

Dear trachoma colleagues,

The trachoma article selected this time uses GPS and clustering analyses to understand chlamydial re-infection following treatment. Aimee Broman, from Johns Hopkins University, has kindly provided a synopsis of the work she and colleagues have carried out. Happy reading.

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Spatial clustering of ocular chlamydial infection over time following treatment, among households in a village in Tanzania.

[Broman AT](#), [Shum K](#), [Munoz B](#), [Duncan DD](#), [West SK](#).
[Invest Ophthalmol Vis Sci](#). 2006 Jan;47(1):99-104.

Abstract

PURPOSE: To observe the spatial distribution of households with high loads of ocular chlamydia infection in children, before and after mass treatment with azithromycin to determine whether there exists spatial clustering of households with high loads of infection and the spatial scale of the clustering. **METHODS:** All residents of a village in Tanzania were invited to participate in the study. A global positioning system unit recorded the location of each house. Mass treatment with azithromycin was offered, with participation above 80%. Active trachoma and swab samples of the conjunctiva were assessed at baseline and at 2, 6, 12, and 18 months after treatment. A k-function analysis was performed to detect clustering of households with high loads of ocular chlamydia in children younger than 8 years. **RESULTS:** A total of 1055 villagers were examined during the study; of these, 374 (35.4%) were children younger than 8 years. The total number of households was 215, with 182 (84.6%) households having at least one child. K-function analysis showed clustering of households with high loads of ocular chlamydia at distances up to 2 kilometers (km) at baseline; at 6 months, slight clustering existed within 0.5 km. At 12 and 18 months, high load households clustered at distances up to 1.3 km. **CONCLUSIONS:** This analysis suggests that infection spreads between households with children or that nearby households share the same risk factors for infection. Mass treatment has value in lowering infection prevalence within the community, and clustering of households with infection takes up to 1 year to reemerge at the same level as baseline. Re-treatment at yearly intervals may interrupt spread of infection.

Synopsis of the study and implications of the findings:

1) Children with high loads of *C.trachomatis* infection are likely transmitting this infection to children of nearby households.

In endemic conditions, households with high levels of infection in children clustered together at distances less than 2 km. Our analysis showed that households with high levels of infection were more densely situated than households with low or no levels of infection in children. The clustering of households with high infection loads suggests transmission of infection between children of different households, but we cannot rule out that households close together may share the same risk factors for infection.

2) Re-infection after treatment will radiate out from households with infection, but it takes at least six months.

Prevalence of infection in children dropped following mass treatment, but while prevalence remained low, clustering of high infection households reappeared after 6 months, at distances less than 0.5 km, and at 12 months clustering occurred at distances less than 1.3 km. This increasing cluster size of high infection households suggests that residual infection in children is passed to nearby households and stresses the importance of mass treatment to protect all households in endemic communities.