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Valley fever: An incurable illness in the dust

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BBC News, Avenal, California

Cases of an incurable illness called valley fever are multiplying at a mystifying rate in the American south-west. Six states are affected, and Mexico too, but few places have been hit as hard as one remote city.

Even in sweltering heat, the wind brings no respite to Avenal.

The gusts are warm, like a hairdryer, and they carry an invisible threat that has claimed and disrupted many lives.

The tiny city of 14,000 people, nestling in a dip in the floor of the San Joaquin Valley, California, is what experts refer to as a "hot zone" for coccidioidomycosis - an illness caused by the inhalation of tiny fungal spores that usually reside in the soil.

Described by the Centers for Disease Control as a silent epidemic, 22,401 new infections were recorded across the US in 2011, mostly in the south-west, up tenfold from 1998.

Although two-thirds of those infected suffer no symptoms, and the illness is not contagious, about 160 people die each year when the fungus spreads beyond the lungs to the brain.

Avenal is at the centre of the epidemic. While millions flock to the famous Californian beaches a couple of hours to the west and to Yosemite National Park to the east, they rarely linger in the San Joaquin Valley, the state's agricultural heartland. Avenal has the air of a forgotten place.

The landscape looks parched and a perpetual haze hangs on the horizon, obscuring the distant mountain ranges.

Pulling up in sleepy Kings Street, there is little sign of life, just some boys on bikes circling in the street while their friend looks on.



In the Gallery Cafe, staff are making sandwiches for three council workers while opposite them, on the wall, a portrait serves as a reminder of the human cost of this terrible illness.

Maria Eugenia Pena died six years ago, aged 39 and pregnant.

Her son Osvaldo Contreras, who runs the cafe with his brother, says he thinks about her every day and wonders every time he gets a headache whether he will be next.

"On windy days you are more conscious of it," says one of Osvaldo's customers, Enrique Jimenez. "You breathe in through your nose, and try not to breathe in as much dust. I worked in the fields for a long time, my father managed a few crops out here, and we took precautions, wearing bandanas."

This was not enough to protect Jimenez's father, who suffered breathing problems for a year before he was diagnosed with valley fever. Long afterwards, he is still receiving treatment.

You're never rid of it, says Mary Garcia, who works in Subway, a few doors along from the cafe.

"There are times I wake up and I'm in a lot of pain. It's like the worst fever you've ever had from a flu," she adds.

She caught valley fever 10 years ago, and sometimes, when the wind blows, it returns.

If any of her children get it, she says she will move away.

Jim McGee is one of those already making plans to get out. Three of his children are still recovering from valley fever, and his baby grandson Victor is now being tested for it.



"It's definitely one of the most frightening experiences I've ever had in my life," says Marivi McGee, 17, sitting on the couch of the family home with Arianna and Marcos next to her. What began as a pain in the chest spread to her head, causing fainting and dizzy spells.

The fungus had spread to her brain, but fortunately, her body overcame the infection without a prolonged course of treatment. All three McGee children still suffer from tiredness, though. Marcos rates his health as only 70-80%.

After 18 years in Avenal, teaching at the adult education centre, 70-year-old Jim says he is lucky to have escaped the fate that befell his children, but he gets tested every year.

"It's always a source of fear. Is this lot of dust that I'm breathing in going to cause me to come down with valley fever or not? Everyone here lives with that fear," he says.

He blames the high infection rates on a big landfill site "continuously churning up the soil" on the northern edge of the town. The landfill company has refused to comment on whether there might be a link.

Many of the young children in Avenal who become sick end up in the Children's Hospital Central California, about 90 minutes' drive to the north. The hospital had only four valley fever cases in 2001, but 61 in 2012.

"No-one knows why," says Dr James McCarty, medical director of the paediatric infectious diseases division. "It could be the increasing population in the area, the influx of people without immunity or previous exposure. Some say it could be a function of wet winters. And human activity, anything that generates a lot of dust - agriculture and construction."

Most infections never produce symptoms at all and people's bodies take care of it, he says. But a third of those infected get prolonged flu-like symptoms.

"This usually runs its course over a month, but one in 20 develops pneumonia which can be mild to severe. And in about one in 100 cases, the infection spreads outside the lung, most commonly to the bones, the brain or the skin. Then it's potentially fatal or at least life-altering."

Although the number of reported cases is about 20,000 a year nationally, McCarty and other experts believe the real number to be about 150,000, because so many people don't know they have it, and even doctors in endemic areas are not quick to identify it. The doctor himself, like thousands of others, contracted valley fever at some point in his life but doesn't recall when because he didn't become ill.

But Filipinos and African Americans are at a higher risk of severe symptoms, for unknown reasons, as are people with compromised immune systems.

The hospital's latest valley fever patient is Ruby Alejandra, aged three, admitted with breathing problems but now on the mend, according

to her mum Zaida. She is from the city of Delano, but McCarty says the number of admissions from Avenal is staggering.

"Anyone who comes in from Avenal, it's valley fever unless proven otherwise. It's amazing how much there is there. It's a real hot zone, perhaps because of the soil ecology or the landfill site."

It's not easy to treat. Anti-fungal drugs are available for serious cases but some patients don't respond and it can take years to clear up. It also never leaves the body and symptoms can be triggered again. Some patients are on the drugs for life, at a crippling financial cost.

Valley fever is not just confined to the US. Its first known victim was a soldier in Argentina in 1893. The first case in North America was the following year, in San Francisco. It soon became known as the San Joaquin Valley Fever, such was its prevalence there but by the 1940s, its existence in Arizona was well documented.

During World War II, German prisoners held at a camp in Arizona fell ill and Germany reportedly invoked the Geneva Convention to try to get them moved. Members of the US armed forces also fell ill while training, so lawns were planted to reduce dust levels and anyone who wandered into unprotected areas faced court martial.

There was a spike in infections in Ventura County after the 1994 earthquake in Northridge, Los Angeles. And in 2001, 10 Navy Seals were infected during training exercises in Coalinga, California.

Now the spotlight, at least locally, is on another group at risk of infection. There are two prisons close to Avenal, holding more than 8,000 inmates in total.

More than 40 have died in the last seven years, and last month a federal court ordered the removal of 2,600 high-risk, black and Filipino prisoners - who will be replaced by inmates from elsewhere in the state.

The incidence of the disease in Pleasant Valley prison is 1,000 times the state average, and in Avenal prison it's 200 times. Seven infected inmates are taking legal action against California Governor Jerry Brown and the prison service, saying the state did not do enough to protect vulnerable groups.

But the prison service has taken steps, says Dr Janet Mohle-Boetani, deputy medical executive for California's prisons. Since 2007, inmates with compromised immune systems have no longer been placed in either Pleasant Valley or Avenal prison, she says, and both doctors and prisoners have been educated on how to identify symptoms. Some 460 prisoners were in the process of being removed before the court order, she insists.

Not every town in this part of the San Joaquin Valley is blighted by valley fever in the same way as Avenal. In Madera, about 100 miles north, few people interviewed on the street by the BBC had even heard of the illness. Many Californians are unaware of it - San Diego, for example, is on the valley fever map but the CDC says the risk is so low that it doesn't discourage travel there.

The two main endemic areas are the San Joaquin Valley and southern Arizona. The latter accounts for two-thirds of all cases registered in the last 14 years, because the major cities of Phoenix and Tucson fall within the infected zone.

But the most recent data mapping is from the 1950s, so the endemic areas could be changing, says Ben Park of the Centers of Disease Control. Cases were identified this year in eastern parts of Washington state, in the far north-west of the US - an area that had not previously featured on the valley fever map.

It's not just residents who are at risk. British jeweller David Liss contracted valley fever during a month-long business trip to a gem fair in Tucson, Arizona, in 2009. He developed a sore throat which became a chesty cough, shortness of breath and night sweats.

An X-ray showed a lump between his lung and his heart membrane, and two operations followed in which part of his lung was removed along with the fungus, which was the size of a golf ball. It had also started to destroy some of the surrounding tissue.

He told them to test it for valley fever because he had heard about it during his many trips to Arizona over the years.

The result was positive but the only doctor who knew anything about it was based in Manchester so David, aged 67, began heading north from London to see him once a month. He began a course of anti-fungal medication, though stopped after 11 months because he says it was making him feel worse.

He takes vitamin pills in the hope of keeping his immune system in peak condition and he avoids the underground and bus to escape other infections - and because stairs make him out of breath. He gets aches and pains all over his body and is prone to overheating and chronic fatigue.

"I'm a walking radiator, that's what they liken me to. I think a lot of people here or in Europe have it and don't know they do. There should be a big sign at immigration saying if you get home and have flu-like symptoms then go to your doctor and get yourself checked out."

Not enough is being done to warn visitors, says Sharon Filip, who contracted it herself and nearly died, and subsequently set up [a survivors' group](#).

"Farm workers and construction workers need to be concerned but the fact is everyone who breathes can be infected. Everyone can get a lethal infection from a single spore.

"They don't warn people not to travel to these areas. If people knew that inhalation of one spore can cause a lifelong infection, debilitating struggles, people losing their livelihoods and whole lives turned upside down, who would go to these areas?"

But the man who probably knows more about valley fever than anyone else thinks the risks need to be put into perspective.

Professor John Galgiani has studied the illness for 30 years and founded the Valley Fever Center for Excellence at the University of Arizona in Tucson. He estimates there is a 3% chance of infection if you spend a year in a highly endemic area, and only a 1% chance of getting sick.

But people can become infected in the most improbable ways however long the odds, he says. The wife of a scientist in the San Francisco Bay area contracted it after she shook out the jeans he had been wearing on a trip to the San Joaquin Valley.

Dr Galgiani thinks the increase in cases is partly due to better reporting and partly population growth, but says differing weather conditions lead to yearly variations - 2012 is looking like it will have fewer infections than 2011. If dry follows wet, that means a lot of airborne fungal spores.

He doubts that increased construction in the desert plays a part. "It's actually hard to show that human activity has any effect. Many endemic areas are quite sparse and looking at who comes into the clinic, it's not overly represented by construction [workers]."

There's nothing you can do to mitigate risk, he says. Masks, for example, can't prevent a single spore being breathed in, but increased awareness will mean earlier diagnoses and better health outcomes.

The search for a vaccine has been plagued with problems, mainly due to a lack of funds.

One vaccine currently being worked on may not make it to clinical trials, says Garry Cole, professor of biology at the University of Texas, unless volunteers step forward who are prepared to be injected with it. Another has made promising progress, he says, but is not attracting enough investment.

Residents of Bakersfield, California, became so frustrated at the apparent lack of interest from drugs companies that they set up [their own foundation](#) to raise the cash themselves.

But a vaccine won't come soon enough to the people of Avenal, where every flutter of the leaves reminds them of the menace in the air.

And unlike the prison inmates, they don't have the option of an escape route offered by the state.

"If they're moving them," says Osvaldo, "then it makes me think whether I should really be living here."

Videos by Franz Strasser

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