TRACHOMA SAFE STRATEGY SERIES:
Surgery

Organizing Trichiasis Surgical Outreach

A preferred practice for program managers

ICTC International Coalition for Trachoma Control

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This second edition took into consideration several practical changes to the organization of trichiasis surgical outreaches, based on 9 years of implementation of this preferred practice technical resource. It captures new learnings to help improve the planning of surgical outreaches, for future continued use within trachoma programs and training workshops.

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Views represented are the preferred practices of the coalition and not necessarily the official views of individual member organizations or agencies.

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Front cover: *A woman is examined by a member of a surgical team in Oromia, Ethiopia. Photo: Antonio Fiorente/The Fred Hollows Foundation*

Foreword

Countries, partners, and donors are committed to the global elimination of trachoma as a public health problem by 2030. Achieving this public health milestone requires more than funding; it requires health personnel with the right mix of skills, and well supported and managed health systems.

A key component of elimination is to reduce the number of unmanaged trachomatous trichiasis (TT) cases to less than 2 per 1,000 adults aged 15 years and above in affected areas. This will require not only data on the number of surgeries performed, but also evidence of Documented Full Geographic Coverage (DFGC) through house-to-house case finding in all communities in the EU to identify suspect TT cases, and outreaches for management of confirmed TT cases.

It will also require improvements in the quality of surgery, in the efficiency of surgery provision programs and special efforts to reach out to women and the most marginalized populations, who are disproportionally affected by TT.

Current estimates suggest that about 1.5 million individuals may need TT management. Where the prevalence of TT is above the WHO threshold for elimination (prevalence of TT in adults unknown to the health system is ≥0.2%), surgery offered only at static centers, will not significantly reduce the backlog, or ensure that DFGC of the population is achieved. Surgical outreach campaigns are required to reduce the number of people with trichiasis and ensure that DFGC is achieved.

This document is not prescriptive. Context varies by country and in large countries there are likely to be differences noted across regions that influence how trichiasis outreach is planned, implemented, and reported. Thus, we hope you will adapt these tools to your environment.

It is essential that those who use this preferred practice also have access to other trichiasis management material (**Box 1**). We refer to different manuals whenever appropriate, rather than repeating information. Finally, it is important to recognize that approaches for TT outreach are not rigid and that new innovations may be found to address the challenges in delivering trichiasis surgery.

The goal of this preferred practice manual is to provide a framework for how to conduct an effective and efficient DFGC for trichiasis case-finding and surgical outreach. It addresses all aspects of conducting an outreach, from mobilizing patients to planning and organizing case finding and outreach, surgical counseling, post-operative care, and recording and reporting program outputs.

BOX 1

Reference material manuals

- **Trichiasis case finding training manual**
- **WHO trichiasis surgery for trachoma** (yellow manual)
- **Training trichiasis surgeons for trachoma elimination programs** (includes use of HEAD START)
- **Supervision guidelines for trichiasis surgery** (including surgeon audit)
- **Women and trachoma manual**

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An Ethiopian woman following an examination by a local health worker at a clinic in Ressa kebele, Amhara. The arrow above her eye indicates which eye needs to be operated on. Photo: The Carter Center/K. Callahan

SECTION ONE

Organizational activities before the outreach

Adequate planning in advance of the outreach campaign is essential for success. There are several factors to consider, highlighted in the sections below.

How to decide where/if outreach needs to take place in a 'district'

This preferred practice is intended to provide guidance in situations where TT remains a public health problem.

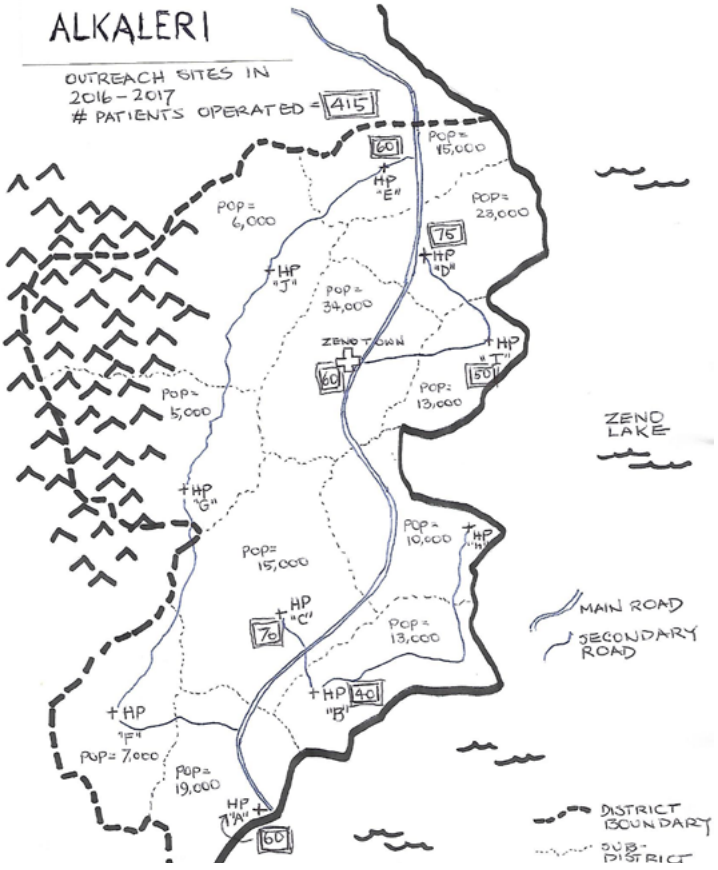
Evidence indicates that case-finders should visit all communities and households to identify suspect trichiasis cases and to refer them to outreach for confirmation by trichiasis surgeons and management. As long as TT remains a public health problem, outreach will be needed.

Planning should be undertaken by dividing the district into sub-units, each including one site where outreach can be done. It is essential to have a map of the area to be served, showing roads and communities and facilities where surgery can be done. **Box 2** provides an example. Generally, one should assume that patients will not walk more than 1-2 hours to access an outreach; some patients with disabilities will need support to attend the outreach.

BOX 2

Example map

Use the map showing the previous year's work to plan for the next year to reach unserved areas.



BOX 3

Trichiasis case finders

Example of determining how many trichiasis case finders are needed (general rule is one case finder can cover a population of 1,500 to 2,000)

Community name	Estimated population	Case finders needed	Other considerations
Amona	1,200	1	
Bibin	6,800	4	Compact community
Carra	550	1	
Denbo	2,300	2	Part of community on other side of river; need 2nd case finder
Emong	3,100	2	
Fello	1,300	2	Community very spread out

Once outreach subunits have been identified, a list of the communities (including the estimated population of each) to be reached by case finding is created. From this list the number of community-based case finders to be selected and trained (**Box 3**) can be determined.

The focus of their work is to examine all adults (age 15+ years) and identify all suspected TT cases in every household in their catchment area/community. Depending on the number of suspected cases they identify, outreach is organized.

Liaising with local health, political, and religious authorities

Once sites have been selected for outreach, local health authorities should be contacted to ensure their cooperation and participation. Political/administrative authorities may also need to be contacted. Be prepared to explain the purpose of case finding and outreach, the number of days each will take and exactly what you will want in terms of participation from the authorities—they will help identify case finders for training and support their work, as needed.

One of the key steps in planning a successful campaign is having good case finding—this enables the team to know how many suspected cases to expect at the outreach.

Estimating the number of patients expected for an outreach

Estimating the number of patients expected for an outreach is done after case finding has been undertaken. This means that all case finders must be contacted prior to their upcoming outreach to find out how many suspected TT cases they have listed.

The estimate of suspected TT patients expected for an outreach should be used to determine the following:

- The number of outreach teams and the composition of the outreach team
- The number of consumables and number of instrument sets to prepare
- The number of days to be spent on outreach
- Whether there are patients who will need assistance to reach the outreach

Requirements for equipment, instruments, and consumables

Requirements for equipment, instruments, and consumables will depend partly on the staff included in the team and the number of surgeons. Every outreach will require the following:

- Equipment for sterilizing instruments (described in **section 8.2** in ***WHO Trichiasis Surgery for Trachoma***)
- Working torch and spare batteries: at least one per examiner and two spares per team
- Water and soap for washing hands and instruments (if not available at the site)
- Operating instruments sets, described in **section 7.2** in ***WHO Trichiasis Surgery for Trachoma***. Having 3 or more sets per surgeon can eliminate time spent waiting for sterilization between patients. It is best to have all instrument sets sterile before you go to the site.
- Sufficient supplies of consumables (sutures, blades, etc., described in **section 7.2** in ***WHO Trichiasis Surgery for Trachoma***).
- Drums of sterile towels, drapes, gowns and masks, and gauze bandages. These are usually packed and sterilized before going out to the site. Long handled forceps are very good for handling them.
- Logbooks and forms (or mobile devices) for recording operations & other management, and referral forms (**see annex**) for patients who need them.
- Antibiotics to provide patients after surgery and high-quality epilation forceps for those who are not appropriate for surgery or those who refuse surgery.

Requirements for the venue

The most basic requirement is a clean room with good light, large enough to accommodate one or more operating tables, an operating trolley, and an instrument table, allowing space for patients and staff to move around without bumping into equipment or each other. The room should be secured in advance to avoid conflicts with other activities at the site. This is discussed in more detail in **section 7.1** in ***WHO Trichiasis Surgery for Trachoma***.

KCCO's Fortunate Shija meets with a Masai microfinance leader/trainer following a mobilization of Masai women for trichiasis outreach undertaken in Ngorongoro District, Tanzania. Photo: Ellen Crystal/Seva Canada

Staffing requirements

Determining the staffing needs requires considering the different tasks that must be undertaken during an outreach. The basic tasks include:

- Registration
- Examination and selection of patients
- Counseling
- Surgery
- Escorting patients in and out of the surgery room
- Sterilization
- Data recording
- Cleaning of the room after outreach

One person can take on more than one task as some of these tasks are of short duration. For example, the person doing sterilization may also help in the surgery room or the counselor may help escort patients on and off the table. Some tasks can be done by someone at the outreach site. The key is to make sure that everyone knows who is responsible for which task. As some personnel need to be released from duties at their facility, planning and communication with supervisors is critical.

Planning what to do with patients with other (non-trichiasis) eye problems

Other visually impairing conditions, such as cataract, are likely to be more common than trichiasis.

Having a plan for dealing with such cases is essential. Having a plan, however, does not require offering cataract (or other) surgery at the outreach. Safe cataract surgery requires a far more sophisticated infrastructure than trichiasis surgery and trying to provide it in an inappropriate environment can have catastrophic results. The trichiasis outreach team must have detailed plans for what they will tell patients with cataract, including, at a minimum, where and when they can receive treatment and how much it will cost. This means coordinating ahead of time with an eye care service that offers cataract surgery.

An example of a referral form is provided in the annex, but it is not enough just to hand this to patients with cataract. The form needs to be made appropriate to the local situation and an organized system for referral must be set up before outreach takes place. The balance between providing only trichiasis services and services for other eye conditions requires careful consideration; it will depend to some extent on whether trichiasis surgeons are trained eye workers with experience in dealing with all eye conditions and should only be considered if proper infrastructure is available at the TT outreach site.

A surgeon prepares for TT surgery at an outreach in Niger. Photo: The Carter Center/Aryc W. Mosher

SECTION TWO

Mobilization and case finding activities before the outreach

It is well recognized that increasing the use of TT surgical services is key to reducing the burden of TT in a district.

There are no 'magic bullets' to mobilization; instead, national, and local programs need to use available evidence to plan mobilization activities and to think strategically and critically. Creating awareness is the first step; activities may need to evolve with time, particularly when the prevalence of TT is low. Case finding is critical if programmes are to achieve the elimination of trachoma as a public health problem. Generating awareness and acceptance will be addressed first, followed by case finding.

Mobilization needs to be considered from the standpoint of a pyramid with the base being 'awareness', the next layer being 'access', and the third layer being 'acceptance'. Each of these needs to be addressed, starting from the bottom, and working up.

The steps needed to ensure that people with TT attend an outreach are many and require good organizational capacity of those implementing the programs.

BOX 4

Methods and/or sources for generating awareness

- Traditional rulers, opinion leaders and community-based organizations
- Community radios
- Village announcers
- Religious leaders
- Locally trusted individuals
- Microfinance leaders
- Posters at health units
- Trichiasis case finders

Generating awareness

To identify patients in need of TT management, the community must first be aware that TT is a problem. They must also understand that it can be treated (managed) and where (outreach site) to go for treatment. That said, awareness by the population is necessary but not sufficient for increasing the use of TT services.

Strategies to generate awareness need to be built around the local context in which people like to receive trusted information. Thus, what works in Nigeria may be different from what works in Ethiopia. Some methods that have been used to raise awareness successfully are listed in **Box 4**. Key principles include:

- **Identify the most effective means of communicating to the people with the greatest need.** Mass media (radio and TV) can reach large audiences but may not penetrate to the population 'at the end of the road', often those most in need of TT intervention.
- **Determine who is most trusted to provide information about TT.** The messenger is just as important as the message. We assume that health workers are good messengers; in fact, other people within the community may be more trusted.
- **Clearly define the messages that you want delivered.** It is impossible to get everyone to understand everything; what simple messages do you want everyone to know? These messages will usually be something along the lines of: [1] TT can be managed successfully and [2] [here] is where to find service.

- **During community-based case finding, more detailed messages to people with TT and their family members are provided.** There are often misunderstandings of TT surgery such as the need to avoid work for weeks. Messages for people with TT and their families need to provide accurate information and also correct misunderstandings that may exist in the community. Ideally, these messages should be provided to one family at a time, giving them the opportunity to ask questions and voice concerns.

Creating access to TT management

Bringing the surgical service close to the patient is critical to success; in virtually all settings this means providing an outreach service to a defined set of communities, linked to a specific outreach site, at which surgery will be provided. This preferred practice assumes that outreach will be organized accordingly. That said, just providing the outreach close to the community, by itself, is insufficient to ensure that people in need of TT management receive them.

During microplanning, the outreach coordinator (who is likely also to be responsible for organizing the training of case finders and mobilization efforts) should use a map and population figures to identify communities for engagement, to determine where outreach can be conducted, and how many case finders are needed. Generally, a 'hub and spoke' system works best in which the hub is the site where outreach surgery is to be carried out, and the spokes are the lines to communities where case finding of TT patients are to be done.

House-to-house case finding is strongly encouraged as it is the best way to ensure that every TT case in every household in every community has been identified and it enables health authorities to be confident that elimination of TT as a public health problem has been achieved. More details on the roles and responsibilities, the training, and the supervision of case finders are found in the ***Trichiasis Case Finding Preferred Practice Manual***.

It is important that case finders keep a list of suspected trichiasis cases. The list of suspected trichiasis patients at the community level serves multiple purposes. First, the number of patients on the list should be communicated to the coordinator for planning the outreach: determining the size of the team, quantity of consumables, and days needed in the field. Second, during outreach the team should compare the number expected to the number who turn up. If there are many suspected cases who fail to attend outreach (called "lost to outreach"), the programme will need to quickly decide how best to screen these individuals. Possible options for addressing lost to outreach are in **Box 5**.

BOX 5

TT cases Lost to Outreach

Evidence from several countries suggests that a sizeable number of people identified by case finders as suspected trichiasis cases do not attend the subsequent outreach. "Lost to outreach" (LTO) threatens the programme's ability to state that all trichiasis cases have been identified AND managed. Reasons for lost to outreach include:

- Disability or advanced age, restricting a suspected trichiasis case's ability to reach the outreach site.
- Long distance to the outreach site (particularly for remote communities).
- Long period between case finding and outreach. Ideally, the period between the two events should be less than 2 weeks.
- Ensure that the scheduling of outreaches does not interfere with community activities/ events like rites of passages, weddings, planting season, temporary migration, etc.
- Planning to have outreaches as close as possible to the patients' communities/dwellings.
- Locating outreach camps in "neutral grounds" especially in places where neighboring communities may be in social or political conflicts.
- Refusal, whether due to a desire not to have surgery, lack of family support, competing priorities, or trichiasis not perceived as a problem.

Addressing lost to outreach is best done before the outreach finishes when case finders are best able to identify the extent of the problem and the reasons. If LTO suspect TT cases are away from the community on other endeavours, they are duly documented.

In some cases, it may be necessary to send a surgeon to a community to confirm cases and offer transport to the outreach site however this is discouraged as it means the surgeon spends time on travel rather than operating at the outreach.

Case finders require training and benefit from:

- A few (laminated) **photos of TT** showing cases of varying severity, from a few eyelashes touching the eyeball to many eyelashes touching the eyeball
- A **torch** or other device to assist with TT identification
- **Pre-scripted messages** for counseling patients with TT
- **Chalk** if marking of houses is used to note completed examinations
- Use of **mobile phones** to communicate relevant information (such as the number of TT patients to expect) to the outreach coordinator.

Encouraging patients with TT to accept interventions

Effective counseling is critical to improve uptake of TT services; the first opportunity for one-on-one counseling is in the community by case finders. At the community level, counseling should focus on identifying, or validating, and then addressing the known barriers and misconceptions about TT surgery services in the area. Health workers who have experience with TT will often be aware of these; however, counseling should include prompts to identify potentially unknown barriers. An example of misconceptions is given in **Box 6**.

The decision to accept surgery is rarely made by the individual with trichiasis alone. For women in most trachoma-endemic countries, the decision to seek TT intervention usually rests with the husband; for this reason, counseling needs to be carried out with the family as well as with the patient. This is easiest to do if identification of suspected TT patients occurs in the community.

BOX 6

Misconceptions about TT surgery: an example from Ethiopia

In our area of Ethiopia almost all the trichiasis patients who participated in a discussion on barriers to use of trichiasis surgery believe that the surgical wound needs lots of time to heal (up to 2 months) during which they should not go outside of their house to avoid sunlight exposure and should not be involved in productive activities such as farming and cooking. Women believe that they should not get near fire or smoke for 2 weeks to a few months as this 'can result in recurrence'. Some trichiasis surgeons have admitted they share these beliefs and advise that patients should avoid cooking to avoid exposure to smoke and fire, as they believe these might result in post-operative trichiasis. Some patients avoid surgery as they cannot stop working or cooking even for a few days.

Most trichiasis patients and their relatives strongly believe that the surgery is very painful, and they do not know that it is done under local anaesthesia. So, they prefer to just keep epilating. We have also realised that there are considerable number of patients with post operative trichiasis or lid closure defect in the community. Most trichiasis patients raised the issue that they think that there is no point in having the surgery and undergoing considerable pain if their trichiasis is going to return like it happened to their neighbour and people in their villages.

An elderly woman is examined after she was brought to hospital in Lira, Uganda. Photo: The Kilimanjaro Centre for Community Ophthalmology

Community-based counseling (by the TT case finder) may need to be undertaken on more than one occasion; the first occasion should be when initial identification of the patient is made. This may be the first time the family is aware of interventions for TT or aware of the risk of vision loss due to it. Key messages are given in **Box 7**. The second community-based opportunity for counseling would likely arise either just before or on the day that outreach is to occur; ideally the case finder will assist suspected cases to reach the outreach site, providing further encouragement for management.

Case finders may get discouraged if people refuse surgery; they should not. The decision to have surgery is not an easy one; a kind yet persistent approach is needed. Multiple interactions and counseling before the outreach date may be needed to ensure that these individuals and their families have additional opportunities to accept management.

The outreach coordinator needs to maintain close communication with case finders to assess their progress, address any challenges, and help them plan for outreach. Finally, it is critical that patients and families know exactly where to report for management and when. If large numbers are anticipated, the coordinator may need to stagger the dates that case finders bring patients to the outreach. It's always a good idea for case finders to repeat the information to ensure that it is clearly understood. Appointment cards may be helpful.

BOX 7

Key messages for people with trichiasis

Whoever provides counseling information will obviously need to understand the local situation to provide accurate information. Read the messages carefully and be prepared to modify as needed for the local situation.

Basic messages to provide anyone with trichiasis:

- Your eyelashes have turned inward and are rubbing your eye, causing pain/discomfort.
- The rubbing can damage your eye and lead to loss of vision or blindness.
- There is a surgical procedure or other management that can correct the problem and stop the rubbing of the lashes.

Intervention:

- Is done by trained health workers and is available (place and date).
- The cost is _____.
- If surgery is recommended, the patient will have a needle 'stick' (injection) in the eyelid to make the area numb.
- The patient needs to lie flat and still throughout the procedure, which takes about 20 minutes per eye.

After surgery the eye will be bandaged for 24 hours. If both eyes are operated, someone will need to guide the patient home (depending on the outreach location).

After the bandage is removed the next day, the patient can resume all normal activities.

Follow up after surgery is important and this may require 3 visits; day after surgery, 1 week, and 3-6 months.

SECTION THREE

At the outreach site

If case finding has been effective, there may be many people waiting for assessment and possible treatment on the first morning of an outreach campaign.

Ensure that the crowd of people can hear the person leading the campaign, who should loudly (ideally with a loudspeaker) provide introductions of the team and explain how the outreach will be run, with an emphasis that the service offered is TT management. Since cases at the outreach site are primarily those brought by case finders, it is important to prioritize them; find ways for case finders to assist at outreach and commend their work.

Patient flow

Logical patient flow is important for ensuring that all patients who present to an outreach site are identified and receive services on the correct eye(s). A visit should be made in advance to plan how the facility will be used. During this advance visit, the team should discuss with local staff the number of expected cases, how the outreach team works, the desired patient flow, where to conduct counseling and registration, where sterilization can be done, and to identify communities that may need transport to reach the outreach site. The team should also identify the surgical room(s) and ask the local staff to do a thorough cleaning of the room the day before the team arrives for the outreach.

Triage

The patients should be arranged into a well-organized queue to quickly and efficiently separate patients with TT from patients with other eye conditions. Those with TT should be sent to a special area for full examination and registration. People brought by case finders and the elderly should be managed first and recorded appropriately.

Examination and registration of trichiasis patients

All patients suspected to have trichiasis must be examined as described in **section 4-6** in ***WHO Trichiasis Surgery for Trachoma*** manual. If TT is present, they need to be registered and have specific information collected, ***even if they are not going to have surgery***. This will allow them to be counted towards the elimination goals. The information may be collected in a dedicated logbook, on individual patient records (which will need to be kept by the program in a specially designated binder), or in a specially designed app for an electronic device. Regardless of the method used for data collection, it is recommended that data be collected as indicated on the TT patient form, shown in the annex. The TT Tracker is an app-based patient record system which has been shown to be useful in improving the quality of data collection and follow up. See **Box 8**.

Once a patient is determined to have trichiasis requiring surgery, they should be encouraged to receive. Fitness for surgery must be assessed before a final decision is made to do the surgery as described in **section 6** in ***WHO Trichiasis Surgery for Trachoma***. Ideally, counseling and assessment should be done in a quiet, private area. However, if there are many patients, group counseling may be more efficient. The steps in the examination and indications for surgery are detailed in **sections 4-5** in ***WHO Trichiasis Surgery for Trachoma***.

BOX 8

The TT Tracker

The TT Tracker is a smartphone-based application used to track trachomatous trichiasis (TT) patients over the course of the time they are receiving treatment and follow-up visits for TT. Patient diagnosis, treatment provided, and the outcome of the treatment at three time points (24-hours, 7-14 days, and 3-6 months) are captured on phones. The information is then used to create due for follow-up lists, surgical outcome reports, and program activity summaries. The TT Tracker was the result of a **recommendation** by program partners, including World Health Organization, Sightsavers, The Carter Center, USAID, RTI, Fred Hollows Foundation, Helen Keller International, Emory University, and Johns Hopkins University. In response, Sightsavers led in its development with the input of experts across multiple organizations. Sightsavers continues to manage the application and supports Ministries of Health to use it in Sightsavers-supported TT programs, but other Ministries of Health can also use the application. The TT Tracker has helped improve the efficiency and effectiveness of TT programs by allowing supervisors to monitor activities, improve data quality, identify patient follow-up needs and identify health workers that require additional training to provide quality care.

Consent for surgery

Consent for surgery must be provided by each individual. This is usually obtained by a health worker after counseling and according to local practices.

Tell the patient about the potential complications of the surgery:

- Bleeding and bruising
- Infection, which may need extra antibiotics
- Over- or under-correction of the eyelid, which might require a second operation
- Post-operative trichiasis after the operation (in around 10-20% of cases).

Always remember to give the patient an opportunity to ask questions. The patient should sign, initial, or fingerprint the TT patient form or some other document that will become part of the record to indicate that they agree to surgery.

Before the operation, the eye to be operated must be marked with an arrow or with tape, or if both eyes are to be operated then both should be marked. If both eyelids require operation, a friend or relative will be required to guide the patient home.

What about patients for whom surgery is not appropriate or who choose to not have surgery?

Some patients will choose to not to have surgery, even after counseling. Every individual with trichiasis needs to be treated with respect and provided with some form of intervention. For those with minor trichiasis (just a few eyelashes not rubbing the cornea and no entropion) epilation is indicated. Eyelashes can be epilated by the team; however, since epilation will need to be carried out on a regular basis, patients and family members need to be taught how to epilate and they should be provided a pair of high-quality epilation forceps. Patients should be instructed to wash the forceps with soap before use. Usually, it will be a friend or family member who does the epilation, and this person should wash their hands with soap before performing the epilation. Individuals who epilate need to be managed in the same way as individuals who receive surgery; that is, they need follow up. Each follow up interaction is an opportunity to provide additional counseling and offer surgery, if appropriate, particularly for people whose TT worsens, such that they have many eyelashes abrading the eye. To be able to provide follow up, it is essential that the person be registered the same way as one accepting surgery. TT cases who abscond from the outreach need follow up for counseling and to offer management.

A Trichiasis patient being screened prior to surgery in Wolkite, Ethiopia. Photo: Nigel Pedlingham

Surgery room

The room does not have to be a special operating room. Surgery can be performed in places like a school classroom or a village hall. **Section 7.1** in ***WHO Trichiasis Surgery for Trachoma*** describes the essential characteristics of a suitable room.

Someone will need to assist the patient to enter the surgery room and lie on the operating bed; after surgery, assistance is needed to leave the room. It is more efficient to have this done by an assistant, rather than by the surgeon. The assistant might be someone from the local health centre or a community volunteer. The assistant should have on clean clothes and be instructed not to touch anything in the surgery room.

The ***sterile equipment table*** should be covered with a sterile cloth and anyone who touches it should have sterile gloves on. This is where all the surgical equipment is laid out neatly so that it is readily available.

The ***stool and operating bed*** should be in a position where good light is available.

A ***rubbish containe***r should be used for all clinical waste materials except surgical sharps. This rubbish should be incinerated after use. A sharps bin must be used for disposing of all sharps, such as needles and blades. It is important that this is conveniently located for the surgeon.

The ***surgeon's sterile trolley*** contains surgical materials to be used for a single patient. The trolley should be covered using a sterile trolley drape. This trolley should be placed at the side of the operating bed, and the contents should be changed after every procedure.

The ***surgical equipment kit*** for trichiasis surgery is described in **section 7.2** in ***WHO Trichiasis Surgery for Trachoma***.

Staffing in the surgery room: Who needs to be in the room and what are they doing?

The ***surgeon*** is obviously in the room to perform the surgery. Although patients will have had counseling, the surgeon also has an important responsibility to communicate clearly with the patient once they are on the operating bed. The surgeon should explain what is expected of the patient, such as the need to lie still during the surgery. Briefly tell the patient what is happening; for example, 'I will place this drape on your face to keep the area clean', and 'you will feel a small scratch now'. Maintaining communication throughout the surgery helps the patient to remain still during the surgery and helps the patient to have a positive experience which they will convey to other patients with TT.

A surgeon will need some assistance; several surgeons that are operating at the same time can share one or more assistants who will help with tasks such as leading the patient into and out of the room and getting them comfortable on the bed. The assistant, if trained in sterile technique, can also get surgical equipment and consumables that the surgeon requires during the operation.

The assistant is also needed to clean the used surgical materials and perform safe instrument sterilization. It is the surgeons' responsibility to teach the cleaner how to properly handle the surgical materials including the cleaning and drying of used instruments and every step of the sterilization.

Cleaning and sterilization of instruments
Sterilization is the elimination of infectious agents including bacteria, fungi, and viruses. This is usually done with steam under pressure in an autoclave or dry heat in a sterilizing oven. Chemical processes and boiling do not usually destroy spores and are not recommended. Some important aspects of sterilization are described in **section 8** in ***WHO Trichiasis Surgery for Trachoma***.

Instruments must be thoroughly cleaned after use on each patient, before sterilization, as follows:

- Wearing gloves, place instruments in a solution of 0.5% chlorine. Leave to soak for 10 minutes without touching them
- Move instruments to a bowl containing soap solution, cleaning them thoroughly to remove blood and other debris. A brush should be used for this
- Put instruments in a bowl of clean water in order to remove the chemicals
- Remove instruments and allow to dry thoroughly before sterilizing

At the end of the outreach, the instruments should be oiled either by placing a drop of oil at every joint, or by soaking them for five minutes in an oily solution. This will prolong the life of instruments. Oiling may also be done any time instruments are stiff during the outreach, after they are dried and before sterilization. Ensure thorough cleaning after oiling to prevent oil entering the surgical wound.

Important issues to keep in mind with an autoclave include the points in **Box 9**.

BOX 9

Proper use of an autoclave

- Carefully read and understand the manufacturer's instructions. Follow the instructions exactly.
- There is a danger of transmitting HIV, hepatitis viruses or other infectious diseases if the surgical materials are not properly sterilized. There is also a danger of causing serious injury if the autoclave is not used correctly. To avoid this, good training in autoclave usage and intermittent supervision are required.
- Always ensure there is the correct amount of water in the autoclave before every use.
- Do **NOT** open the autoclave until the pressure reaches zero.
- Do **NOT** use an autoclave if parts are malfunctioning, for example, if the pressure does not rise and there is continual escape of steam.

Post-surgical counseling and care

Ideally there will be someone besides the surgeon to provide post-operative instructions so that the surgeon can move on to operating on the next patient. Counseling messages will depend on how follow up is planned and will have to be tailored for different settings. Issues to be discussed in post-operative counseling are shown in **Box 10**.

Once surgery is complete it must be documented in the patient record; this will usually be done by the surgeon immediately following surgery so that nothing (such as complications during surgery) is forgotten. The information to record is included in the TT patient form (see annex). It may go onto an individual paper form for each patient, a large logbook, or be collected on the TT Tracker.

For the health worker doing post-operative care, the steps required on day 1 and day 7-14 are described in **section 12** in ***WHO Trichiasis Surgery for Trachoma***. Additional recommendations are provided in the section on follow up below.

A patient is treated by a surgeon in Samburu, Kenya. Photo: CBM

BOX 10

Key messages for post-surgery recovery

- Many patients may require simple pain relief, such as paracetamol
- Patients should keep the eyelid clean and not rub it. Gentle face washing is ok.
- A firm pad will remain on the eye until the next day. This will be removed the day after surgery by health staff.
- Patients should rest for one day after surgery and then may resume normal activity with caution, making sure to keep their face clean.
- If available, patients are given a single dose of azithromycin to take before leaving the site. All patients should receive one tube of tetracycline eye ointment for each eye that has been operated on, to be instilled into the lower fornix each morning and evening until the tube is finished. This should be demonstrated to patients (those who have only one eye operated) and to the person who is accompanying the bilaterally operated patients.
- It is important for patients to have follow up 1 day after the surgery, then 7-14 days after surgery (suture removal), and finally about 6 months after surgery (to check outcome).
- Patients should be encouraged to seek care if they note complications from surgery.

Cleaning up after the campaign

The team is responsible for ensuring that cleaning of the surgical equipment is done thoroughly and correctly.

Therefore, the team leader (usually the surgeon) should appoint a person responsible for cleaning or assistant and teach them how to properly handle, clean, oil, and sterilize the instruments and should periodically monitor the cleaning process. Regular sharpening of scissors is essential to prevent working with blunt scissors. Blunt scissors will clasp tissue instead of cutting it, which causes contusion of the tissue, leading to non-optimal wound healing. Make sure that the rooms used during the outreach are cleaned and waste is disposed properly. Leave the surgical site in a similar (or better) condition to which you found it.

TT surgery in Iganga District, Uganda. Photo: Amir B Kello, Light for the World

SECTION FOUR

Follow up of patients after surgery

Follow up of patients and accurate reporting of outreach activities are both important to the success of efforts to eliminate TT.

Accurate record keeping throughout the outreach process is essential. It allows for future follow up of patients and for planning efficient future surgical camps. Additionally, it provides supervisors with adequate data to provide supportive supervision during the follow up phase.

Follow up of patients

All trichiasis surgery patients should be examined three times after surgery: at 1 day, 7-14 days, and 3-6 months. Refusals should also be invited and offered management.

BOX 11

Potential post-operative complications

- **Post-operative trichiasis:** Eyelashes touching the eye.
- **Infection:** Swelling of the eyelid, tearing or discharge from the operated eye.
- **Granuloma:** Feeling of a foreign body in the eye, accompanied by a visible lump on the inner side of the eyelid, which causes discomfort.
- **Lagophthalmos:** When the eyelid is closed, a portion of the eye is visible.

Day 1 post-op

In most settings, patients can be seen at the surgical location the day after surgery by the operating surgeon. At this visit, eye patches are removed, and the lids are cleaned and examined as described in **section 12** in ***WHO Trichiasis Surgery for Trachoma***. In addition to the steps listed there, in this early post-operative phase, if the eyelid is not appropriately corrected, surgical adjustment can be made by retying the sutures to get a good outcome. It is easier to fix an inadequate correction immediately after surgery than it is later. Any active bleeding should be stopped at this time.

Day 7-14 post-op

In settings where silk or other non-absorbable sutures are used, a follow up visit for suture removal should be scheduled for 7-14 days after surgery. The activities to take place on this visit are described in **section 12** in ***WHO Trichiasis Surgery for Trachoma***. Ideally this visit would be conducted by the operating surgeon so that s/he can examine the short-term outcomes. However, in settings where this is not practical, the team should arrange follow up visits in collaboration with the health center or health post where the surgery takes place, to ensure that all operated patients have a guaranteed place to return for follow up. Regardless of where suture removal takes place, the team needs to ensure that the person who removes the sutures is knowledgeable and skilled with suture removal because inadequate removal can lead to infection and granuloma formation. When the operating surgeon cannot be present, the person who removes the sutures should note any adverse events, such as post-operative trichiasis or eyelid deformity, and make sure such notes are transmitted to the surgeon. If resources permit, a photograph of the eyelid should be taken and shared with the operating surgeon.

The use of absorbable sutures has increased substantially, but it is still advisable to check the wound, and patients should be encouraged to come for follow up.

Final follow up (3-6 months post-operative)

All TT surgical patients should have a follow up 3-6 months after surgery although it is recognized that post-operative TT may occur after 6 months post-op. If there is post-operative TT, additional surgery is indicated; this should be carried out by a more experienced surgeon.

All patients should be encouraged to seek care between scheduled visits if complications arise.

This young man escorted his grandmother to the eye clinic for her TT surgery, and then two weeks later for a check up. Photo: Beth Kurylo/International Trachoma Initiative

SECTION FIVE

Record keeping and reporting

Record keeping and reporting at outreach or soon thereafter is critical to the success of the programme.

There are different components to a TT programme so there are different aspects of record keeping and reporting. Information collected should be limited to that required to make programmatic decisions or report on progress to elimination.

Recording case finding information

Case finding is the foundation for assessing FGC of trichiasis service delivery. **Box 12** provides the indices to measure. It is important to collect information from all case finders registers during outreach.

Case finders should be encouraged to attend outreach. Advantages of having case finders present at an outreach include:

1. Easy review of their case finder registers to match FGC data and list of suspected persons vs those that came for outreach.
2. Respond to any queries on case finder registers.
3. Provide possible reasons if all suspected cases did not show up for outreach and decide on plan to address lost to outreach.

In areas where this is not possible, case finders need to be contacted immediately regarding suspected cases and coverage of households in the community. At the outreach, check the case finder registers to determine if lost to outreach is common. If that is the case, make a plan to address the problem.

Recording patient information

The TT patient record (see annex) form is filled when a TT patient is identified during the outreach. The form in the annex is the same form used by the TT Tracker. Basic demographic information, clinical information and management are recorded. Any operative complications are also recorded. At each follow-up visit, specific information should be recorded on all managed cases. Note that information should be recorded for each eye separately. The information must be collected regularly for a supervisor to monitor the program.

Recording outreach summary statistics

One team member should be assigned the primary responsibility for recording all pertinent outreach level information at the end of each outreach. Recommended information to collect is shown on the summary statistics form (see **Annex D**). This information should be compiled before leaving the outreach site and used to decide if further work is needed within the outreach catchment area. Spot checks by supervisors at outreaches are helpful to confirm that information collected is accurate.

BOX 12

Documentation of full geographic coverage (at district level)

#	Description	Where located	Responsible
CASE FINDING			
1	Every community has had case finding	• Community list • Districts maps (electronic or paper) showing all communities	Programme / district /regional MoH staff
2	Every household (in every community) has had case finding	• TT stats sheet • Case finder register	Programme / state staff & case finder
3	Every adult (in every household) has been seen by a case finder	Case finder register	Case finder
OUTREACH			
4	Every suspected trichiasis case has been screened (at outreach or in community)	Case finder register	Surgeon
5	Every confirmed trichiasis case has been offered management	All patient register (Patient Surgical records)	Surgeon
6	Every child under 15 years of age has been referred to a tertiary facility for surgery under general anaesthesia	Facility Register / Patient record card	Surgeon

At the end of each outreach program, a list of people who were operated or epilated or chose to not accept surgery, in addition to those not present (from case finder registers) should be provided to the relevant local authorities. It is important, however, not to pressure TT cases to have surgery or to risk patient confidentiality. A plan needs to be made for those individuals identified by case finders as suspected cases but who failed to attend the outreach to be followed up. Ideally, they are reached at the end of that outreach or within a very short time frame. Findings (but not names) should be reported to the relevant local authorities and to the national program.

Using summary findings to guide future outreach activities

In areas with a high prevalence of TT and where surgery has not been readily available, it is likely that large numbers of TT patients will be identified, and many surgeries will be conducted in a short time period. In such settings, including two to four TT surgeons in the outreach team can be an efficient use of resources and will help to rapidly reduce the backlog. However, as the backlog decreases in a specific area, the number of surgeons necessary for each outreach is likely to decline. Review of case finder reports of suspected cases, collected through phone calls, should be used to determine staffing needs at upcoming outreach.

The coordinator of each outreach should compare the numbers of TT patients who came to the outreach to the number that was expected, based on communication with case finders.

Experience suggests that TT surgeons should be able to perform a minimum of 10 surgeries (eyes not people) in each outreach day. Therefore, when evaluating prior campaign data to plan future campaigns, one should determine what the average number of surgeries being done is and consider restructuring specific aspects of the campaign to increase efficiency whenever possible. Talk with the organizers of the prior campaigns and learn from them what worked and what did not. Travel costs and allowances for staff will always be major drivers of program costs, so make sure to use these resources wisely.

ANNEX A

Surgery Day trichiasis patient record card

Individual TT Case

Patient details		
Name		
Date of birth	/ /	
Age at first visit	years	
Sex	❑ Female ❑ Male	
Region, district, and village		
Neighborhood/subunit (traceable address)		
Mobile phone contact (list name & relationship of phone owner to patient):		
Date of visit	/ /	
GPS coordinates		
Preoperative photograph taken of face	❑ Yes ❑ No	
Consent of patient for ID photo	*Thumbprint or sign*	
	Right eye	**Left eye**
Visual acuity		
Number of trichiatic lashes *(Count up to 10. If more, record "10+")*		
Position of trichiatic lashes *(indicate all that apply)*	❑ Nasal ❑ Central ❑ Temporal	❑ Nasal ❑ Central ❑ Temporal
Evidence of previous TT operation	❑ Yes ❑ No	❑ Yes ❑ No
Entropion *(if yes, indicate proportion of eyelid affected)*	❑ No ❑ Yes <1/3 of lid ❑ Yes ≥1/3 of lid	❑ No ❑ Yes <1/3 of lid ❑ Yes ≥1/3 of lid
Evidence of epilation *(if yes, indicate what proportion of lid is epilated)*	❑ No ❑ Yes <1/3 of lid ❑ Yes 1/3–2/3 of lid ❑ Yes ≥1/3 of lid	❑ No ❑ Yes <1/3 of lid ❑ Yes 1/3–2/3 of lid ❑ Yes ≥1/3 of lid
Preoperative photograph of eyelid taken	❑ Yes ❑ No	❑ Yes ❑ No
Cataract causing VI or blindness	❑ Yes ❑ No	❑ Yes ❑ No
Consent of patient for TT surgery	If patient refuses TT surgery, confirmation that they were counselled on epilation	
Thumbprint or sign	*Thumbprint or sign*	

ANNEX B

Operative Record

To be collected for everyone undergoing TT surgery

Name of operating surgeon	
Date of surgery	
Name of patient	

	Right eye	**Left eye**
Type of operation	❑ BTRP ❑ PLTR (modified Trabut)	❑ BTRP ❑ PLTR (modified Trabut)
Suture *(choose one)*	❑ Silk ❑ Absorbable	❑ Silk ❑ Absorbable
Complications *(choose all that apply)*	❑ Excess bleeding ❑ Lid margin split/cut ❑ Globe puncture ❑ Other _____	❑ Excess bleeding ❑ Lid margin split/cut ❑ Globe puncture ❑ Other _____

Immediate post-operative photo of operated eyelid	❑ Yes ❑ No	❑ Yes ❑ No

ANNEX C

Post operative/epilation record

Follow up #1 (1st Post-op Day)

Date of follow-up	
Patient name	
Photo of the operated eyelid taken	❑ No ❑ Yes
Name of person conducting follow-up	

	Right eye	Left eye
Undercorrection	❑ No ❑ Yes	❑ No ❑ Yes
Number of trichiatic lashes *(Count up to 10. If more, record "10+")*		
Granuloma	❑ Absent ❑ Present	❑ Absent ❑ Present
Eyelid contour abnormality	❑ Absent ❑ Present	❑ Absent ❑ Present
Over-correction	❑ Absent ❑ Present	❑ Absent ❑ Present
Management *(choose all that apply)*	❑ Applied TTC eye ointment ❑ Requested to return for follow-up in _____ days ❑ Offered revision of surgery	❑ Applied TTC eye ointment ❑ Requested to return for follow-up in _____ days ❑ Offered revision of surgery

Follow up #2 (Day 8 – 14)

Date of follow-up		Patient name	
Photo of the operated eyelid taken	❑ No ❑ Yes	Name of person conducting follow-up	

	Right eye	Left eye
Undercorrection	❑ No ❑ Yes	❑ No ❑ Yes
Number of trichiatic lashes *(Count up to 10. If more, record "10+")*		
Granuloma	❑ Absent ❑ Present	❑ Absent ❑ Present
Eyelid contour abnormality	❑ Absent ❑ Present	❑ Absent ❑ Present
Over-correction	❑ Absent ❑ Present	❑ Absent ❑ Present
Management *(choose all that apply)*	❑ Removed sutures ❑ Epilation ❑ Requested to return for follow-up in _____ months ❑ No further follow-up required ❑ Offered repeat surgery	❑ Removed sutures ❑ Epilation ❑ Requested to return for follow-up in _____ months ❑ No further follow-up required ❑ Offered repeat surgery

Follow up #3 (3-6 months)

Date of follow-up		Patient name	
Photo of the operated eyelid taken	❑ No ❑ Yes	Name of person conducting follow-up	

	Right eye	Left eye
Number of trichiatic lashes *(Count up to 10. If more, record "10+")*		
Position of trichiatic lashes *(indicate all that apply)*	❑ Nasal ❑ Central ❑ Temporal	❑ Nasal ❑ Central ❑ Temporal
Granuloma	❑ Absent ❑ Present	❑ Absent ❑ Present
Eyelid contour abnormality	❑ Absent ❑ Present	❑ Absent ❑ Present
Entropion *(if yes, indicate proportion of eyelid affected)*	❑ No ❑ Yes $<^1/_3$ of lid ❑ Yes $\geq^1/_3$ of lid	❑ No ❑ Yes $<^1/_3$ of lid ❑ Yes $\geq^1/_3$ of lid
Over-correction	❑ Absent ❑ Present	❑ Absent ❑ Present
Management *(choose all that apply)*	❑ Removed sutures ❑ Epilation ❑ Requested to return for follow-up in _____ months ❑ No further follow-up required ❑ Offered repeat surgery	❑ Removed sutures ❑ Epilation ❑ Requested to return for follow-up in _____ months ❑ No further follow-up required ❑ Offered repeat surgery

ANNEX D

Summary statistics form

To be completed during each outreach activity or every quarter from a fixed facility.

Date of outreach or period covered	
Site of outreach or name of facility (could be pre-populated)	
Number of patients expected with TT (based on mobilization efforts)	

Number of patients identified with TT	Male		Female	
Number of patients <=15 years old from above identified with TT	Male		Female	

Number accepting surgery	Male		Female	
Number of patients operated	Male		Female	
Number of eyes operated	Male		Female	
Number of patients refusing surgery and counselled to epilate	Male		Female	

ANNEX E

Referral form for patients requiring additional eye service

May modify this or substitute any official referral form.

Patient Referral

Today's date	
Name of patient	
Referral to (name of clinic/hospital)	
Patient advise to report by this date	

During an outreach for trichiasis surgery at _____

this patient was discovered to have _____

_____

_____

_____

_____

_____

_____

Kindly examine and treat as necessary.

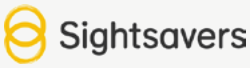
Thank you.

_____

Person making referral

Name	
Contact phone number	

ICTC Members



ICTC Observers

ICTC International Coalition for Trachoma Control

www.trachomacoalition.org