

NEGLECTED TROPICAL DISEASES

Oral Antibiotic Raises Hopes of Eradicating Yaws

“Where the road ends, yaws begins,” experts like to say of the disfiguring disease, which afflicts hundreds of thousands of people in remote corners of the tropics. Now, they hope, yaws could be facing the end of its own road.

At a meeting in the World Health Organization’s (WHO’s) Geneva headquarters last month, researchers reported preliminary results from four pilot projects suggesting that the disease might be vanquished by simply giving all vulnerable populations a single dose of an oral antibiotic, repeated if necessary. The findings give a boost to a plan devised 2 years ago by 17 tropical disease specialists who met in Morges, Switzerland. Their goal: to eradicate yaws by 2020.

The obstacles are daunting, however, not the least of which is sustaining financial and political commitment for a disease that affects relatively few people. Despite many attempts, only one human pathogen has ever been eradicated, smallpox in 1979. The ongoing efforts to vanquish polio and guinea worm are both far over budget and years past deadline. And yaws eradication was tried, and failed, before.

Still, with a new tool in hand, would-be eradicationists are upbeat. “For sure, yaws is not in the same epidemiological ballpark as killer diseases like AIDS, malaria, pneumonia, and so on, but it causes immense suffering in thousands of people, especially children,” says Kingsley Asiedu, who is spearheading yaws eradication activities in WHO’s neglected tropical disease department. “We can put an end to this suffering.”

Although rarely fatal, yaws causes weeping skin ulcers, usually on the face, back, buttocks, and legs. The agent, a close cousin to the syphilis bacterium, causes an estimated 100,000 new cases each year, 75% of them in children. Most resolve with no lasting damage. But in about 10%, the infection causes disfiguring erosion of tissue, cartilage, and bone.

The previous yaws eradication campaign was launched in 1952, when estimated cases totaled 50 million worldwide. Health workers fanned out over 46 countries, treating people with a long-acting antibiotic, benzathine penicillin, which required painful injections and skilled health workers to deliver them. Twelve years later, prevalence had plunged 95%. But governments and funding agencies lost interest, and in the 1970s

the disease began climbing back.

Since then, international agencies and donors have launched concerted efforts to reduce the burden of neglected tropical diseases. And right before the 2012 Morges meeting came evidence that, for yaws, a different drug could simplify the task. In a study in Papua New Guinea, Oriol Mitjà of the Barcelona Institute for Global Health Hospital Clinic and the University of Barcelona University in Spain showed

treatment was doable, the researchers reported last month. In each country, 95% of the population in selected yaws-affected areas—90,000 people in total—received the drug. The pills were easy to give to children, who used to run from the sight of a benzathine-filled syringe.

So far, only the Papua New Guinea pilot study has effectiveness data. “Six months after the first treatment, we saw a 10-fold drop, from 926 to 94 cases,” says Mitjà, who led this study. “If the other pilot studies show similar results, there will be little doubt about the feasibility of the new eradication strategy.”

But several tropical disease experts are cautious. For one, the geographic scope of the disease is unknown. “Inadequate surveillance is the most serious pitfall that could jeopardize the whole campaign,” warns Donald Hopkins of the Carter Center, who chairs the International Task Force for Disease Eradication and has led the guinea worm eradication effort since 1986. Many countries where yaws is endemic do not track cases.

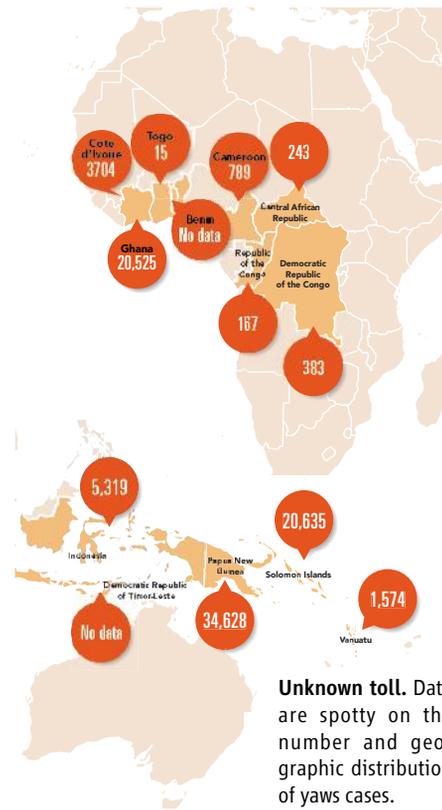
What’s more, success will depend on reaching mobile populations in remote, sometimes dangerous, places. “The Pygmies are nomadic and move continually,” says Matthew Coldiron, who headed a recent azithromycin campaign during the pilot study in the Republic of the Congo. “After a first round of treatment in a community, 6 months later we found that over a quarter of community members had arrived since the previous treatment, and many were infected.” Drug resistance is another potential problem. If the disease has an animal reservoir, which is not known, the entire plan could be severely hampered and possibly doomed, as infected animals could reinfect people already treated.

Funding will make or break the project, which is estimated to cost anywhere from \$100 million to \$1 billion. Negotiations are already under way with Pfizer about donating still unknown quantities of the drug. And to pull it off, at least 85 countries would have to commit to conducting intense surveillance for years.

Eradiation of yaws is worthwhile and not impossible, Hopkins says. But, he adds, “It will be tougher, take longer, and cost more than originally planned.”

—JOHN MAURICE

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Unknown toll. Data are spotty on the number and geographic distribution of yaws cases.

that a single oral dose of azithromycin, an inexpensive antibiotic made by Pfizer, was as effective as benzathine in curing yaws.

While the earlier strategy targeted just those people who were visibly infected, the Morges plan calls for blanket coverage of at least 90% of the population in yaws-affected areas. This is key, Mitjà says, as researchers have learned that for every one person visibly infected, six others have latent infections and no symptoms. Repeated mass treatments will catch people not treated the first time round.

After the 2012 meeting, WHO funded pilot studies in four countries with yaws—Republic of the Congo, Ghana, Papua New Guinea, and Vanuatu. Mass azithromycin