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SightLine

The Wilmer Eye Institute at Johns Hopkins

We're
Gonna
Beat
Trachoma

Sheila West is on a mission
and making significant research
advances on the way.



We're Gonna Beat Trachoma

Armed with \$12.1 million courtesy of the Bill & Melinda Gates Foundation, Sheila West and a far-flung cohort of colleagues are doing battle with the world's leading infectious cause of blindness—and they're aiming to win.





Sheila West and her colleagues were doing a survey in Tanzania when a little boy wandered over and offered her some peanuts.

The blonde woman in the photos wears a denim jumper and a plain T-shirt. She is surrounded by African women and children, smiling widely and swathed in brightly colored clothing. The landscape appears parched and dusty, and in some shots you can see children shouldering enormous water jugs. Back in Sheila West's office at the Wilmer Eye Institute, those scenes seem as remote as the sub-Saharan villages West visits regularly to treat people infected with trachoma, a blinding eye disease that affects some 84 million people each year.

In 2007, West was awarded a five-year, \$10 million grant from the Bill & Melinda Gates Foundation to uncover ways to eliminate trachoma. In October 2008, the Foundation gave her an additional \$2.1 million, allowing West to expand her research to include other neglected tropical diseases. Working with a consortium of researchers from the Wilmer Eye Institute, where she is a professor of ophthalmology; London's School of Hygiene and Tropical Medicine; the University of San Francisco; and the World Health Organization (WHO),

West will focus on improving known treatments for trachoma, which include surgery and antibiotics.

Trachoma is the world's leading infectious cause of blindness. The disease is now a problem mainly in Africa, the Middle East and parts of Asia—places where clean water and access to medical care are seriously lacking. Because trachoma is easily spread via flies, clothing and bedding, children in particular are infected over and over again. These prolonged episodes lead to scarring of the upper eyelid, which contracts the lid and causes the eyelashes to rub across the cornea. "It's not only painful, but leads to corneal blindness," explains West. And it's largely irreversible. "These eyes that are blind from trachoma are not good candidates for corneal transplants, even if such a technology were available in these countries, and it's largely not."

Despite intense competition for grant money, West says it wasn't difficult to convince the Gates Foundation

to fund her research. "Unlike the National Institutes of Health, which is largely interested in the impact of diseases in the United States, the Bill & Melinda Gates Foundation considers operational research for the global burden of disease," she says. That includes what's known as "neglected tropical diseases," such as leprosy, lymphatic filariasis, schistosomiasis and trachoma. "By themselves, these are not the killers that malaria and HIV are, and for that reason are neglected. But taken together, they're responsible for considerable morbidity," explains West. She hopes her research will find enough overlap in control of these diseases so that

medical treatments may rid communities not just of trachoma, but possibly co-existing conditions as well.

The Gates Foundation responded to West's approach, which focuses on improving known effective treatments for trachoma. Although West shies away from the word *cure*, she will say, "We can eliminate blinding trachoma, but we need some answers before we can say that it's going to be by 2020 [the goal set by the WHO]. That's where the grant came in."

Specifically, the Gates grant will tackle two aspects of the four-pronged treatment approach endorsed by the WHO, known as the SAFE strategy: the S stands for surgery to correct the in-turned eyelashes; A is for antibiotics to treat the infectious community; F and E are for face-washing and environmental change, like the provision of clean water, to try to interrupt

the transmission of trachoma.

West's team is concentrating on the S and A components. "Despite surgery that we know corrects lashes, in a program setting we have a huge problem of recurrence," she explains. "We feel a lot of that is due to surgical technique." With a shortage of ophthalmologists in rural Africa, the surgery is being performed by medical assistants, ophthalmologic nurses and paramedical personnel, with less than ideal results.

Part of the grant will fund a clinical trial to determine whether a new device developed by Wilmer plastic surgeon Shannath Merbs will decrease the recurrence rate of trachoma. The trial, slated to begin in 2009 in Tanzania, will follow 1,400 patients over two years. An enthusiastic West says, "It shows how you take a high-technology area like plastic surgery, focus on a problem in a third-world area, and come up with a new approach that nobody's thought of."

West will also aim to answer the questions of how many people need to be treated with antibiotics and how often in order to eliminate trachoma in highly affected communities. A

generous donation of the drug azithromycin, or Zithromax, by Pfizer means that communities can now be treated with a single-dose oral pill or liquid—a huge advantage in the fight against trachoma.

West, who is fluent in French and Swahili, has spent most of her 24-year Wilmer career "trooping around in these villages in Africa." Her work there has left some indelible impressions that few other Americans can imagine. "The kind of instability and horrific stories that the U.S. tends to see in Africa are so far from my experiences," says West. "I have people who have been with me since 1986 in Africa. They are among the hardest working people I have ever encountered." She knows many African ophthalmologists who have forgone international careers to devote themselves to improving the eye health



In Tanzania, Sheila West confers with members of her team and village residents.

in their communities. "I see a country of motivated health professionals who work hard and bring pride to their job, whether it's sitting in an office doing data entry, whether it's out in the field flipping eyelids or trying to get Zithromax to the far corners of these villages."

Part of what keeps West going are the impressive results of trachoma programs like hers. Follow-up surveys to a Zithromax program in Ghana revealed no evidence of trachoma—making it the first African country to essentially eliminate the disease. The Gambia will likely follow suit. "It's happening," says West. "We just need to speed up that process."

"When I started out my career, trachoma was the second leading cause of blindness worldwide; it was a huge problem in so many countries. And I may actually be able to retire when this is no longer a public health problem," she says. "To know that I was part of an effort for the global elimination of a blinding eye disease is truly exciting." ■

PART OF THE JOB IS GETTING THERE

Seeing what can be done with even limited resources gives Sheila West hope for the rural African communities where she works to eliminate trachoma. The Gates Foundation has provided her team with one vehicle to bring

medical care to these remote villages, and West has raised funds for another van. However, she could desperately use a third. "We are just holding our third vehicle together with baling wire and duct tape," she says.

West estimates that \$84,000 would buy another van plus insurance and extra parts that would deliver antibiotics to an entire district.

"Something as simple as that can make a huge difference."