human immunodeficiency virus or leprosy. Most chose H.I.V. — even though lep-

rosy does not kill, can be cured, and does not make a victim risky to have sex with. "The stigma is that strong," he said.

A new test was crucial because trained microscope diagnosticians are rare in the rural areas where the disease persists. It is simple: one drop of blood goes into a well on a plastic test strip followed by three drops of solution.

It took a long time to develop, Dr. Spencer said, because researchers needed a steady supply of the bacterium, and no way to grow it in a laboratory has ever been found.

It grows vigorously in one animal: the armadillo, a fact discovered only in the 1970s at a federal laboratory in Baton Rouge, La. But armadillos come with their own complications. After a year of harboring the slow-growing bacteria, they must be killed for their livers and spleens — and armadillos do not breed in captivity.

"Luckyly," Dr. Duthie said, in Louisiana and Texas, "they're everywhere, and they're easy to catch."

However, armadillo hunting is not risk-free. Some Southerners hunt them for food and their armored skins, and some wild armadillos harbor strains of leprosy bacteria. Two years ago, federal researchers estimated that about a third of the human cases discovered in the United States each year are caught from armadillos — which have the honor of being one of the state mammals of Texas.