

## Short-sightedness in sight-saving: half a strategy will not eliminate blinding trachoma

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Few diseases are more closely linked to the environment than trachoma – the leading global cause of preventable blindness. An estimated 40 million people are infected with *Chlamydia trachomatis*, of whom 8.2 million have trachomatous trichiasis, the blinding stage of the disease.<sup>1</sup> Infections are transmitted between people through ocular secretions and by eye-seeking flies that breed in human faeces.<sup>2</sup>

There is no vaccine for trachoma, but antibiotics reduce the pathogen load in hosts and shorten the infectious period; while surgery reverses the in-turning of eyelashes that causes corneal trauma and eventual blindness. However, treated individuals can be reinfected, especially in unhygienic environments.<sup>3</sup> One way to reduce the prevalence of trachoma in endemic areas is to distribute antibiotics to the whole community, but such distribution is costly in rural Africa and healthy individuals often refuse to be treated.<sup>4</sup>

The Alliance for the Global Elimination of Blinding Trachoma by the year 2020 (GET 2020), an effort led by the World Health Organization, includes environmental measures in its SAFE approach (Surgery for trichiasis cases, Antibiotics to treat the community pool of infection, and Facial cleanliness/Environmental improvement to reduce transmission). However, recent country progress reports show that surgery and antibiotic interventions were jointly implemented and monitored in 61% (23/38) of countries<sup>5</sup> while only 34% (13/38) of national programmes included either face washing or environmental components.<sup>5</sup>

Trachoma research has largely concentrated on surgery and antibiotics, for two main reasons. Firstly, there is more funding for such research and secondly, it is easier to design and conduct randomized controlled trials of these interventions. Interactions between people and their environment

are complicated and take longer to study; thereby complicating research into the impact of environmental measures. This research bias in favour of surgery and antibiotics has led some reviewers to question the importance of water, sanitation and hygiene within the GET 2020 campaign.<sup>6,7</sup>

However, circumstantial evidence shows that sanitation and face-washing are needed to eliminate trachoma. In the 19th century, trachoma was common in the United States of America and Europe, but was eliminated before the advent of antibiotics by improved water, sanitation and hygiene, in the context of general economic development.<sup>8</sup> More recently, the first three countries (Mexico, Morocco and Oman) to eliminate trachoma in the GET 2020 campaign included environmental prevention and human development in their national strategies.

Latrines block mechanical transmission by removing human faeces from the environment, thereby reducing flies. Research has shown that households using latrines have a decreased risk of trachoma.<sup>9–11</sup> Similarly, facial cleanliness in children is associated with decreased risk.<sup>11,12</sup> Environmental interventions need not be expensive or elaborate. In rural communities in the United Republic of Tanzania, simple, shared latrines constructed with local materials reduce trachoma risk.<sup>10</sup> Although comprehensive cost-effectiveness analyses of all components of SAFE are lacking; water and sanitation measures alone provide a net economic benefit.<sup>13</sup>

For these reasons, we challenge the tactic of using surgery and antibiotics as the means for the elimination of blinding trachoma in the absence of adequate environmental measures. We recommend three steps to transform global trachoma efforts into sustainable prevention.

The first is to integrate trachoma policies into national water, sanitation, hygiene and child survival strategies. The International Trachoma Initiative (a nongovernmental organization established by Pfizer and member of GET 2020), has 42 partner organizations, but only five of these are directly involved in environmental efforts. GET 2020 should invite more water, sanitation and hygiene stakeholders to join forces for coherent policy development and more effective use of resources.

The second is to link antibiotic distribution and surgery with hygiene and sanitation promotion. Recurrence of trachoma after treatment is a known challenge.<sup>14</sup> In many countries where trachoma is endemic, such as Ethiopia, Niger and the United Republic of Tanzania, the Ministry of Health is responsible for both antibiotic distribution and sanitation, facilitating this link.

The third is to include sanitation and hygiene in monitoring and certification of elimination. Current monitoring and certification of trachoma elimination only require reporting of disease statistics and the surgery and antibiotic components of the strategy. Obligatory monitoring – and attainment – of quantifiable environmental targets, such as 100% latrine use, would provide insurance against trachoma recurrence. Such efforts would also increase the environmental evidence base, making it easier to assess cost-effectiveness and make valid recommendations.

Half a strategy is no strategy. Yet, by including environmental measures, the trachoma campaign has the potential to be an outstanding example of sustainable infectious disease control. This is an opportunity that would be a blinding shame to waste. ■

### References

Available at: <http://www.who.int/bulletin/volumes/88/2/09-075424/en/index.html>

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