

Trachoma

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Trachoma is an infectious eye disease caused by strains of the bacteria *Chlamydia trachomatis* (which causes an infective conjunctivitis). Repeated episodes of infection can result in loss of vision and blindness if not treated.¹ Trachoma has disappeared in developed countries as living standards have improved, however it remains an issue in some developing countries, and still occurs in the Aboriginal population in Australia.

C. trachomatis is an obligate, intracellular, gram-negative bacterium.¹ It attaches to the epithelial cells in the eye and is internalised, forming a metabolically active reticulate body, which triggers a delayed type hypersensitivity reaction. Inflammation occurs in all layers of the conjunctiva, with infiltration of lymphocytes, and the development of lymphoid follicles in the tarsal conjunctiva. Repeated infection and prolonged inflammatory processes results in fibrosis and thickening of the conjunctiva, causing scarring.¹ The scarring pulls the eyelid margin inward, causing trichiasis, where one or more eyelashes are pulled in to rub on the eye. Trichiasis causes pain and trauma to the corneal surface, and will result in opacification of the cornea and irreversible vision loss if left untreated.

The clinical signs of trachoma can be considered in two distinct phases.² 'Active trachoma' involves active infection with *C. trachomatis*, characterised by inflammatory thickening of the conjunctiva and the development of follicles. 'Cicatricial disease' is characterised by scarring, with later trichiasis and corneal opacity. Trachoma can be easily diagnosed and the World Health Organization (WHO) Simplified Grading System allows for rapid clinical assessment of the prevalence and severity of the disease in a population.

Trachoma is a disease of poor hygiene related to poverty and proximity. Primary transmission involves transmission from person to person through infected ocular secretions or nasal discharge; secondary transmission by flies also occurs. Specific risk factors for trachoma include household crowding, an insufficient or unclean water supply, the absence of a toilet in the household, and an increased presence of flies. The most important risk factor is poor facial hygiene, characterised by a dirty face.

The control strategy recommended by the WHO is SAFE: Surgery, Antibiotics, Facial cleanliness and Environmental improvement.³ Surgery for trichiasis involves reversing the in-turned eyelashes. Antibiotics reduce the level of chlamydial infection in the active trachoma phase through a single oral dose repeated every 6–12 months and may be administered at a family or community-wide level. Facial cleanliness involves behavioural change in communities and families, addressed through health promotion programs, while environmental strategies address water, sanitation and household hygiene.

The National Indigenous Eye Health Survey⁴ (2009) determined the overall rate of active trachoma to be 3.8% in all Aboriginal and Torres Strait Islander children aged 5–15 years (ranging from 0.6% in major cities to 7.3% in very remote areas). In Aboriginal and Torres Strait Islander adults the rate of scarring was 15.7%, trichiasis 1.4% and corneal opacity 0.3%.

In New South Wales (NSW), 8.1% of adults surveyed had trachomatous scarring. Trachoma was very common in Aboriginal communities in western NSW until the 1970s and therefore trichiasis may be found in older Aboriginal people in these areas. To detect trichiasis in these people one can follow the 'Ts for Trichiasis'; Think of looking for it; use your Thumb to lift the upper lid off the eyeball; and use a Torch to see in-turned lashes. Outreach eye services in NSW do not keep data on the number of clients with trichiasis, but anecdotally report the numbers as low.

The Survey found 2% of children surveyed in NSW (3 of 155 children) showed signs of active trachoma (two from inner regional areas and one from a major city). The current prevalence of trachoma in western NSW is unclear, but anecdotal evidence suggests it is rare. Further work is required to determine the best surveillance methods for detecting and managing this disease, in keeping with a global commitment to the elimination of trachoma by 2020.

References

1. Wright HR, Turner A, Taylor HR. Trachoma. *Lancet* 2008; 371: 1945–54. doi:10.1016/S0140-6736(08)60836-3
2. Taylor HR. Trachoma. Haddington Press: Australia; 2008.
3. Mathew AA, Turner A, Taylor HR. Strategies to Control Trachoma. *Drugs* 2009; 69(8): 953–70. doi:10.2165/00003495-200969080-00002
4. Taylor HR, Fox SS, Xie J, Dunn RA, Arnold AMR, Keefe JE. The prevalence of trachoma in Australia: the National Indigenous Eye Health Survey. *Med J Aust* 2010; 192(5): 248–53.