

CHAPITRE 21

Which are the best surveillance methods for directing the fight against trachoma? What are the intervention and recovery (or elimination) thresholds?

[*Quelles sont les méthodes de surveillance les plus adéquates pour guider la lutte contre le trachome ? Quels sont les seuils d'intervention et les seuils de guérison (ou d'élimination) ?*]

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There are two issues here. What indicator(s) should be used, and how should sampling be performed.

Efficacy indicators and Process indicators

There are no perfect indicators. Several groups have proposed standard indicators, often differing only in trivial details (e. g. 1-10 year olds or 1-9 year olds). There is some advantage to using the same indicators that other programs use, so results can be compared. Rather than developing a totally new set of indicators that differs only in minor details from existing proposals, it would be preferable to choose a subset of existing indicators that are most valuable to programs in West Africa.

The WHO has recommended several efficacy and process indicators for surveillance of a trachoma program's activities. Their definitions are still changing, particularly for the process indicators. Examples include.

Efficacy indicators from population-based surveys

Clinical activity (WHO Simplified Grading, either TF or TI counting as clinically active) in children aged 1-9 years (after the 1st birthday and before the 10th birthday). These children are by far the most likely to display evidence of infection. Children under 9 months often do not display the characteristic signs of infection (follicles) even if they are infected, so children < 1 year are not included. Expressed as clinically active children/total children of this age group.

Trichiasis. Uncorrected (unoperated or recurrent) trichiasis in adults (men and women) 40 years and older. Expressed as a fraction of discovered trichiasis cases over population in this age group.

Scarring (TS) would be a useful intermediate indicator, but inexperienced graders find it the most difficult to grade consistently (Taylor *et al.*, 1987). Corneal blindness (CO) is in a sense the most important outcome, as it is the direct cause of blindness, but it frequently has other causes : there is a low level of corneal opacity in communities without trachoma.

Process indicators. Processes are more difficult to assess, the WHO definitions are still changing, as are changing the definitions of the various NGOs involved in trachoma control. These measures may be country specific.

Surgery

- Total number of surgeries performed during the previous year,
- Trichiasis surgical coverage : number of TT operated divided by the number of TT operated + number of patients requiring surgery,
- Recurrence rate as a proxy indicator for quality of surgery.

Antibiotics

- Total number of patients treated with antibiotics during the previous year,
- Antibiotic coverage : number treated/eligible and targeted for treatment.

Facial cleanliness

- Percent of children aged 1 to 9 years with clean faces.

Environmental

- Access to water : Percentage of population with access to water within 30 minutes travel time (or 1 kilometer),
- Fly breeding sites : percentage of households using latrines

National programs and individual organizations will develop their own subsets of indicators in order to fit their specific needs, particularly in terms of program's management.

How should communities and individuals be sampled?

The essence of determining prevalence is predicated on either examining all individuals (usually not realistic or necessary), or examining an unbiased, random sample of individuals in the population of interest. There are a number of sampling strategies, and the optimal strategy depends on the goals and resources of the program. Examples include:

1) examine all individuals during a "trachoma day", perhaps the same day that antibiotics are administered ;
2) examine all individuals in a random sample of villages ;
3) examine all individuals in a random sample of households ;
4) examine children 1-9 and adults >40 years in a random sample of villages or households.

Comment on the WHO Trachoma Rapid Assessment protocol.

The WHOs Trachoma Rapid Assessment system (examine 50 children from poorest households, ask locals if there are any trichiasis cases, assess latrines and flies, etc.) may be useful for identifying trachoma-endemic areas, but it should be stressed that this methodology was not designed as a prevalence survey or for monitoring a program once it has started.

Intervention : Where should a trachoma program be started?

It is necessary to estimate the prevalence of ocular chlamydial infection. Clinical activity in children appears to be a reasonable estimate of this in untreated communities, as mentioned above. The WHO has proposed the following guidelines for intervention:

Clinical activity in children	Recommended strategy
>20%	Mass treatment of all members of community
5-20%	Targeted treatment of high risk group: 1) all children, 2) active children and their household, etc.
<5%	Managed under routine eye care program

It should be noted that these guidelines are based on expert opinion more than data. From studies, we have learned the following:

- While areas with >20 % clinical activity in children generally have correspondingly high ocular chlamydial infection by lab testing, areas with <5-10% clinical activity in children may have no ocular chlamydia by lab testing (Baral et al., 1999) ;
- Mass treatment becomes less expensive than targeted treatment at higher levels of clinical activity (>20 or 25 %) (Holm et al., 2001) ;
- In meso-endemic areas (5-20 %), treatment of all children or active children and their household appear to be equally effective (Holm et al., 2001).

Elimination as a public health care concern: when can we stop a trachoma program? This is a difficult question. In particular, it depends on two things that we do not know:

- Is there a magical threshold, from below which infection can never return to its original level? This is unknown, may be wishful thinking, that infection may return to previous level if nothing else is done (Gaynor et al., 2002).
- Do hygiene and environmental programs have enough of an effect that infection will not return to previous levels even if antibiotics are stopped? This is not known too (Emerson et al., 2000). A well-designed controlled trial suggested that at 1 year hygiene could affect the severity of cases (less TI), but not the prevalence of clinical activity (TF and TI)(West et al., 1995). A small pilot study suggests that active trachoma was reduced more in two villages with an intensive (and perhaps unsustainable) fly control program than in two nearby villages without fly control (Emerson et al., 1999). A larger, well-designed fly control study involving multiple villages is now taking place in the Gambia to try and address this important issue (Emerson et al., 2002).

Pending further studies, the WHO has recommended the following definitions of elimination:

Elimination of active trachoma as a public health care concern	<5% clinical activity in children
Elimination of blinding trachoma (incident cases)	0% prevalence of trichiasis (recently changed to 0. 1%)

It should be recognized that guidelines of elimination often change during the course of a program (e. g. leprosy's definition has changed several times). Also, it should be noted that these guidelines are, as above, more from expert opinion than from data. Studies include:

– Antibiotic treatment is more effective in reducing infection (by lab testing) than in reducing clinical activity (by examination). For example, mass treatment with azithromycin may reduce infection in children from approximately 50% to <10 %, but clinical activity from approximately 50% to only 20-30 % (Schachter et al., 1999).

– After multiple treatments, there may be, for example, 5 % clinical activity, but no detectable infection. It should be noted that it is possible that a small amount of chlamydia is present but undetectable by even the most sensitive lab techniques.

– Ideally, as with sexually transmitted chlamydial infections, laboratory testing (PCR) would be performed to document elimination of infection. This could be made more affordable by sampling communities, sampling individuals within communities, and pooling several samples within the same laboratory test (Peeling et al., 1998; Diamont et al., 2001). Realistically, programs will rely on clinical examinations, but they should interpret their results according to what this implies about actual infection.

– Remember, although elimination and eradication are synonymous in English. They can have different meanings in disease control (Dowdle, 1998). For example, elimination of leprosy as a public health concern is defined as a prevalence of <1 :10000, and elimination of tuberculosis as a public health concern is defined as an incidence of <1 :100000/year.

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