Online Quiz

Test Your Knowledge: Ten Questions on Trachoma

This quiz is related to the Learning Forum in the February issue of *PLoS Medicine* (DOI: 10.1371/journal.pmed.0030041)

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Question 1. Which one of the following is true about the prevalence of active trachoma?

- ☐ The prevalence of active trachoma increases with age
- ☐ Although the prevalence rates of active trachoma are similar in males and females, the later sequelae (trichiasis, entropion, corneal opacification) are more common in women than men
- ☐ The global prevalence of active trachoma is 10 million cases

Question 2. Which one of the following is true about blindness due to trachoma?

- ☐ Trachoma invariably leads to blindness
- ☐ Trachoma is the most common overall cause of blindness worldwide
- ☐ Trachoma is the most common cause of infectious blindness worldwide

Question 3. What is the best estimate of the potential global loss of productivity related to impaired vision and blindness from trachoma?

- ☐ US\$1.3 billion annually
- ☐ US\$5.3 billion annually
- ☐ US\$10.3 billion annually

Question 4. Which of the following patients with trachoma, as defined by the World Health Organization simplified grading system, are at highest risk of blindness?

- ☐ Patients with trachomatous scarring
- ☐ Patients with trachomatous inflammation—follicular
- ☐ Patients with trachomatous trichiasis

Question 5. How reliable is clinical examination (clinical diagnosis of active trachoma) in predicting ocular chlamydial infection?

- ☐ In high-prevalence areas, diagnosis of active trachoma by clinical examination has only a 70% correlation with evidence of ocular *Chlamydia trachomatis* infection using polymerase chain reaction, and the correlation is 10% in low-prevalence areas
- ☐ In high-prevalence areas, it has only a 50% correlation with evidence of ocular *C. trachomatis* infection, and the correlation is 5% in low-prevalence areas

- ☐ In high-prevalence areas, it has only a 30% correlation with evidence of ocular *C. trachomatis* infection, and the correlation is 1% in low-prevalence areas

Question 6. Which of the following is true about surgical treatment for people with trachomatous trichiasis?

- ☐ With the bilamellar tarsal rotation procedure, the recurrence rate at two years is lower than the recurrence rate after cryoablation or electrolysis
- ☐ Only surgeons have sufficient expertise to perform the bilamellar tarsal rotation procedure
- ☐ When communities affected by trachoma are offered surgery, there is typically a very high rate of uptake

Question 7. Which of the following best reflects the evidence on using antibiotics to treat active trachoma?

- ☐ There is good evidence that oral treatment is more effective than topical treatment
- ☐ RCTs of antibiotics versus placebo have had conflicting results and are difficult to pool
- ☐ RCTs have consistently shown that antibiotics are superior to placebo in treating active trachoma

Question 8. Which of the following is true about the WHO's "SAFE" strategy (Surgery for trichiasis, antibiotics to reduce the reservoir of infection, facial cleanliness, and environmental improvement) to reduce transmission of *C. trachomatis*?

- ☐ Although the WHO recommends two specific antibiotic regimes, the optimal antibiotic regimes have not yet been established
- ☐ All four components of the strategy have been proven effective in multiple RCTs
- ☐ With this strategy, the WHO is aiming to eliminate trachoma by the year 2010

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Question 9. Which of the following best reflects the evidence on the value of fly control as an intervention to reduce the incidence of active trachoma?

- ☐ There is good evidence from multiple RCTs that fly control reduces the incidence of active trachoma
- ☐ There is good evidence from multiple RCTs that fly control does not reduce the incidence of active trachoma
- ☐ There is only preliminary evidence from a small pilot study that fly control reduces the incidence of active trachoma

Question 10. Which of the following best reflects the evidence for the value of face washing as an intervention to reduce the rate of severe trachoma?

- ☐ There is good evidence that face washing alone reduces the rate of severe active trachoma
- ☐ There is good evidence that a combination of face washing plus topical tetracycline reduces the rate of severe active trachoma
- ☐ There is no good evidence that face washing has any value in reducing the rate of severe active trachoma

Answer 1. Although the prevalence rates of active trachoma are similar in males and females, the later sequelae (trichiasis, entropion, corneal opacification) are more common in women than men

The later sequelae of active disease are more common in women than men [1,2]. The prevalence of active trachoma decreases with age [1,2]. Reported estimates of the global burden of active trachoma vary, but are in the range of 84–150 million [1,3,4].

References

1. Mabey D (2005) Trachoma. Clin Evid 14: 1–3.
2. West SK, Munoz B, Turner VM, Mmbaga BB, Taylor HR (1991) The epidemiology of trachoma in central Tanzania. Int J Epidemiol 20: 1088–1092.
3. World Health Organization (2004) Report of the Eighth Meeting of the WHO Alliance for the Global Elimination of Trachoma. Geneva: World Health Organization. Available: http://whqlibdoc.who.int/hq/2004/WHO_PBD_GET_04.2.pdf. Accessed 6 February 2006.
4. Mariotti SP (2004) New steps toward eliminating blinding trachoma. N Engl J Med 351: 2004–2007.

Answer 2. Trachoma is the most common cause of infectious blindness worldwide

The most common overall cause of blindness is cataract, but trachoma is the world's leading infectious cause of blindness [1,2].

References

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2. Thylefors B, Negrel AD, Pararajasegaram R, Dadzie KY (1995) Global data on blindness. Bull World Health Organ 73: 115–121.

Answer 3. US\$5.3 billion annually

The best estimate of the economic burden of trachoma, by Frick and colleagues, is that the global loss of productivity related to impaired vision and blindness from trachoma is US\$5.3 billion annually [1].

Reference

1. Frick KD, Hanson CL, Jacobson GA (2003) Global burden of trachoma and economics of the disease. Am J Trop Med Hyg 69 (Suppl 5): 1–10. Available: http://www.ajtmh.org/cgi/content/full/69/5_suppl_1/1. Accessed 6 February 2006.

Answer 4. Patients with trachomatous trichiasis

Patients with trachomatous trichiasis are at highest risk of blindness, so treating these patients is the first priority of the World Health Organization (WHO) strategy for managing trachoma (the “SAFE” strategy: surgery for trichiasis, antibiotics for active disease, facial cleanliness, environmental improvement) [1–3].

References

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2. Bailey R, Lietman T (2001) The SAFE strategy for the elimination of trachoma by 2020: Will it work? Bull World Health Organ 79: 233–236.
3. Kuper H, Solomon AW, Buchan J, Zondervan M, Foster A, et al. (2003) A critical review of the SAFE strategy for the prevention of blinding trachoma. Lancet Infect Dis 3: 372–381.

Answer 5. In high-prevalence areas, diagnosis of active trachoma by clinical examination has only a 70% correlation with evidence of ocular *Chlamydia trachomatis* infection using polymerase chain reaction, and the correlation is 10% in low-prevalence areas

In high-prevalence areas, clinical examination has only a 70% correlation with evidence of ocular *C. trachomatis* infection using polymerase chain reaction, and the correlation is 10% in low-prevalence areas [1–3]. Nevertheless, Heathcote Wright and colleagues have argued that clinical examination is “an essential tool in the effort to identify populations with trachoma and to monitor the progress of intervention programs” [4]. There is evidence that clinical examination, in the form of the simplified WHO grading system, can be easily learned by local health workers and has generally shown a high level of reproducibility [5].

References

1. Bird M, Dawson CR, Schachter JS, Miao Y, Shama A, et al. (2003) Does the diagnosis of trachoma adequately identify ocular chlamydial infection in trachoma-endemic areas? J Infect Dis 187: 1669–1673.
2. Thein J, Zhao P, Liu H, Xu J, Jha H, et al. (2002) Does clinical diagnosis indicate ocular chlamydial infection in areas with a low prevalence of trachoma? Ophthalmic Epidemiol 9: 263–269.
3. Miller K, Schmidt G, Melese M, Alemayehu W, Yi E, et al. (2004) How reliable is the clinical exam in detecting ocular chlamydial infection? Ophthalmic Epidemiol 11: 255–262.
4. Wright HR, Keefe JE, Taylor HR (2006) Trachoma and the need for a coordinated community-wide response: A case-based study. PLoS Med 3: e41. DOI: 10.1371/journal.pmed.0030041
5. Taylor HR (1987) Trachoma grading: A new grading scheme. Rev Int Trach Pathol Ocul Trop Subtrop Sante Publique 71: 175–181.

Answer 6. With the bilamellar tarsal rotation procedure, the recurrence rate at two years is lower than the recurrence rate after cryoablation or electrolysis

In a randomized controlled trial (RCT), Reacher and colleagues randomized patients to three procedures—bilamellar tarsal rotation procedure, cryoablation, or electrolysis—and followed up with them once or twice, approximately nine and 21 months after surgery [1]. The researchers defined operative success as no evidence of trichiasis and complete lid closure. Bilamellar tarsal rotation was the most effective operation and was successful in 80% of cases of minor trichiasis, compared with success rates of 29% for electrolysis and 18% for cryoablation.

In many countries, nurses and ophthalmic assistants have been trained to perform bilamellar tarsal rotation [2].

A major obstacle to preventing blindness from trachoma is the low rate of uptake of surgery by communities with trachomatous trichiasis [1]. In Tanzania, for example, less than 20% of women with trichiasis opted for surgery, even

when it was offered for free [2]. Barriers to uptake include child-care duties, travel distance to surgery, and lack of awareness about the treatment [1]. A cluster-randomized controlled trial of village-based surgery versus health center-based surgery found a significantly higher uptake rate with the village-based service [3].

References

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2. Oliva MS, Munoz B, Lynch M, Mkocha H, West SK (1997) Evaluation of barriers to surgical compliance in the treatment of trichiasis. *Int Ophthalmol* 21: 235–241.
3. Bowman RJ, Soma OS, Alexander N, Milligan P, Rowley J, et al. (2000) Should trichiasis surgery be offered in the village? A community randomised trial of village vs. health centre-based surgery. *Trop Med Int Health* 5: 528–533.

Answer 7. RCTs of antibiotics versus placebo have had conflicting results and are difficult to pool

A systematic review of RCTs of antibiotics versus placebo found that the trials had conflicting results, and were heterogeneous and difficult to pool [1]. The reviewers concluded that there was “evidence that antibiotics reduce active trachoma but results are not consistent and cannot be pooled.” The review found that “oral treatment is neither more nor less effective than topical treatment.”

Reference

1. Mabey D, Fraser-Hurt N (2003) Antibiotics for trachoma. *Cochrane Database Syst Rev* 2003: CD001860.

Answer 8. Although the WHO recommends two specific antibiotic regimes, the optimal antibiotic regimes have not yet been established

A critical review of the clinical evidence supporting the SAFE strategy found that the optimal antibiotic regimens have not yet been established [1]. The reviewers found variation in the strength of evidence for the four components, and not all four have been proven in multiple RCTs. The WHO vision is to eliminate trachoma by the year 2020 [2].

References

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Answer 9. There is only preliminary evidence from a small pilot study that fly control reduces the incidence of active trachoma

One pilot study for an RCT compared spraying of deltamethrin for three months with no intervention in two pairs of villages (one pair received deltamethrin or no intervention in the wet season, and one pair received deltamethrin or no intervention in the dry season). Spraying of deltamethrin significantly reduced the number of new cases of active trachoma after three months (odds ratio, 0.25; 95% confidence interval, 0.09–0.64) [1].

Reference

1. Emerson PM, Lindsay SW, Walraven GE, Faal H, Bogh C, et al. (1999) Effect of fly control on trachoma and diarrhoea. *Lancet*. 353: 1401–1403.

Answer 10. There is good evidence that a combination of face washing plus topical tetracycline reduces the rate of severe active trachoma

A systematic review [1] identified two relevant RCTs on face washing for preventing active trachoma. The two RCTs found that face washing plus topical tetracycline was better than control (topical tetracycline in the first RCT, and no intervention in the second RCT) at reducing the rate of active trachoma at one year (first RCT) or at three months (second RCT). In the second RCT, there was no significant difference between face washing alone and no intervention in the proportion of children with active trachoma at three months.

References

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