Zambia fights to sustain its malaria success
A model for malaria interventions is at risk as funding flattens and the disease smolders on

By Kai Kupferschmidt

In the life-and-death battle against malaria, success is easy to measure for Philip Thuma, a doctor in Macha, in the southern region of Zambia. Here, on the gentle rolling landscape of this rural outback, where the poorest of the poor live off the maize they grow, the parasitic disease used to have a devastating effect. Little more than a decade ago, at the small district hospital that Thuma runs, up to 1500 children were admitted with malaria every year. About 60 of the young patients died. Now, there are about 30 admissions a year, and two or three deaths, Thuma says.

Such gains are impressive for a country where malaria has long been endemic. Soon after the rains start around October, Anopheles gambiae, Anopheles arabiensis, and Anopheles funestus—the three mosquito species that transmit malaria here—start breeding. Cases multiply, reaching a peak in April and May. The swampy parts in the north of the country are particularly hard hit.

Between 2006 and 2011, however, the World Bank, the U.S. President’s Malaria Initiative, the Global Fund to Fight AIDS, Tuberculosis and Malaria, and other donors directed more than $300 million into the country to combat the disease, making it a testbed for prevention and treatment. “One of the goals of early investment in fighting malaria in Zambia was to establish a proof of concept,” says Kent Campbell, director of the malaria control program at PATH, an international nonprofit organization—a case study in how malaria illnesses and deaths “could be quickly and dramatically decreased.”

In 2003, Zambia was the first African country to adopt artemisinin combination therapy to treat malaria. From 2006 to 2011, more than 24 million bed nets treated with insecticide were distributed. Indoor spraying with a long-lasting insecticide covered more than 6 million homes in the same time. In some areas, whole communities were screened for malaria and anyone who tested positive, even if they were not feeling sick, was treated.

The efforts paid off. In a recent analysis, Nancy Fullman of the Institute for Health Metrics and Evaluation at the University of Washington, Seattle, and colleagues found that malaria cases had declined by about 7% per year between 2000 and 2013, reducing deaths by about 60% over that period. “This is great news for the country,” she says.

Now, as donor commitments flatten, public health officials in Zambia and those aiding them are focused on consolidating their success. Worrisomely, the gains are uneven,
A worker sprays the inside of a hut with an insecticide in Lusaka province in Zambia. Indoor spraying is one of the main interventions used to curb the spread of malaria in the country.

with the southern part of the country faring better than the north. “There are parts of the country where malaria transmission has not changed at all or increased over the last few years, despite all the efforts,” says William Moss, an epidemiologist at the Johns Hopkins Malaria Research Institute in Baltimore, Maryland. And the overall progress shows signs of eroding. Malaria cases nationwide, after dropping from nearly 5 million cases in 2006 to about 3 million in 2009, rose again to about 4.5 million in 2011, for reasons health officials still struggle to explain.

Key to maintaining Zambia’s status as a poster child for progress against malaria, most agree, are continued commitment by donors and the national government. Renewed efforts in the north, quick reaction to new malaria cases in the south, and attention to neighboring nations. If that isn’t done, experts warn, the disease could come back in full force.

THUMA HAS BEEN IN ZAMBIA

long enough to see malaria all but disappear—and then come roaring back. In 1976, when the son of medical missionaries came to the southern African country to work as a doctor, malaria was not a big problem. In each district there was a health inspector who coordinated campaigns to combat malaria, for example spraying houses with insecticides every year.

Then, at the end of the 1970s, the price of copper, an important export for Zambia, dropped and the Zambian economy tanked. Investments in malaria control were scaled back. “The whole infrastructure sort of fell apart,” Thuma says. On top of that, in the 1980s, resistance to chloroquine, the main medicine against malaria at the time, emerged. “By 1990 to 1995 there was malaria all over the country again,” Thuma says. “It was terrible.”

Other countries have had a similar experience. A 2012 study evaluated 75 instances since 1930 when malaria reemerged in a country after it had been beaten back to varying extents. Civil wars, natural disasters, and resistance against chloroquine or the insecticide DDT fueled some of the setbacks. But Richard Feachem, director of the global health group at the University of California, San Francisco, says that in the end, “The reason was almost always the same: The budget was cut right back, the malaria team were partially or entirely laid off.”

Donor money for malaria interventions is still flowing into Zambia, and the country also devoted $24 million from its own budget to malaria in 2013 and $27 million this year—sums unheard of in sub-Saharan Africa, according to Campbell. So why are some of its hard-fought gains eroding?

Even a short financial blip can disrupt a country’s gains: In 2010, Campbell says, money to replace bed nets—which begin to lose efficacy after 3 years—temporarily ran short, and that immediately led to a resurgence of malaria. It may also be that natural variation played a bigger role in Zambia’s earlier gains than many have thought. A drought in southern Zambia a decade ago killed off large numbers of A. funestus mosquitoes, Moss notes. “They haven’t really recovered and now there is A. arabiensis, a less efficient vector.”

In the north, on the other hand, A. funestus and A. gambiae are still spreading the disease, and they have now developed resistance to pyrethroid insecticides. A new indoor spraying campaign with actellic, a more expensive chemical that still kills the insects, is supposed to start soon and may help to beat back malaria, Moss says. But more research is also needed to understand why the north hasn’t enjoyed the same successes as the south, says Ubydul Haque, of the Emerging Pathogens Institute at the University of Florida in Gainesville.

To sustain the gains in the south, public health officials are deploying a strategy called reactive case detection. If any new malaria case is diagnosed, a group of physicians is sent to the home of the patient, and anyone living within a radius of 140 meters is tested for malaria and treated if they are found to be infected. “It’s almost like outbreak detection” for a fast-spreading virus, Moss says. The long-range goal of such efforts is to get transmission of malaria down to zero in this part of Zambia.

Even if that effort succeeds, no one should rest easy, Feachem says. “Donors tend to go where there is the most disease and with malaria that is a mistake,” he warns. After halting transmission, preventing reintroduction should become the new focus, he adds.

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Science 345 (6202), 1270-1271.
DOI: 10.1126/science.345.6202.1270