

# Costs of surveys and mass drug administration (MDA) for active trachoma in high and low endemic districts in Kenya



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Competing interest: None

# Introduction



- A trachoma prevalence survey is mandatory prior to MDA.
- The starting threshold for MDA is  $\geq 10\%$  prevalence of active trachoma (TF) in children 1-9 years old and stopping  $< 5\%$ .
- Prevalence 10%-30% treat annually x 3 years then conduct impact assessment trachoma prevalence survey to justify continuation.
- If prevalence  $> 30\%$  treat annually x 5 years, then assess.
- Recommended intervention unit for trachoma = administrative district of approximately 100,000 people each (trachoma district).

# Introduction



- Kenya modified survey methods because of large variation in the population sizes of administrative districts: 100,000 to 1,000,000 people. Trachoma is found in arid areas/nomadic communities.
- In the large districts (>200,000 people) clusters for a survey by administrative district are widely spaced.
- In the initial survey some endemic communities were missed and some non-endemic ones included in MDA.
- The aim was to compare the costs of surveys and MDA in low and high trachoma- endemic districts by the standard and a new survey methods.

# Methods



- New method: divide the large district into geographical areas with 100,000-200,000 people each and similar risk of trachoma.
- Survey each of the areas (segments) separately.
- Baseline survey to justify MDA in Turkana district: 533,837 people, 77,000 KM<sup>2</sup>, borders Uganda, Southern Sudan and Ethiopia.
- Impact assessment survey to justify continuation of MDA in Narok district: 576,388 people, 17,128 KM<sup>2</sup>, borders Tanzania.
- The incremental costs of trachoma surveys and MDA in Kenya were extracted from project financial reports.

# Results



Districts	Survey segments	Prevalence of TF	MDA requirement	
			Standard survey method	New survey method
TURKANA	Western Turkana	67.6	N/A*	<b>5 years</b>
	Northern Turkana	46.4	N/A	<b>5 years</b>
	Southern Turkana	31.2	N/A	<b>5 years</b>
	Central Turkana	20.5	N/A	3 years
	Kakuma refugee camp	14.0	N/A	3 years
	<b>Entire district</b>	<b>38.0</b>	<b>5 years</b>	<b>N/A</b>
NAROK	South Western	26.7	N/A	3 years
	South Eastern	21.6	N/A	3 years
	Central	4.3	N/A	<b>Not needed</b>
	North Eastern	2.1	N/A	<b>Not needed</b>
	North Western	0.4	N/A	<b>Not needed</b>
	<b>Entire district</b>	<b>11.0</b>	<b>3 years</b>	<b>N/A</b>

\*N/A = not applicable

# Costs



- A survey by standard method = **US\$27,160** (20 clusters) and a survey by new method = **US\$32,592** (100 clusters).
- Distribution cost for a single treatment in Narok was **US\$0.26**.
- Assume 100,000 people per segment @ US\$0.26 x 3 segments (excluded in Narok) x 3 years project cycle = **US\$78,000**.
- A single dose of donated zithromax = **US\$20** in Kenya.
- Assume 100,000 people x 3 excluded segments @ US\$20 x 3 years = **US\$18,000,000**.

# Conclusions



## **NAROK (District with low prevalence and clustered disease)**

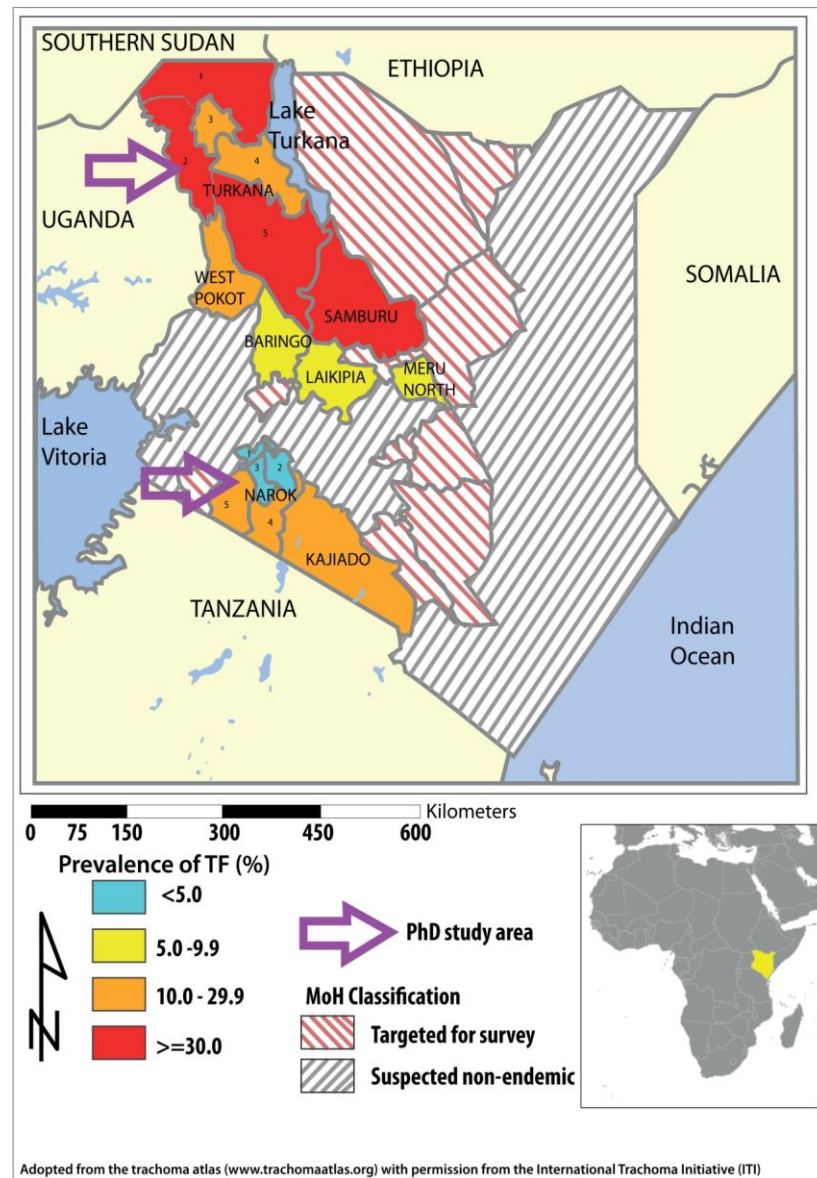
- Survey by segments reduces costs by exclusion of non-endemic segments from MDA.

## **TURKANA (highly trachoma-endemic district)**

- In the short term (3 years) the new survey method had no benefit over the standard survey (same decision for MDA).
- In the long term (>3 years) the segments with prevalence <30% may be excluded from MDA after an impact assessment.

# Information

Trachoma maps are available at:  
[www.trachomaatlas.org](http://www.trachomaatlas.org)





What is the appropriate age of participants for a survey to estimate the prevalence of trachomatous trichiasis (TT)?



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Competing interest: None

# Introduction



- TT prevalence increases with advancing age.
- The age limit of people  $\geq 15$  years is recommended for TT surveys and sample sizes are large because TT prevalence in people  $\geq 15$  years is usually low. Researchers often trade off small sample sizes for reduced precision in prevalence estimation.
- The purpose of a TT survey is to determine the backlog of TT for planning surgical services, not to case find. TT coverage is low; why spend a lot of resources trying to establish the total backlog?
- TT is found in people  $>40$  years old in places where active trachoma has been eliminated. Example: Sichuan province, China

# Introduction



- RAABs (age limit  $\geq 15$  years) are increasingly being employed for assessing need and measuring the impact of interventions for control of blindness.
- If TT surveys are conducted in the same districts after RAABs it would result in “wasted surveys”.
- The aim of this study was to determine the appropriate age of participants for subsequent TT surveys.
- There is need to ensure that TT (adults) and TF (children) surveys are completed within the same period of time.

# Methods



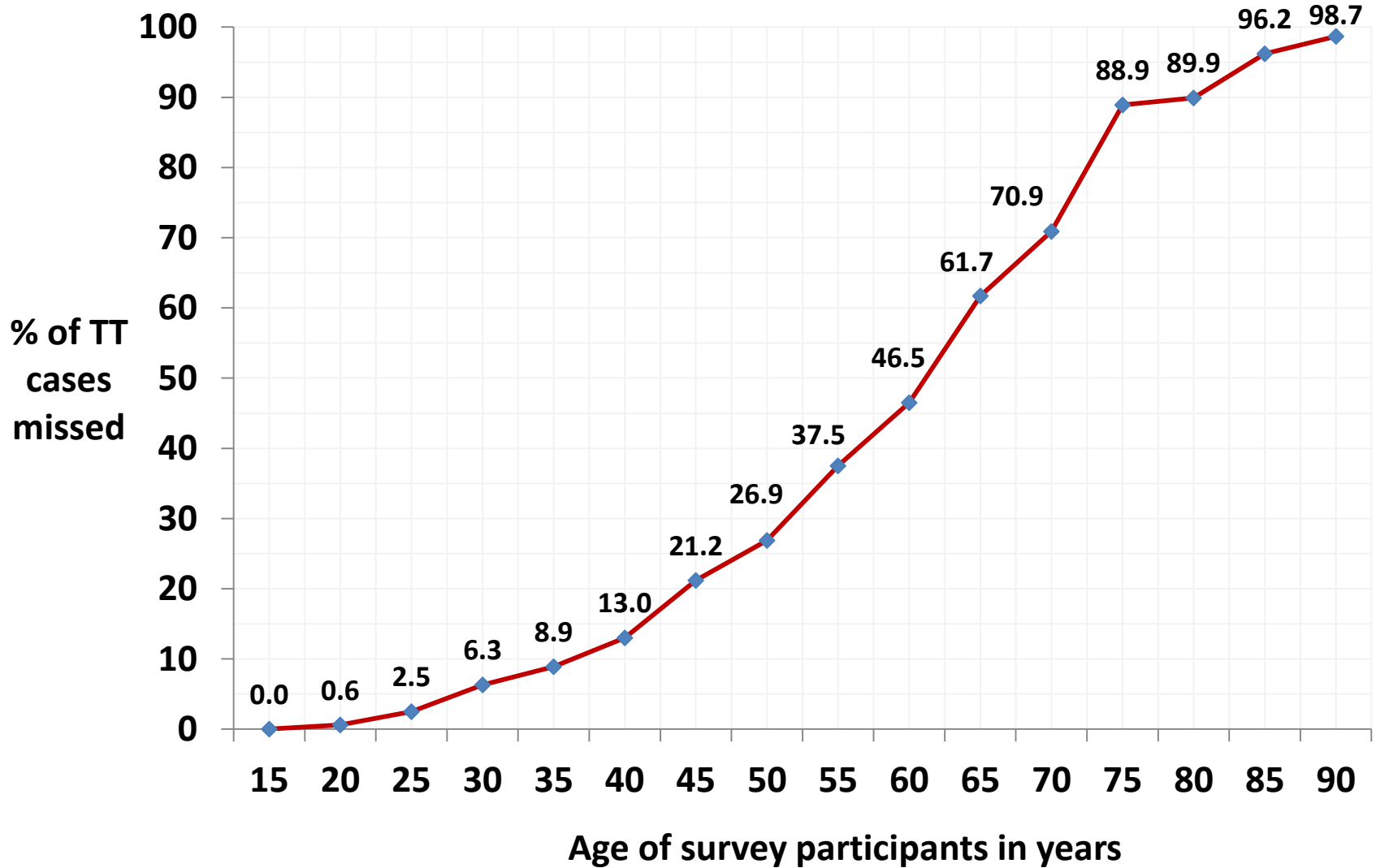
- Data for previously-conducted surveys where the age limit of  $\geq 15$  years was used were re-analysed.
- The surveys were conducted in six administrative districts in Kenya in 2004 and 2007 and the sample size was achieved in all the surveys.
- A total of 7,944 subjects aged  $\geq 15$  years old were examined and 316 (4.0% ) had TT.

# Results



Age limit (years)	TT cases and (percentages) diagnosed in the six surveys						TOTAL
	Samburu	West Pokot	Baringo	Kajiado	Meru North	Laikipia	
≥50	63(76.8)	62(78.5)	60(72.3)	24(52.2)	9(81.8)	13(86.7)	<b>231(73.1)</b>
≥40	73(89.0)	72(91.1)	74(89.2)	32(69.6)	10(90.9)	14(93.3)	<b>275(87.0)</b>
≥30	80(97.6)	74(93.7)	80(96.4)	37(84.4)	10(90.9)	15(100)	<b>296(93.7)</b>
≥20	82(100)	79(100)	82(98.8)	45(97.8)	11(100)	15(100)	<b>314(99.4)</b>
≥15	82(100)	79(100)	83(100)	46(100)	11(100)	15(100)	<b>316(100)</b>
<b>TOTAL</b>	<b>82(100)</b>	<b>79(100)</b>	<b>83(100)</b>	<b>46(100)</b>	<b>11(100)</b>	<b>15(100)</b>	<b>316(100)</b>

# % of TT cases missed



# Results continued



- The age  $\geq 40$  years was selected for subsequent TT prevalence surveys.
- Prevalence of TT in people  $\geq 40$  years was 10% and thus a smaller sample size was needed than for age  $\geq 15$  years.
- Backlog of TT in Turkana district was 5,932 people  $\geq 40$  years old. The district was conducting about 100 TT surgeries per year.
- Narok district the backlog was 2,084 people  $\geq 40$  years old. The district was conducting about 200 TT surgeries per year.

# Conclusions



- The age of  $\geq 40$  years is the most appropriate age for TT surveys.
- A third of the backlog would have been missed if age limit of  $\geq 50$  years was adopted.
- Consider age limit  $\geq 40$  years when conducting RAABs in trachoma endemic districts.
- See WOC electronic poster PO-EPI-17 for prevalence and backlog of TT correction factors



# Limitations



- The findings could not be generalized because all the surveys were conducted in one country.
- The population age structure and the natural history of TT may vary in different communities.
- Further studies are required to indentify the most appropriate age range of individuals to be included in a TT survey.

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