

## **Mass treatment with single-dose azithromycin for trachoma.**

**Solomon AW, Holland MJ, Alexander ND, Massae PA, Aguirre A, Natividad-Sancho A, Molina S, Safari S, Shao JF, Courtright P, Peeling RW, West SK, Bailey RL, Foster A, Mabey DC.**

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**BACKGROUND:** Trachoma, caused by repeated ocular infection with *Chlamydia trachomatis*, is an important cause of blindness. Current recommended dosing intervals for mass azithromycin treatment for trachoma are based on a mathematical model. **METHODS:** We collected conjunctival swabs for quantitative polymerase-chain-reaction assay of *C. trachomatis* before and 2, 6, 12, 18, and 24 months after mass treatment with azithromycin in a Tanzanian community in which trachoma was endemic. For ethical reasons, at 6, 12, and 18 months, we gave tetracycline eye ointment to residents who had clinically active trachoma. **RESULTS:** At baseline, 956 of 978 residents (97.8 percent) received either one oral dose of azithromycin or (if azithromycin was contraindicated) a course of tetracycline eye ointment. The prevalence of infection fell from 9.5 percent before mass treatment to 2.1 percent at 2 months and 0.1 percent at 24 months. The quantitative burden of ocular *C. trachomatis* infection in the community was 13.9 percent of the pretreatment level at 2 months and 0.8 percent at 24 months. At each time point after baseline, over 90 percent of the total community burden of *C. trachomatis* infection was found among subjects who had been positive the previous time they were tested. **CONCLUSIONS:** The prevalence and intensity of infection fell dramatically and remained low for two years after treatment. One round of very-high-coverage mass treatment with azithromycin, perhaps aided by subsequent periodic use of tetracycline eye ointment for persons with active disease, can interrupt the transmission of ocular *C. trachomatis* infection.

Synopsis prepared by Dr. Anthony Solomon:

The World Health Organization now recommends annual mass antibiotic treatment in any area in which the prevalence of TF in 1-9 year-old children is 10% or greater. The paper "Mass treatment with single-dose azithromycin for trachoma" evaluates the impact of one very high coverage round of mass azithromycin treatment in a meso-endemic community in Rombo District, Tanzania.

In the study, the principal outcome measures are the prevalence and intensity of ocular *Chlamydia trachomatis* infection, as measured by quantitative PCR: a very

sensitive and specific laboratory technique that can determine not just whether or not chlamydial infection is present, but how much *Chlamydia* is present in a standard swab taken from the eye.

At baseline, there were 978 residents in Kahe Mpya, the sub-village involved in the study. 956 were examined, and 195 of them (20.4%) had active trachoma (TF and/or TI in either eye); the prevalence of TF in 1-9 year-old children was 36.0%. The prevalence of ocular *C. trachomatis* infection (all ages) was 9.5%. Treatment immediately followed swabbing. Of the 978 residents, 916 (93.7%) received azithromycin, and another 39 (4.0%) received two tubes of tetracycline eye ointment for self-application at home. In total, therefore, 955 people (97.6% of residents) were treated.

No further azithromycin was given over two years of post-treatment follow-up. At 6, 12 and 18 months after treatment, however, people who had clinical evidence of active disease were given tetracycline eye ointment. This was done to satisfy the requirements of our ethics committees.

Prevalence of infection fell from 9.5% before treatment to 2.1% at two months after treatment, 1.5% at 6 months, 0.9% at 12 months, 0.6% at 18 months, and 0.1% at 24 months. A measure of the average intensity of infection, called the "Community ocular *C. trachomatis* load" (COCTL), fell from 0.423 before treatment to 0.059 at 2 months (13.9% of its baseline value), then continued to fall, reaching 0.003 (0.8% of baseline) at 24 months. There were few new infections after treatment: at each time point after baseline, over 90% of the total community burden of ocular *C. trachomatis* was found among subjects who had been positive the previous time they were swabbed. Population turnover over the course of the two year study totalled nearly 20%, but only 2 of 195 new residents brought *C. trachomatis* infection with them, and they did not appear to infect their household contacts. In the paper, analyses are presented which suggest that post-mass-treatment use of tetracycline eye ointment did not itself have much impact on the community's burden of infection; however, a possible effect of this intervention can not be ruled out.

The results suggest that a single round of mass azithromycin treatment was successful in interrupting transmission of ocular *C. trachomatis* infection in this sub-village. The most likely explanation for this effect is the extremely high antibiotic coverage that was achieved. Though this finding is extremely encouraging, ensuring that over 95% of residents take offered antibiotic is much more difficult at district- or national-level. Operational research is required to further investigate the reasons for incomplete acceptance of offered antibiotic in trachoma control programmes.