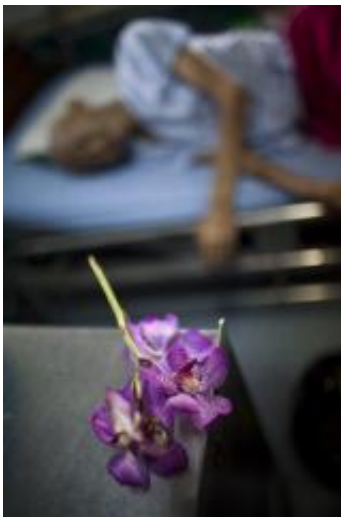


First case of highly drug-resistant TB found in US

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This Oct. 5, 2009 photo shows an unidentified tuberculosis and HIV patient on his bed at Wat Prabat Nampu in Lopburi, Thailand. Simple TB is simple to treat, a \$10 course of medication, but the pills must be taken in specific combinations for six months to completely wipe out the bacteria. If treatment is stopped short, the TB learns to fight back against the drugs, mutating into a tougher strain for which few, if any, medications exist. It can cost \$100,000 a year or more to cure drug-resistant TB, which is described as multi-drug-resistant (MDR), extremely drug-resistant (XDR) and completely drug-resistant (CDR). (AP Photo/David Longstreath)

(AP) -- It started with a cough, an autumn hack that refused to go away.

Then came the fevers. They bathed and chilled the skinny frame of Oswaldo Juarez, a 19-year-old Peruvian visiting to study English. His lungs clattered, his chest tightened and he ached with every gasp. During a wheezing fit at 4 a.m., Juarez felt a warm knot rise from his throat. He ran to the bathroom sink and spewed a mouthful of blood.

I'm dying, he told himself, "because when you cough blood, it's something really bad."

It was really bad, and not just for him.

Doctors say Juarez's incessant hack was a sign of what they have both dreaded and expected for years - this country's first case of a contagious, aggressive, especially drug-resistant form of [tuberculosis](#). The Associated Press learned of his case, which until now has not been made public, as part of a six-month look at the soaring global challenge of drug resistance.

Juarez's strain - so-called extremely drug-resistant (XXDR) TB - has never before been seen in the U.S., according to Dr. David Ashkin, one of the nation's leading experts on tuberculosis. XXDR tuberculosis is so rare that only a handful of other people in the world are thought to have had it.

"He is really the future," Ashkin said. "This is the new class that people are not really talking too much about. These are the ones we really fear because I'm not sure how we treat them."

Forty years ago, the world thought it had conquered TB and any number of other diseases through the new wonder drugs: Antibiotics. U.S. Surgeon General William H. Stewart announced it was "time to close the book on infectious diseases and declare the war against pestilence won."

Today, all the leading killer [infectious diseases](#) on the planet - TB, malaria and HIV among them - are mutating at an alarming rate, hitchhiking their way in and out of countries. The reason: Overuse and misuse of the very drugs that were supposed to save us.

Just as the drugs were a manmade solution to dangerous illness, the problem with them is also manmade. It is fueled worldwide by everything from counterfeit drugmakers to the unintended consequences of giving drugs to the poor without properly monitoring their treatment. Here's what the AP found:

- In Cambodia, scientists have confirmed the emergence of a new drug-resistant form of malaria, threatening the only treatment left to fight a disease that already kills 1 million people a year.
- In Africa, new and harder to treat strains of HIV are being detected in about 5 percent of new patients. HIV drug resistance rates have shot up to as high as 30 percent worldwide.
- In the U.S., drug-resistant infections killed more than 65,000 people last year - more than prostate and breast cancer combined. More than 19,000 people died from a staph infection alone that has been eliminated in Norway, where antibiotics are stringently limited.

"Drug resistance is starting to be a very big problem. In the past, people stopped worrying about TB and it came roaring back. We need to make sure that doesn't happen again," said Dr. Thomas Frieden, director of the U.S. Centers for Disease Control and Prevention, who was himself infected with tuberculosis while caring for drug-resistant patients at a New York clinic in the early '90s. "We are all connected by the air we breathe, and that is why this must be everyone's problem."

This April, the World Health Organization sounded alarms by holding its

first drug-resistant TB conference in Beijing. The message was clear - the disease has already spread to all continents and is increasing rapidly. Even worse, WHO estimates only 1 percent of resistant patients received appropriate treatment last year.

"We have seen a huge upburst in resistance," said CDC epidemiologist Dr. Laurie Hicks.

Juarez' strain of TB puzzled doctors. He had never had TB before. Where did he pick it up? Had he passed it on? And could they stop it before it killed him?

At first, mainstream doctors tried to treat him. But the disease had already gnawed a golf-ball-sized hole into his right lung.

TB germs can float in the air for hours, especially in tight places with little sunlight or fresh air. So every time Juarez coughed, sneezed, laughed or talked, he could spread the deadly germs to others.

"You feel like you're killing somebody, like you could kill a lot of people. That was the worst part," he said.

Tuberculosis is the top single infectious killer of adults worldwide, and it lies dormant in one in three people, according to WHO. Of those, 10 percent will develop active TB, and about 2 million people a year will die from it.

Simple TB is simple to treat - as cheap as a \$10 course of medication for six to nine months. But if treatment is stopped short, the bacteria fight back and mutate into a tougher strain. It can cost \$100,000 a year or more to cure drug-resistant TB, which is described as multi-drug-

resistant (MDR), extensively drug-resistant (XDR) and XXDR.

There are now about 500,000 cases of MDR tuberculosis a year worldwide. XDR tuberculosis killed 52 of the first 53 people diagnosed with it in South Africa three years ago.

Drug-resistant TB is a "time bomb," said Dr. Masae Kawamura, who heads the Francis J. Curry National Tuberculosis Center in San Francisco, "a manmade problem that is costly, deadly, debilitating, and the biggest threat to our current TB control strategies."

Juarez underwent three months of futile treatment in a Fort Lauderdale hospital. Then in December 2007 he was sent to A.G. Holley State Hospital, a 60-year-old massive building of brown concrete surrounded by a chain-link fence, just south of West Palm Beach.

"They told me my treatment was going to be two years, and I have only one chance at life," Juarez said. "They told me if I went to Peru, I'm probably going to live one month and then I'm going to die."

Holley is the nation's last-standing TB sanitarium, a quarantine hospital that is now managing new and virulent forms of the disease.

Tuberculosis has been detected in the spine of a 4,400-year-old Egyptian mummy. In the 1600s, it was known as the great white plague because it turned patients pale. In later centuries, as it ate through bodies, they called it "consumption." By 1850, an estimated 25 percent of Europeans and Americans were dying of tuberculosis, often in isolated sanatoriums like Holley where they were sent for rest and nutrition.

Then in 1944 a critically ill TB patient was given a new miracle antibiotic and immediately recovered. New drugs quickly followed. They worked so well that by the 1970s in the U.S., it was assumed the

disease was a problem of the past.

Once public health officials decided TB was gone, the disease was increasingly missed or misdiagnosed. And without public funding, it made a comeback among the poor. Then immigration and travel flourished, breaking down invisible walls that had contained TB.

[Drug resistance](#) emerged worldwide. Doctors treated TB with the wrong drug combinations. Clinics ran out of drug stocks. And patients cut their treatment short when they felt better, or even shared pills with other family members.

There are two ways to get drug resistant TB. Most cases develop from taking medication inappropriately. But it can also be transmitted like simple TB, a [cough](#) or a sneeze.

In the 1980s, HIV and AIDS brought an even bigger resurgence of TB cases. TB remains the biggest killer of HIV patients today.

For decades, drug makers failed to develop new medicines for TB because the profits weren't there. With the emergence of resistant TB, several private drug companies have started developing new treatments, but getting an entire regimen on the market could take 24 years. In the meantime, WHO estimates each victim will infect an average of 10 to 15 others annually before they die.

A.G. Holley was back in business.

Holley's corridors are long and dark, with fluorescent tubes throwing harsh white light on drab walls. One room is filled with hulking machines once used to collapse lungs, sometimes by inserting ping pong

balls. Antique cabinets hold metal tools for spreading and removing ribs - all from a time when TB was rampant and the hospital's 500 beds were filled.

Only 50 beds are funded today, but those are mostly full. More than half the patients are court-ordered into treatment after refusing to take their meds on the outside.

Juarez came voluntarily. In the beginning, he was isolated and forced to wear a mask when he left his room. He could touch his Peruvian family only in pictures taped to the wall. He missed his dad, his siblings, his dog, his parrot, and especially his mother.

"I was very depressed," he said. "I had all this stuff in my mind."

He spent countless hours alone inside the sterile corner room reserved for patients on extended stays - dubbed "the penthouse" because it is bigger and lined by a wall of windows.

His moods ran hot and cold. He punched holes in the walls out of frustration, played loud reggaeton music with a thumping beat and got into fights with other patients. He covered his door's small window with a drawing of an evil clown to keep nurses from peering inside. He made friends with new patients, but was forced to stay long after many of them came, got cured, and left.

Early on, Juarez's treatment was similar to chemotherapy. Drugs were pumped into his bloodstream intravenously three times a day, and he choked down another 30 pills, including some that turned his skin a dark shade of brown. He swallowed them with spoonfuls of applesauce, yogurt, sherbet and chocolate pudding, but once they hit his stomach, waves of nausea sometimes sent him heaving. He would then have to force them all down again.

"When he first came in we really had to throw everything and the kitchen sink at him," said Ashkin, the hospital's medical director, who experimented on Juarez with high doses of drugs, some not typically used for TB. "It was definitely cutting edge and definitely somewhat risky because it's not like I can go to the textbooks or ... journal articles to find out how to do this."

After 17 years of handling complex cases - including TB in the brain and spine - Ashkin had never seen a case so resistant. He believed he would have to remove part of Juarez's lung.

Ashkin dialed Peru to talk to the young man's father.

It's a rare disease, said Ashkin, hard to define. Your son is one of two people in the world known to have had this strain, he said.

"What happened to the other person?" his father asked.

"He died."

Juarez's adventure in the U.S. had turned into a medical nightmare.

About 60 million people visit the U.S. every year, and most are not screened for TB before arrival. Only refugees and those coming as immigrants are checked. The top category of multidrug-resistant patients in the U.S. - 82 percent of the cases identified in 2007 - was foreign-born patients, according to the CDC.

The results are startling among those tested, said Dr. Angel Contreras, who screens Dominicans seeking to enter the U.S. on immigrant visas. The high rate of MDR-TB in the Dominican Republic coupled with high

HIV rates in neighboring Haiti are a health crisis in the making, he said.

"They're perfect ingredients for a disaster," he said.

Juarez's homeland, Peru, is also a hotspot for multidrug-resistant TB. DNA fingerprinting linked his disease to similar strains found there and in China, but none with the same level of resistance.

"So the question is: Is this a strain that's evolving? That's mutating? That's becoming more and more resistant?" asked Ashkin. "I think the answer is yes."

Doctors grappling with these new strains inadvertently give the wrong medicines, and so the TB mutates to become more aggressive and resistant.

Poor countries also do not have the resources to determine whether a patient's TB is drug-resistant. That requires sputum culturing and drug-susceptibility testing - timely, expensive processes that must be performed in capable labs. WHO is working to make these methods more available in high-risk countries as well as negotiating cheaper prices for second-line drugs.

"There's a lot of MDR and XDR-TB that hasn't been diagnosed in places like South Africa and Peru, Russia, Estonia, Latvia," said Dr. Megan Murray, a tuberculosis expert at Harvard. "We think it's a big public health threat."

Experts argue if wealthy countries do not help the worst-hit places develop comprehensive TB programs, it puts everyone at risk.

"You're really looking at a global issue," said Dr. Lee Reichman, a TB expert at the New Jersey Medical School Global Tuberculosis Institute.

"It's not a foreign problem, you can't keep these TB patients out. It's time people realize that."

Juarez spent a year and a half living alone in a room plastered with bikini-clad blondes, baseball caps and a poster of Mt. Everest for inspiration. There were days when he simply shut down and refused his meds until his family convinced him to keep fighting.

"I was thinking that maybe if I need to die, then that's what I need to do," he said, perched on his bed in baggy jeans. "I felt like: 'I'm never going to get better. I'm never going to get out of here.'"

When put side by side, his CAT scans from before and after treatment are hard to believe. The dark hole is gone, and only a small white scar tattoos his [lung](#).

"They told me the TB is gone, but I know that TB, it doesn't have a cure. It only has a treatment like HIV," he said, his English now fluent and his body weight up 32 pounds from when he first arrived. "The TB can come back. I saw people who came back to the hospital twice and some of them died. So, it's very scary."

His treatment cost Florida taxpayers an estimated \$500,000, a price tag medical director Ashkin says seems like an astronomical amount to spend on someone who's not an American citizen. But he questions how the world can afford not to treat Juarez and others sick with similar lethal strains.

"This is an airborne spread disease ... so when we treat that individual, we're actually treating and protecting all of us," he said. "This is true homeland security."

In July, at age 21 - 19 months after checking in - Juarez swallowed his last pills, packed a few small suitcases and wheeled them down the hospital's long corridor.

The last time doctors saw him, he was walking out of the sanitarium into south Florida's soupy heat.

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