Why tackle trachoma?

Nearly 10% of the world’s population is at risk of blindness from trachoma, the world’s leading cause of preventable blindness. About 8 million people are visually impaired as a result of trachoma, and about 84 million people have active disease. Trachoma is endemic in 55 countries, primarily in Africa and Asia. The disease affects rural populations with limited access to health care and clean water, and disproportionately affects women and children. Children under five years old are most susceptible to the disease, and women are approximately three times more likely than men to be blinded by trachoma in most areas. In addition to the tremendous personal suffering caused by trachoma, the disease limits or eliminates its victims’ ability to work, resulting in productivity losses estimated at US$2.9 billion per year.

Trachoma endemic regions as identified by WHO

Source: WHO

Trachoma is preventable, and the suffering and productivity losses it causes are avoidable. The World Health Organization recommends a low-cost, multi-faceted intervention strategy for eliminating blinding trachoma known by the acronym “SAFE”, which advocates Surgery for advanced trachoma, Antibiotics, Facial cleanliness, and Environmental improvements. Communities in which the SAFE strategy is being applied are showing progress towards eliminating blinding trachoma.

Trachoma is one of the oldest infectious diseases known to mankind — references to it appear on papyrus scrolls from ancient Egypt. Improved living conditions have eliminated it in most developed nations. Advances in treatment methodologies and the availability of strategic resources have now brought global elimination of this ancient disease within reach.

What is trachoma?

Trachoma is an inflammation of the upper eyelid that, through repeated infections, results in irritation and scarring. In the advanced stages of the disease, known as trichiasis, the eyelid becomes so severely scarred that it contracts, causing the eyelashes to turn inwards. The eyelashes repeatedly irritate and damage the cornea, ultimately causing blindness.

In endemic areas, every single member of a community may show signs of trachoma. Young children have eye infections characterized by reddening and irritation, older children and adults have scars on their eyelids from the disease. Many of those with scars will go on to develop trichiasis, with corneal scarring and blindness. Elders in the community may be blinded in one or both eyes by their lifetime of exposure to the bacteria that cause trachoma.

The microorganism responsible for trachoma, Chlamydia trachomatis, is highly infectious and can be spread on an infected person’s hands or clothing, or transmitted by flies that have been in contact with discharge from the eyes or nose of an infected person. In an endemic community, the primary reservoir of Chlamydia trachomatis is in children, particularly those under the age of five. Due to the infectious nature of the disease, those who have most contact with infected children (including mothers, siblings and playmates) are most likely to become infected. Since women are traditionally the primary caregivers of children under five, they are frequently exposed to repeated infections, and are therefore more vulnerable to scarring and, consequently, blindness.

A woman’s blindness can have a dreadful impact on her family, putting her children at greater risk of other health problems, including malnutrition. In many communities in Africa, if a mother is blinded by trichiasis, her daughter will be withdrawn from school to assist with chores.

The SAFE Strategy

The SAFE strategy combines curative medicine, public health measures, and social development interventions to

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fight blinding trachoma. SAFE uses appropriate medicines and technologies that are readily adaptable to diverse cultures and populations.

**Surgery** is necessary to prevent blindness in people who suffer from trichiasis, the advanced stages of trachoma. In the late stages of the disease, the eyelashes invert and scratch the cornea, causing pain, irritation, and ultimately blindness. Using a relatively simple surgical procedure, trained surgical health workers are able to rotate eyelashes away from the eye, which alleviates pain and prevents progression of the disease to blindness. Even if active trachoma is eliminated from a community through the distribution of antibiotics, adults who have been exposed to the disease during their lifetime will continue to manifest trachiasis, which will require surgery to prevent blindness. Trichiasis surgery is cost effective, costing US$25-40 per operation. Surgery takes about 15 minutes, and has long-term success rates of up to 80%.

**Antibiotics** are effective in the treatment of active trachoma, lessening the impact of the infection on individuals, and reducing the community pool of disease. Taken once a year, the antibiotic azithromycin has proven very effective against active trachoma. The single oral dose is far easier to administer than the previously recommended regimen of tetracycline eye ointment applied two times a day for six weeks. Azithromycin should be transported and stored at temperatures below 30°C.

**Facial Cleanliness.** Research has shown that children with clean faces are significantly less likely to have active trachoma. Additionally, good facial hygiene inhibits the transmission of the disease, as discharge from the eyes and noses of infected people is the main source of the disease.

**Environmental Improvement,** including facilitating access to clean water and promoting good hygiene measures, is a critical component of trachoma elimination. Improving access to and use of water and sanitation is important in breaking the cycle of disease transmission. Since the spreading of trachoma depends in part on flies, making the environment less hospitable to flies impedes their ability to act as vectors.

**How to promote SAFE**

The SAFE strategy is a comprehensive, multi-dimensional approach to eliminating blinding trachoma. There are many ways to promote SAFE at the community and national levels. Since trachoma spreads through a cycle of infection and re-infection, often between siblings or from mother to child and back again, preventive measures are key to its long-term elimination as a public health threat.

- Trachoma control initiatives should be linked to other, broader initiatives, including health, hygiene, and water and sanitation. Improving environmental conditions and promoting good hygiene are essential components of trachoma elimination, and also have a broader impact on the health of the community. Trachoma programs can be linked to ongoing water/sanitation initiatives and to health education and hygiene promotion activities in endemic communities.

- Increasing the number of individuals who are trained to perform trichiasis surgery, and facilitating access to their services, is paramount to the success of surgery programs. In many trachoma-endemic areas, access to ophthalmologists, and even to the most basic health care, is limited. General physicians and nurses who are involved in their country’s trachoma program can be trained as trichiasis surgeons in approximately two weeks, being taught to identify trichiasis cases, perform the surgical procedure, carry out appropriate follow-up, and analyze the procedure’s success. The set of appropriate tools to perform the operation costs US $80 to $400.

- Involving community members in planning and implementing interventions will help ensure that programs are appropriate to local situations and sustainable. In Ghana, a pilot project that trained community volunteers to diagnose trachoma and to treat infected people with azithromycin produced promising results.

- Facilitating mass distribution of antibiotics (such as azithromycin pills and tetracycline eye ointment) in trachoma-endemic communities is crucial. Height-sticks can be used to measure the height of children over two rather than weighing them to calculate appropriate azithromycin dosage. Using tools such as heightsticks makes it possible to distribute medication more efficiently, and enables community volunteers without formal education to assist with distribution.

- Behavioral changes can be difficult to achieve and sustain. Creative methods to change the behavior of children and their caretakers have been tested, such as the “child-to-child” approach, using older children to influence the behavior of preschoolers, and school programs to educate the next generation of caretakers.

- Promoting sanitation improvements is an important part of the SAFE strategy. A pilot study in The Gambia found that reducing the fly population in a village through chemical spraying over a three-month period resulted in 61% fewer cases of active trachoma than in control villages. Mass-spraying of endemic communities is not advisable as a long-term trachoma control strategy, but there are other more environmentally sound methods of controlling fly populations, which include the construction of pit latrines.

**Can blinding trachoma be eliminated?**

**Yes.** Morocco is likely to be the first country to eliminate trachoma using the SAFE strategy. Through six years of vigilant and concerted effort, Morocco has reduced active
trachoma prevalence in children under 10 years of age by 90%. There is strong evidence that Morocco will eliminate blinding trachoma as a public health issue by the end of 2005 (see graph). Morocco's progress is an encouraging challenge to other endemic countries and offers hope for global elimination of blinding trachoma by 2020.

Another example of progress in trachoma control comes from Niger. The Zinder region has expanded its treatment population in the endemic districts of Magaria and Matamey from an initial target of 100,000 to approximately 700,000 people in 2003. In 2004, the program will expand further to cover all six districts of the Zinder region. This will provide treatment for trachoma to approximately 25 percent of the total population of Niger.

In order to eliminate blinding trachoma, it will be necessary to extend prevention and treatment services to poor and often remote populations, who are the most vulnerable to trachoma. In assessing the feasibility of eliminating blinding trachoma, it is important to remember that trachoma was once endemic in many parts of the world where it is no longer found. Trachoma once plagued Europe and the United States, but with improvements in socioeconomic conditions, the disease has been eliminated from most developed countries. Comprehensive strategies and access to increased medical knowledge, technology, and infrastructure finally put global elimination of blinding trachoma within reach.

Trachoma and the Millennium Development Goals

In 2000, UN member states committed themselves unanimously to attaining the Millennium Development Goals (MDGs), measurable and time-bound goals for confronting global barriers to development. The MDGs represent a partnership between developed and developing nations in which eliminating poverty and promoting sustainable development is the highest priority.

Trachoma — a disease that manifests itself in impoverished, rural areas without access to clean water; that disproportionately afflicts women and children in struggling communities in 55 endemic countries; and results in debilitating and preventable blindness — stands in the way of attaining the expanded vision of global human development represented by the MDGs. The SAFE strategy encourages a holistic approach to eliminating blinding trachoma, which will also help address broader MDG targets.

Dos and Don’ts

Do assess local sanitation and hygiene practices and beliefs as the basis for all planning. Always involve community members/stakeholders in designing and implementing interventions. Maximize the impact of hygiene education by using participatory techniques that target women and children, and use women as facilitators.

Do incorporate facial cleanliness and other hygiene messages into primary school curricula, and insure that adequate water and sanitation are available at schools and health facilities.

Do target hard-to-reach and impoverished areas.

Do train primary health care providers in the distribution of antibiotics, and in the use of height-sticks to measure height as a proxy for weight in dosing azithromycin.

Do train health workers to provide surgery, and ensure that surgery trainees demonstrate requisite skills before being licensed to perform surgery. Follow up with periodic retraining to ensure that their knowledge and skills in this area are regularly refreshed.

Do conduct trachoma prevalence surveys to increase global awareness of disease burden: disease-control programs must rest on reliable scientific evidence.

Do organize trachoma programs locally that respond to local circumstances.

Do link trachoma treatment to trachoma prevention and to the development of solid public health infrastructure.

Don’t concentrate interventions on only one of the components of the SAFE strategy; a balanced approach is needed to eliminate blinding trachoma.

Do incorporate trachoma elimination programs into a comprehensive agenda of health promotion, health equity, and disease control.
For more information:
To become involved in implementing SAFE, please contact the National Coordinator of Blindness Prevention at your local Ministry of Health and your local WHO representative.

Useful websites
- International Trachoma Initiative: http://www.trachoma.org
- Sight Savers: http://www.sightsavers.org.uk/
- UNICEF: http://www.unicef.org
- World Health Organization: http://www.who.int/health_topics/trachoma/

Other Partners
- The Carter Center: http://www.cartercenter.org/healthprograms/program3.htm
- Christoffel-Blindenmission: http://www.cbmi.org
- Operation Eyesight Universal: www.giftofsight.com
- Orbis International: www.orbis.org
- WaterAid: http://www.wateraid.org
- World Vision International: http://wvi.org

Manuals and Guidelines
- International Trachoma Initiative (ITI), 2002, Zithromax® in the Control of Blinding Trachoma: A Program Manager’s Guide
- WHO, Primary Health Care Level Management of Trachoma, WHO / PBL / 93.33
- WHO, 2001, Guidelines for the Rapid Assessment of Blinding Trachoma, WHO / PBD / GET / 00.8
- WHO, Achieving Community Support for Trachoma Control. WHO / PBL / 93.36

Other Documents
- Mecaskey JW, Ngirwamungu E, Kilima PM 2003, Integration of Trachoma Control into Primary Health Care: The Tanzanian Experience, American Journal of Tropical Medicine and Hygiene 69 (Suppl 5): 29-32
- West, SK 2003, Blinding Trachoma: Prevention with the SAFE Strategy, American Journal of Tropical Medicine and Hygiene, 69 (Suppl 5): 29-32

Expanded versions of the “at a glance” series, with e-linkages to resources and more information, are available on the World Bank Health-Nutrition-Population web site: www.worldbank.org/hnp