

Sight saving stick

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Scientists have developed the first inexpensive, sensitive and easy-to-use rapid test for trachoma, an eye infection that has led to more than one million women and children going blind.

The 'sight-saving' dipstick could have a dramatic impact on the treatment of the disease caused by *Chlamydia trachomatis* bacteria. It produces results in less than half an hour and can be used in remote areas by staff who have been trained on-the-spot and have access to only the most basic elements. The infection, which causes the eyelid to fold inward and the lashes to scar the cornea, can be cleared by a single dose of a drug called azithromycin.

In a trial involving over 600 Masai children living in the shadow of Mount Kilimanjaro, Tanzania, the assay proved to be more than twice as effective in detecting trachoma than traditional analysis. It took just one hour to train local health workers to carry out the tests which were then evaluated in a village 'office' without electricity or running water, using tables and chairs as makeshift lab benches. The results are published in this week's edition of *The Lancet*.

Around 1.3 million women and young children have been blinded by trachoma, which is easily spread by the Bazaar fly or through lack of hygiene, and another 7 million in Africa and Asia suffer serious visual problems. The World Health Organization estimates that 84 million people in 55 countries need treatment, with 90% of these cases occurring in the developing world. The problem is exacerbated in Africa where there is just one ophthalmologist for every million people.

The wafer-thin, 8cm long trachoma dipstick is an adaptation of the award-winning 'FirstBurst' diagnostic test to detect the sexually-transmitted form of Chlamydia, which is highly contagious (resulting in more than 90m new cases every year) and can lead to infertility in women.

Both tests were developed by a team working at Cambridge University led by Dr Helen Lee with funding from the Wellcome Trust. Dr. Lee has set-up Diagnostics for the Real World, a spinout company based on the technologies developed at Cambridge. The goal of the company is to improve health in resource-poor settings by developing badly needed diagnostic tests for neglected diseases.

Claude-Edouard Michel, one of the leaders of the programme, who works with Dr Lee in Cambridge's Diagnostics Development Unit, said: "We have shown this test can work in the most difficult circumstances without even the most basic of laboratory equipment."

Professor Mabey, from the London School of Hygiene and Tropical Medicine, said: "The test is an important advance in the fight against trachoma. At present, the amount of azithromycin pledged by the manufacturer, Pfizer, will not be sufficient to treat everyone living in endemic communities. Yet, much of the drug is wasted in treating communities which no longer need it.

"The new test will enable programme managers to find out for themselves which communities still harbour the infection and thus to focus treatment on the communities which really need it."

Dr. Paul Courtright, co-Director of the Kilimanjaro Centre for Community Ophthalmology at Tumaini University in Moshi, Tanzania said: "The findings from this study will likely lead to a major re-think on how we conduct trachoma control in Africa. It will help us become more

targeted in our approach—saving time and money.

“The potential to accurately identify households and villages with trachoma and provide the interventions needed to eliminate this disease just took a leap forward with this study.”

Trachoma is a disease which affects the poor and is the leading infectious cause of blindness. It can result in the eyelid turning inwards, causing the lashes to scrape across the eyeball, resulting in scarring of the cornea.

As effective diagnostic tests are rarely available in remote regions, health workers look for clinical signs of the infection. These usually appear as white patches just under the surface of the delicate membrane which covers the eyeball.

The infection is easily spread by the Bazaar fly or through lack of hygiene, which is common in many poor areas where there is little or no water. The WHO has launched a programme to eliminate trachoma by 2020 and is focusing on surgery, antibiotics, facial cleanliness and environmental improvements.

In areas where it is estimated more than one in ten people have trachoma, the whole community is currently given a single dose of Azithromycin. The mass treatment continues for three years until the prevalence is 5% or less but can result in many people being repeatedly given the drug unnecessarily.

Source: University of Cambridge

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