TRACHOMA SAFE STRATEGY SERIES:
Surgery

Training Trichiasis Surgeons for Trachoma Elimination Programs

To be used alongside the WHO yellow manual *Trichiasis Surgery for Trachoma*

ICTC International Coalition for Trachoma Control

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Front cover photo: Community-based trichiasis surgery. (Photo: Talla Photo)

Foreword

The World Health Organization (WHO) has set 2020 as the target year for the elimination of blinding trachoma as a public health problem. The most common infectious cause of blindness, trachoma begins with infection of the conjunctival lining of the eyelid during childhood. Repeated infections cause scarring of the conjunctiva, progressing to trichiasis, in which the eyelid turns inward and causes the eyelashes to rub painfully against and eventually abrade the cornea. This final stage leads to irreversible blindness.

To achieve the goal of elimination as a public health problem, national programs and their partners have been implementing the WHO-endorsed SAFE strategy, an integrated approach that includes surgery to correct the in-turned eyelid and prevent blindness, antibiotics to clear infection, facial cleanliness to reduce transmission, and environmental improvements to make facial cleanliness more achievable and reduce transmission by eye-seeking flies.

Trachoma is currently endemic in 41 countries, putting 190 million people at risk of blindness. Estimates from epidemiological surveys indicate that 3.2 million people have trichiasis and are thus at risk of blindness. In recent years, donors such as the United Kingdom's Department for International Development, the Queen Elizabeth Diamond Jubilee Trust, and the United States Agency for International Development have funded efforts by numerous countries and NGOs to reduce the trichiasis backlog and achieve the trichiasis elimination target of less than 1 trichiasis case per 1,000 population in endemic districts.

In scaling up trichiasis programs, two aspects are critical: a) reaching the necessary number of people with trichiasis to achieve the elimination goal; and b) ensuring that the surgery provided is of high quality and post-operative complications are kept to a minimum.

At the January 2012 Global Scientific Meeting for Trachomatous Trichiasis in Moshi, Tanzania, improved training for trichiasis surgeons was identified as a key factor to increasing the quality of surgical outcomes. The objective of this manual is to bring together the various available training materials, including the 2nd edition of the WHO manual *Trichiasis Surgery for Trachom*a and the training manual for the HEAD START analog surgical simulator, into one package. This will allow the trainer to lead trainees from theoretical classroom learning, through practice on the HEAD START simulator, and on to live patients and certification as qualified trichiasis surgeons. This manual also contains sessions on preferred practices that have been identified through research and field experience.

We hope that the national programs and surgeon trainers find this manual useful in increasing the skills of trichiasis surgeons and strengthening the quality of the surgery.

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Satisfied trichiasis surgery patients six months after surgery.
(Photo: Mary Houghton)

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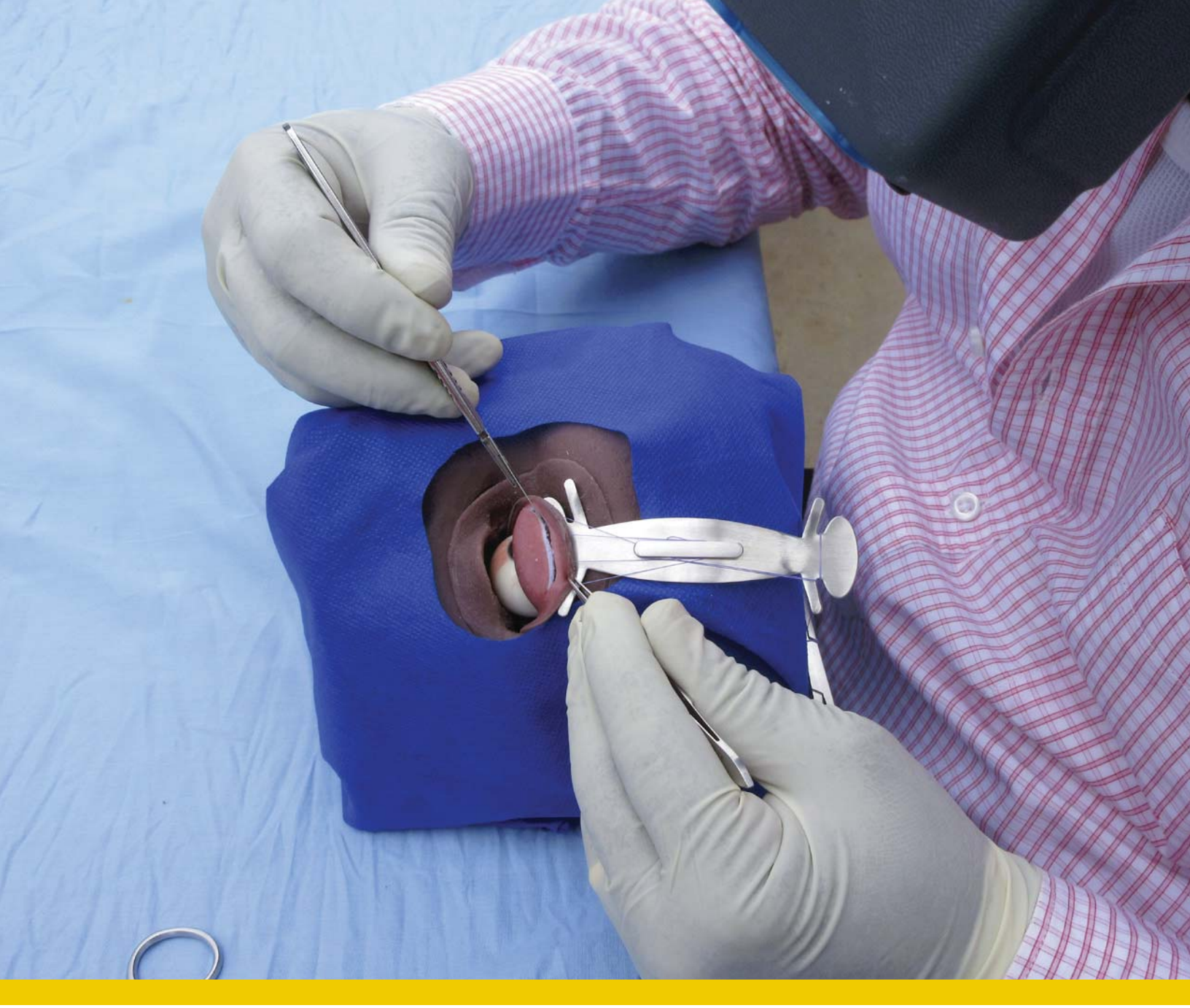


Practicing on the HEAD START surgical trainer.
(Photo: Amir Bedri Kello)

Purpose of this manual

This guide for trainers of trichiasis surgeons contains information to help a trainer prepare for and lead a training workshop. It is intended to facilitate and standardize the process and quality of training new trichiasis surgeons and trichiasis surgeons who undergo refresher trainings.

This manual should be used in conjunction with the WHO publication, *Trichiasis Surgery for Trachoma – Second Edition* (the Yellow Manual); it should not be used by itself. Additional training resources and materials to support the learning process are included in the annexes.

Overview

Workshop sessions are designed to help participants develop the specific skills necessary for surgical management of patients with trachomatous trichiasis (TT). Participants acquire a theoretical understanding of these skills through presentations, videotaped and live demonstrations, exercises, group discussions, and role playing.

After the theoretical training and before operating on patients, participants should practice their skills on the HEAD START surgical trainer, under the trainer's close supervision. HEAD START is a mannequin that allows surgeons-in-training to practice on a lifelike head and eyelid before graduating to live patients. Practicing on HEAD START will allow trainees to repeat the steps of the surgery in a safe environment. Gaining confidence, having the opportunity to observe the outcomes of their surgery related to incision and suturing, and promoting critical self-evaluation are among the advantages HEAD START offers for trainees.

According to WHO recommendations, all trainees must undergo a certification process before being allowed to operate alone in the field. To achieve certification, each trainee must operate on at least 15 eyelids, including a mix of right and left eyes (10 during the training process, five during the certification process), demonstrating high-quality surgery and safe practices. To assess a trainee's eligibility for certification, the trainer should use the checklist in the WHO manual *Trichiasis Surgery for Trachoma – Second Edition*, p. 49-65.

A master trainer demonstrates HEAD START's removable eyelids to trainees. (Photo: Carla Johnson/International Trachoma Initiative)

Roles and responsibilities of the trainer

Adult learning principles: This manual is designed in accordance with adult learning principles, providing the trainer with the tools to maximize the learning potential of the participants. It includes discussions, group work, role plays, demonstrations and practice; it only recommends lectures where appropriate. **The content of the course should not be taught through formal lectures.**

The trainer will help the trichiasis surgery trainees learn the skills presented in the course. As the trainer, you need to be fully familiar with all the training materials. It is the trainer's job to:

- **Train:** Explain to participants how to work through the materials and what they are expected to do in each module and exercise; provide explanations, conduct demonstrations, answer questions, lead group discussions; supervise the participants in performing surgery; and give participants any additional help they need to successfully complete the course.
- **Assure:** Make sure that learning is taking place and adapt the training to the participant's learning style; motivate the participant; compliment the participant on correct answers, improvements, or progress; make sure that there are no major obstacles to learning (such as too much noise or not enough light in the room); and monitor the progress of each participant.
- **Manage:** Plan ahead and obtain all supplies required for each day of training well in advance, so that everything is in the classroom or operating room when needed.
- **Decide:** Based on the final assessment of a participant's capacity to perform TT surgery, the trainer has the duty to decide if he or she qualifies for certification. Quality patient care must be the overriding principle.

It is the responsibility of the trainer to ensure strong supportive supervision during all phases of the training, and especially during the clinical practice, to guarantee safe and high-quality care to the patient.

Qualifications of the trainer

The trainer should have as many of the following qualifications as possible.

1. The trainer should be an ophthalmologist or a mid-level eye care health worker with extensive experience in TT surgery.
2. The trainer should currently be active in TT surgery.
3. The trainer should have extensive experience in the trichiasis surgery technique(s) being taught (Trabut and/or bilamellar tarsal rotation (BLTR) technique).
4. The trainer should have previous teaching experience and should be able to demonstrate good teaching skills.
5. The trainer should be thoroughly familiar with WHO guidelines for trichiasis surgery as detailed in *Trichiasis Surgery for Trachoma – Second Edition* and have experience using them.
6. The trainer must be available 1–2 days prior to training, during all of the course, and for future supportive supervision visits.

Trainer checklist to be completed before the course begins

1. Materials, equipment, and logistics

Required technical resources

❑ WHO manual, *Trichiasis Surgery for Trachoma – Second Edition*. The trainer and trainees must each have their own copy in the appropriate language.

❑ HEAD START video provided with this guide

❑ PowerPoint presentation provided with this guide

❑ ICTC preferred practices documents for TT surgery (available at: www.trachomacoalition.org):

- — *Trichiasis Counselling Guide*
- — *Training Curriculum for Trichiasis Case Identifiers*
- — *Supportive Supervision for Trachomatous Trichiasis Programmes*
- — *Organizing Trichiasis Surgical Outreach*
- — Global Scientific Meeting on Trachomatous Trichiasis (Moshi, 2012)
- — Second Global Scientific Meeting on Trachomatous Trichiasis (Cape Town, 2015)

Training materials

❑ LCD projector and a computer

❑ Flip chart and markers

❑ Pens, notebooks, folders for each participant

Support documents – Each trainee will need a copy of each document (documents provided with this manual):

❑ Surgical checklist

❑ Laminated pictures showing examples of correct eyelid surgery outcomes

❑ Laminated support document: Hand washing/ putting on gloves

❑ WHO Universal Precautions – infection control

Logistical arrangements for HEAD START:

❑ The training must be located close to trichiasis patients, to ensure that clinical practice can occur directly after HEAD START training.

❑ The training venue should have reliable electricity or a generator.

- — Proper lighting of the training venue and the operating room (OR) should also be ensured (e.g. clip-on lights for each loupe or one torch (flashlight) with spare batteries for each table, plus good adjustable OR lights)

❑ HEAD START training requires one table and two chairs per trainer. Chairs must be adjustable or at a height that will allow comfortable surgical practice when the operator is seated. An additional table and chair is recommended to allow trainees to continue practicing on their own following initial HEAD START training, while trainers are working with other trainees.

Supplies, equipment, and consumables (Please refer to WHO manual, *Trichiasis Surgery for Trachoma – Second Edition* for the details of consumables and equipment needed during live surgery.)

❑ For HEAD START practice:

✔ One mannequin base ("head") per trainer plus 1-2 additional bases, depending on the training situation

✔ Drape with hole for eye, to cover the base when conducting surgery

✔ Disposable eyelid cartridges – 10-15 per trainee

✔ One complete TT surgery set* per mannequin base

✔ One additional TT clamp for BLTR or one additional Trabut plate for Trabut, per complete surgery set

✔ Surgical consumables:

- — Surgical blades (No. 15): Same number as cartridges (10-15 per trainee)
- — 4/0 Sutures: Preferably the same suture that is used in the field. Should have attached 3/8 circle reverse-cutting needles. For BLTR, one suture with needle per cartridge (thus, 10-15 per trainee). For Trabut, one suture with needle per cartridge, plus additional sutures for placing traction suture (15-20 total sutures per trainee)

✔ One 2.5x magnification loupe per mannequin base, plus one per trainer

✔ Carrying case

✔ Surgical gloves (variety of sizes to accommodate small and large hands)

* Each TT surgery set contains one blade holder; one serrated forceps; one toothed forceps (with tying platform); one needle holder; one pair blunt dissecting scissors; and, depending on the procedure used, either two hemostats and one TT clamp, or one Trabut plate and one hemostat.

❑ For live surgery practice refer to WHO manual *Trichiasis Surgery for Trachoma – Second Edition*, p. 9-10, for equipment needs.

❑ For the certification process, refer to WHO manual *Trichiasis Surgery for Trachoma – Second Edition,* p. 49-65.

❑ Autoclave

❑ Additional materials for demonstration and practice: sterile gloves, torch, batteries

❑ Data collection forms and registers

2. Training participants

❑ Minimum recommended selection criteria are based on *Trichiasis Surgery for Trachoma – Second Edition* selection criteria, p. 49.

❑ Recommended number of trainees per trainer:

✔ During the initial surgery training sessions with HEAD START, the trainer should work one-on-one with a trainee. In some settings, it may be feasible for a trainer to work with two trainees at a time. However, a trainer should not work with more than two trainees at a time during an initial training session, because it would be difficult for more than two trainees to see what the trainer is doing.

✔ During live surgery training sessions and certification, the WHO manual, *Trichiasis Surgery for Trachoma – Second Edition* p. 49-50, recommends a program of five days per trainee with a maximum of six trainees in any one session. No more than two trainees per trainer should be observing at a time.

❑ Additional information on the participants: CVs, previous experience with TT surgery, familiarity with the national trachoma program and its goals

3. Live surgery and certification process

❑ Coordinate with national program/partners to ensure that the required number of patients will be available. It is recommended that mobilization take place during the week before live surgery training begins, and that patients be scheduled in advance for each day of live surgery.

❑ Ensure that supplies, equipment, and consumables are available.

Preparation

The training course is divided into five sections, with each section containing several sessions. All sessions follow the same structure: Session summary; Objectives; Duration; Materials; Handouts; Training Procedure; and Tips, when available.

In addition, PowerPoint presentation slides are provided to support the training process. A suggested agenda is included as well in Annex J. All of these materials should be adapted to the context and needs of the participants.

Thorough preparation is essential for a successful training workshop. The trainer should be fully familiar with all the training modules, and should ensure that all necessary materials, equipment and logistical arrangements are ready.

Section 1: Introduction to the training program

Session 1: Introductions

Session Summary: This introductory session is an icebreaker designed to help participants to relax in the new environment and get to know each other. This opening activity sets the tone for the training workshop as being participatory and embracing adult learning principles.

Objectives:

1. To demonstrate that this is a participatory workshop and full participation is expected from each learner.
2. To demonstrate that the participants are responsible for their learning and that the trainer is there to facilitate the learning process, not force it on anyone.
3. To allow the participants and facilitator to interact and to get to know one another, thereby creating a sense of community and safety within the learning environment.

Duration: 45 minutes

Materials: Flip chart and markers

Handouts: None

Training Procedure:

1. Ask the participants to form a circle that also includes the trainer.
2. Explain to the participants that they will get to know each other by taking turns telling about themselves. Ask the first person in the circle to stand up, announce their name, where they are from, and something about themselves (e.g., favorite sport or dream vacation spot).
3. The next person must then stand up, say the name of the first person and his or her "sport," and state his or her own name and sport.
4. The third person must say the names and sports of each of the preceding people and then add his or her name and sport.
5. This continues all the way around the circle to the last person, who needs to remember everyone's name and sport.
6. Following this activity, the trainer asks the participants to comment on the value of the activity, and writes their responses on the flip chart.
7. If not brought up by the participants, the trainer should mention that the activity: allows participants to become acquainted; develops a sense of community; helps people relax; sets a climate of participation and "instant involvement" of all; demonstrates that the trainer is part of the group and not a lecturer; provides the trainer with a sense of the group that will help as the workshop proceeds; and helps reduce the anxiety of the trainer.

Tips:

Icebreakers promote group participation, and are an excellent way to help people relax and get interested in an activity. There are many different examples of icebreakers that can be used for any group size. Use them at the beginning of the training as introduction games, or even as energizers during the training, to help create a positive group atmosphere and motivate the participants!

Session 2: Expectations, agenda and objectives

Session Summary: Participants come to workshops with a variety of expectations about the nature of the workshop and what they will gain. These expectations may differ from the organizers' intentions, and if not promptly discussed may lead to confusion, dissatisfaction and poor learning. This and the following session provide an opportunity to identify participants' expectations and reconcile them with the workshop objectives or, if reconciliation is not possible, to address the reasons why the expectations cannot be met.

Objectives:

1. To identify participants' expectations for the workshop and determine their learning needs in terms of training (and trachoma).
2. To establish a pattern of group work for the workshop.

Duration: One hour

Materials: Flip chart and markers

Handouts: None

Training Procedure:

1. Ask each participant to write down three expectations he or she has for the workshop – in other words, three things they hope to learn or achieve during the workshop.
2. Give the participants 5-10 minutes to develop their list. When they are finished, form groups of 2-3 people (or larger, depending on the number of participants).
3. Ask the members of each group to share their expectations with each other. The group should then develop a group list of three expectations, arriving at a consensus based on their individual expectations.
4. Bring the participants together and invite one group to present its expectations. Write their responses on the flip chart.
5. Ask the other groups if they had any different expectations to add to the list, adding these to the flip chart.
6. At this point, present the workshop objectives and agenda.
7. Review the agenda and discuss the participants' expectations, indicating where their expectations will be met, where the agenda can be reorganized to meet expectations, and which expectations cannot be met.

Tips:

Although not all participant expectations can be addressed within this course, it is important for the trainer to note these expectations and, when relevant, to make an effort to address them, either during this workshop or later (e.g., during follow-up activities such as supervision) or by providing additional resources (e.g. support documents, links to other sources of information). This will help the trainer to adapt the content of this course to the learning needs of the audience.

Mutual support and respect are important for a successful training workshop. (Photo: William Nsai)

Practicing a trichiasis examination during a training workshop. (Photo: Sabrina La Torre)

Session 3: Norms

Session Summary: This session is intended to establish the behaviors that the participants agree will be necessary to have a successful and productive workshop.

Objective: To set the ground rules for behavior during the workshop.

Duration: 15 minutes

Materials: Flip chart and markers

Handouts: None

Training Procedure:

1. Brainstorm with the participants what they feel are the necessary norms for this to be a successful workshop (answers may include: not speaking at the same time, respect for others' opinions, no side conversations, cell phones turned off, no smoking, etc.).
2. Write the responses on the flip chart.
3. Ensure that all participants agree.
4. Post the flip chart on the wall of the training room to be referred to if needed.

Session 4: The importance of certification

Session Summary: One of the critical aspects of training TT surgeons is ensuring that they have the necessary skills to consistently achieve high-quality outcomes. In the past, many surgeons have been trained and sent out to perform surgeries without being tested on their newly acquired skills. Not holding newly trained surgeons to a standard of quality before they begin operating may have contributed to the high percentage of surgical failures in the trachoma-endemic world. This session is designed to discuss the need to certify, and to add to the discussion of expectations to be sure that all the trainees are aware that they will need to demonstrate certain skills in order to move on.

Trainees receive certification for this course in two stages: 1) first, the trainee is certified to move from HEAD START to live patients; 2) second, the trainee graduates from the course certified to begin independent work in the field. The steps for the final assessment are outlined in the WHO manual *Trichiasis Surgery for Trachoma – Second Edition*, p. 51. In some cases, national programs may have additional requirements for certification.

It is important to note that once new surgeons are certified and allowed to work independently in the field, TT programs must ensure that supportive supervision visits and surgical audits occur regularly. These activities are essential to provide technical support and facilitate ongoing capacity building for the TT surgeons, and should be part of each TT program's quality assurance system. ***Please refer to Section 5, session 5 for more information on supportive supervision and surgical audits.***

Objectives:

1. To introduce and discuss the purpose of certification.
2. To ensure that all participants are aware that they may not meet the qualifications to become TT surgeons.

Duration: 30 minutes

Materials: Flip chart and markers; Trainee Assessment Form (see Annex H); WHO manual *Trichiasis Surgery for Trachoma – Second Edition*, p. 49-65 (certification checklists)

Handouts: None

Training Procedure:

1. Ask the participants if they are aware of the certification requirements for becoming TT surgeons.
2. If they are not aware of the requirements, explain that during the training they will need to demonstrate specific skills to graduate to the next phase. Show them the certification checklists for both HEAD START and live surgery, so they are aware of the specific areas in which they will be assessed.
3. Remind the participants that they will first gain practical skills by using the HEAD START mannequin. They will be expected to demonstrate certain skills on HEAD START prior to moving on to live patients.
4. Following the live surgery practice, participants will be assessed as they operate on five eyelids. If they demonstrate the necessary competencies according to the WHO certification checklist, they will be certified to practice independently. If they do not demonstrate the necessary skills, they may benefit from additional training or possibly may not be allowed to be TT surgeons.
5. Ask the participants if they have any questions.
6. Ask the participants why certification is important, listing their responses on the flip chart.

Tips:

The critical message here is that, in the interest of good patient care, not everyone may be certified to become a TT surgeon or continue as a TT surgeon. At the outset, TT surgeon programs should be clear that the trainer should not be put in the unethical position of having to certify an unqualified surgeon for political or program reasons.

If at the end of the practice a trainee fails the certification process, he or she must not be allowed to perform TT surgery. Though this is a difficult step for many training program managers, it is ESSENTIAL from an ETHICAL perspective. Thus, to optimize training outcomes, it is essential to select trainees in accordance with the established criteria, as described in the WHO manual Trichiasis Surgery for Trachoma – Second Edition.

Of course, this message should be conveyed in a sensitive manner. The trainer could, for example, remind a participant who has failed the certification process that there are still other career paths for him/her.

Section 2: Background and theory

Session 1: Trachoma and the strategy for elimination

Session Summary: This session first presents basic facts about trachoma (definition, epidemiologic data, risk factors). The key point here is how trichiasis develops, although understanding the other aspects of trachoma provides an overall clinical context for the surgeons-in-training.

The session next provides a brief look at trachoma and trichiasis globally and at the national level. If this workshop is focusing on specific regions or districts, then any available data pertaining to SAFE in that region should be presented as well. This presentation includes 2-3 slides on the global burden of disease. National or local representatives should prepare a brief presentation on trachoma in that country/province/region/state/district. As this session is intended solely to provide context for the training workshop, discussion should be limited to what the situation will mean for the participants in terms of being TT surgeons. Debates about the data are not necessary for the success of this session and should be discouraged.

Finally, the session explains the SAFE strategy and how trachoma elimination planning is structured. Though most participants will already be familiar with the four components of SAFE, facilitators need to ensure that everyone has the minimum knowledge necessary to participate. This is an opportunity to begin introducing some of the programmatic concepts commonly used in trachoma planning such as the elimination target, the backlog, the annual intervention objective and how such targets are calculated. This session is also the opportunity to initiate discussions with the participants on the overall objective of the TT intervention: to bring and maintain the prevalence of unmanaged trachomatous trichiasis in adults below 0.2%.

Objectives:

1. To define trachoma and briefly explain its various stages and how trichiasis develops (further information will be provided during Session 2, Session 3).
2. To give participants an overall understanding of the trachoma situation, and particularly the trichiasis situation, in which they will be working.
3. To ensure that all participants are familiar with the SAFE strategy.
4. To ensure that all participants are familiar with the various terms and concepts of trichiasis planning.

Duration: Two hours

Materials: Flip chart and markers, PowerPoint presentation slides introducing trachoma and showing its various stages, slides on calculating the TT backlog and TT elimination targets to bring prevalence in adults below 0.2%, Excel file for calculating TT backlog and elimination targets

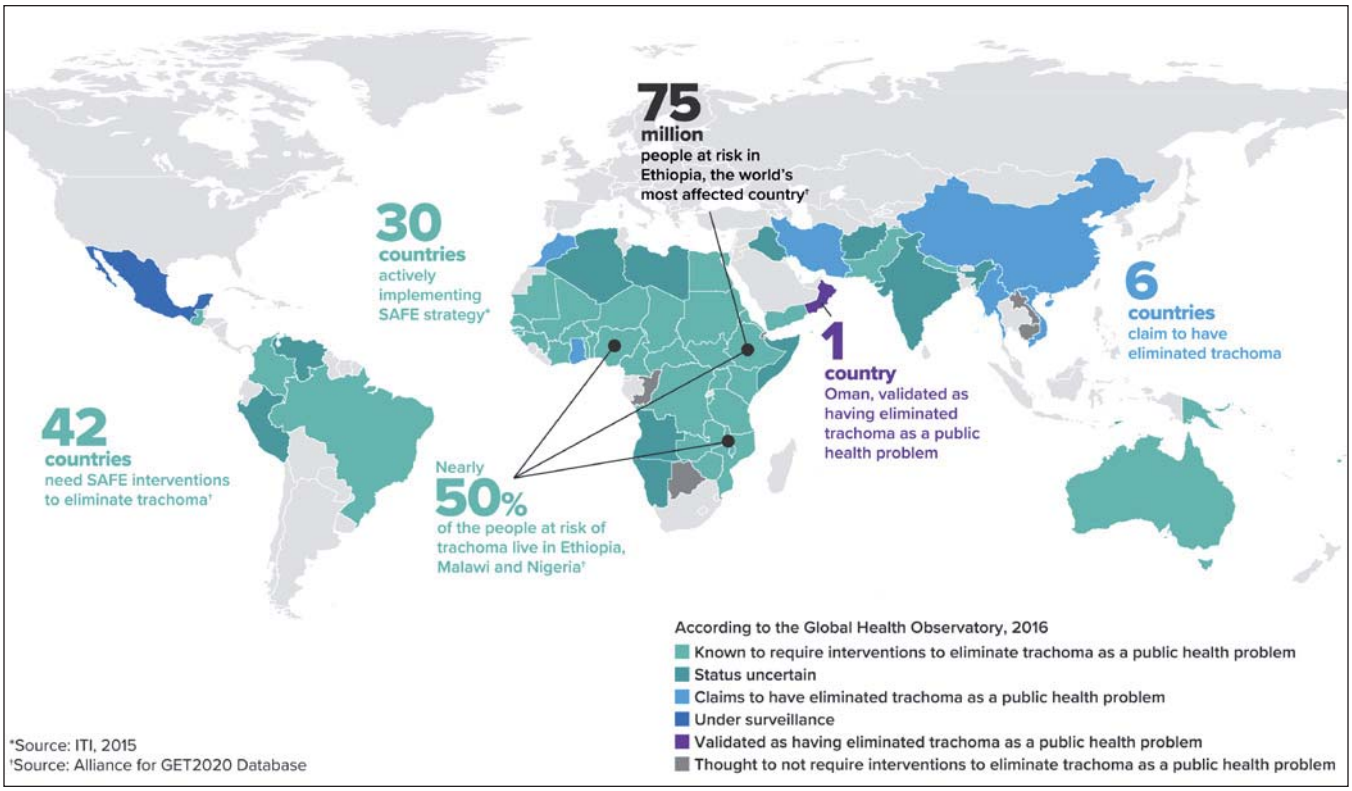
Handouts: None

Training Procedure:

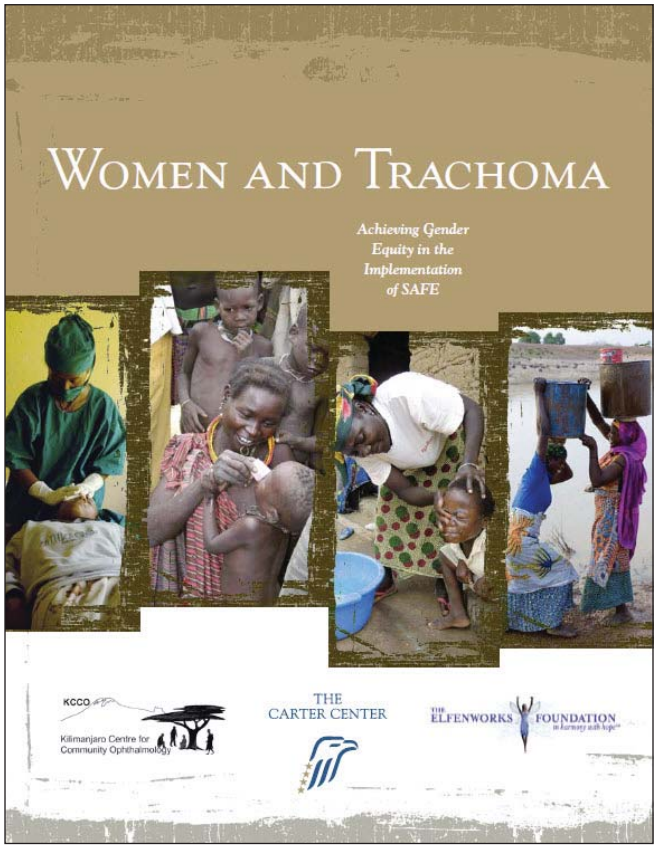
1. Present an overview of the global and national situation and any local data, as appropriate, to aid trainees in understanding the magnitude of the problem at various levels.
2. Ask the participants what the biological cause of trachoma is and how the infection can be spread.
3. Ask the participants to list risk factors for trachoma.
4. Before moving on to the next point, ask the participants if they have any questions.
5. Write the letters “SAFE” on the flip chart.
6. Ask the participants what SAFE refers to, writing down their responses.
7. As each component of SAFE is identified, ask the participants to explain its importance within the context of trachoma elimination.
8. Present the slides on calculating the TT backlog and elimination targets.
9. Present the calculation sheet and demonstrate the calculation for one district.
10. Conduct a brief discussion with the participants as to how the data might affect their role as TT surgeons.
11. Ask the participants for any questions or needs for clarification.

Tips:

Women and Trachoma – It has been shown that significantly more women than men develop trichiasis. The excess risk for and complications of trachoma borne by women through the course of the disease suggest that factors other than biology are involved. It has been suggested that women are more susceptible to trachoma infection (and therefore trichiasis) because they generally have more frequent and prolonged contact with children, who are the reservoirs of infection. In some cultures, women have higher barriers to accessing health care than men, so the excess risk of trichiasis is accompanied by decreased likelihood of being treated for it. It is important to highlight these points and facilitate further discussion on the topic, especially regarding its implications for planning outreach campaigns and designing social mobilization strategies targeted at women.



The status of trachoma endemicity at the country level. (Source: *Eliminating Trachoma: Accelerating Towards 2020*, WHO Alliance for the Global Elimination of Trachoma by 2020)



The *Women and Trachoma* manual, available at www.cartercenter.org.

Session 2: Preferred practices

Session Summary: This session presents the available evidence on conducting trichiasis surgery programs. The presentation is based on the findings of scientific meetings held in 2012 and 2015, and focuses on the need to increase both the quality (and thus the outcomes) of surgeries and the quantity of surgeries. This presentation also introduces the concept of trichiasis management. Within WHO guidelines, the backlog of trichiasis represents trachomatous trichiasis cases that are unknown to the health system, meaning those that have not been identified and offered surgery. Individuals with trichiasis who have been previously encountered and offered surgery are not counted as part of the elimination target, even if they have not accepted the surgical services offered.

Ideally, all people with TT will accept surgery, particularly if central eyelashes are involved or peripheral lashes are touching the cornea, but the reality is that they won't. Regardless, all people with TT, and their decision on how they want to manage their condition, need to be recorded and followed up on.

Individuals who initially refuse surgery should be offered epilation after proper counselling. In addition, they should be followed on regular basis and offered surgery again as trichiasis progresses. *(Epilation will be furthered detailed in Section 3, Session 4 – Surgery: Indications and contraindications).*

Objectives:

1. To introduce the results of research concerning case management of TT.
2. To introduce the results of research concerning quality of surgery and the role of surgeon training.
3. To introduce the results of research concerning the quantity of surgeries (surgical productivity) necessary to reach 2020 goals.
4. To create an understanding of reporting that includes surgeries, epilation, and (informed) refusals.

Duration: 30 minutes

Materials: Projector, PowerPoint presentation slide set on preferred practices

Handouts: None

Training Procedure:

1. Present the findings from the 2012 and 2015 Global Scientific Meetings on Trachomatous Trichiasis (see Annex D for a summary of key findings from the 2015 meeting in Cape Town).
2. Assess participants' knowledge and critical thinking by asking questions concerning the three main topics of the presentation (management, quality and quantity) and their applicability to the local situation.
3. Initiate a discussion about the participants' feelings about those who refuse to have surgery after proper counselling on the risks of refusing surgery. Good documentation of acceptance and refusal for surgical programs will be very important.

Tips:

Documents related to preferred practices are available on the ICTC website www.trachomacoalition.org. The participants should be strongly encouraged to read them.

Session 3: Organizing an outreach

Session Summary: As discussed in the Preferred Practices session above, only a small percentage of trichiasis cases are managed through fixed-facility services. Taking services to affected communities is therefore essential if a country is to reach its TT elimination goal. This session introduces the considerations that surround outreach services, including organizing the campaigns; mobilizing TT patients; setting up the outreach camps to efficiently manage patients and family members, and counsel and manage refusers; providing post-surgical follow-up; and recording and reporting key data and using the data to improve future efforts.

Each of these components is covered in detail in the ICTC guide *Organizing Trichiasis Surgical Outreach*, available on the ICTC website www.trachomacoalition.org.

The key points to discuss will differ from country to country. The facilitator should decide which points are the most pertinent. All countries should at least highlight the need to estimate the number of patients that could be expected at a camp, the need for counselling and management of refusers, the follow-up required for patients who have received surgery, and the need to follow up on those who refuse surgery and opt for epilation.

Objective: To explain the basic components of organizing TT surgical outreach services and to further establish the programmatic context in which participants will be working.

Duration: 90 minutes

Materials: Five prepared flip chart sheets, each having one of these headings written at the top: 1) Pre-surgery Organizational Activities; 2) Mobilization Activities; 3) Managing the Outreach Site and Conducting Surgery; 4) Follow-up of Patients; 5) Recording and Reporting

Handouts: None required, but, if available, copies of the guide *Organizing Trichiasis Surgical Outreach* would be very useful.

Training Procedure:

1. Review the point that 65-85% of all TT case management is done through outreach.

2. Emphasize the importance of outreach to achieve the GET2020 goals.

3. Present the first flip chart sheet and brainstorm with the participants the various aspects of what needs to be done prior to the outreach, listing the responses on the sheet. (Use the table of contents of the Outreach guide as an indication of the critical points. What is critical may differ from country to country, depending on the role the TT surgeon will play in the overall organization of the camp.)

4. Continue in the same manner with the other categories.

Tips:

This session should be referred to during the following one on social mobilization and counselling.

Session 4: Social mobilization and counselling

Session Summary: This session is an opportunity to emphasize some key points regarding social mobilization and counselling.

It is well recognized that implementing strategies to increase the use of trichiasis surgical services is key to reducing the backlog of trichiasis in the community. National and local programs need to use available evidence to plan mobilization activities and to think strategically and critically. Furthermore, programs need to consider that as some barriers to use of services are addressed, others may become apparent. This means that mobilization efforts may need to evolve over time; new techniques for mobilization may be required, especially when few patients remain.

Mobilization needs to be considered from a standpoint of a pyramid, with the base being "awareness," the next layer being "access," and the top layer being "acceptance." Thus, counselling is an integral part of trichiasis surgical services. Counselling will help increase awareness about trichiasis and its management, explain the seriousness and implications of unmanaged trichiasis, moderate patient expectations, encourage patients to come for follow-up, and address any concerns people with trichiasis (and their family members) may have regarding trichiasis surgery or other management of the disease.

Objectives:

1. To ensure that participants understand the key principles of social mobilization and counselling.
2. To ensure that participants understand the importance of implementing adapted strategies for social mobilization and counselling as part of organizing successful outreach campaigns.
3. To identify and list potential reasons why people do not get trichiasis surgery, and discuss potential solutions.

Duration: One hour

Materials: Flip chart and markers, PowerPoint presentation slides on social mobilization and counselling

Handouts: None required, but the following could be provided: Copies of the ICTC *Trichiasis Counselling Guide* if available, and the list of ICTC key messages for counselling (Annex E)

Training Procedure:

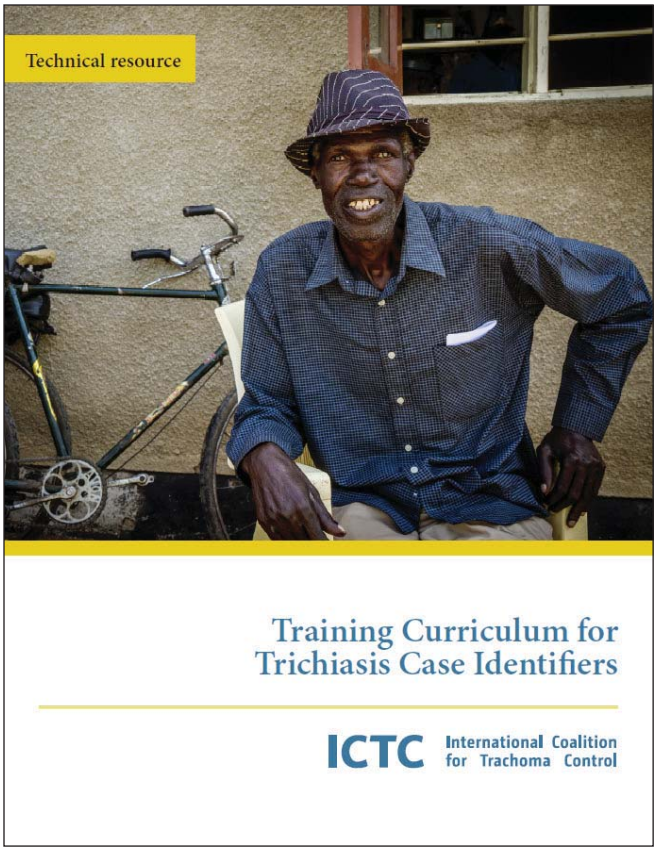
1. Present the PowerPoint slides.
2. Ask the participants to list all of the reasons why people do not get trichiasis surgery. Tell them to list as many reasons as possible within 15 minutes.
3. After 15 minutes, ask them to present this list to the trainer. While this is going on, the trainer takes note of the barriers identified.
4. The group will discuss each item on the list and offer solutions accordingly.

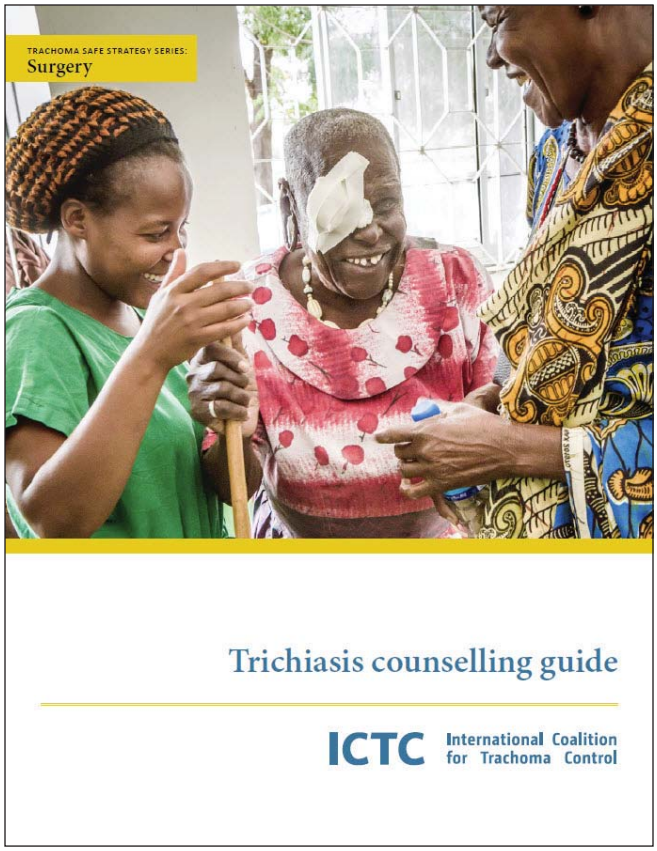
The list of key messages for counselling – ICTC preferred practices – should be reviewed and adapted to the local context accordingly. This should be done by a select group prior to the campaign.

5. At the end of the exercise, review and summarize the main skills a counsellor should possess.

Tips:

This session is also an opportunity to emphasize the need for trachoma services to be inclusive. The trainer should refer to the initial discussion on Women and Trachoma suggested in Section 2, Session 1. Considering that not only women, but also the elderly and persons with disabilities (loss of sight), represent a significant portion of a TT surgery program's target beneficiaries, it is critical to tailor social mobilization and counselling strategies accordingly. In addition, inclusion of these persons should also be taken into consideration while planning the outreach campaign (close location, accessible venue, male and female health workers and TT surgeons on site, etc.).





These ICTC manuals provide in-depth information on identifying trichiasis cases and counselling patients. Available at www.trachomacoalition.org.

Section 2 is now complete. Before starting section 3, it is recommended that the trainer use the following test to recap the previous section.

Test Procedure

1. Distribute the test to each participant or have the test ready to project from the computer onto the screen.
2. Explain that the participants have 15 minutes to answer the questions.
3. After 15 minutes, divide the participants into groups of three to discuss their answers and, if differences arise, to generate group answers to the questions.
4. After 15-20 minutes, ask each group to discuss their responses to the test questions.

Trichiasis Test – Part 1

1. Considering the socio-economic risk factors for trachoma, who is at greater risk for trichiasis?

2. Please briefly describe the SAFE strategy.

3. Based on the elimination target for trichiasis, please describe how the backlog and annual intervention objective are defined.

4. Please explain what is meant by "unknown to the health system."

5. Please briefly explain why social mobilization and counselling strategies are key components to reducing the backlog of trichiasis.

Section 3: Pre-surgical skills

Session 1: Anatomy of the eye and eyelid

Session Summary: This session introduces the basic anatomy of the eye, with an emphasis on the parts most affected by trachoma. The time spent on this session will depend on the background of the participants. In countries that train only ophthalmic technicians to perform trichiasis surgery, this could be just a quick review. In countries that train nurses and other health workers, additional time will be needed to ensure that all of the participants can demonstrate knowledge of the anatomy of the eye and eyelid.

Objective: To ensure that all participants have a good understanding of the anatomy of the anterior part of the eye and the eyelid.

Duration: 45 minutes

Materials: Flip chart and markers, projector with slide of front of eye and cross-section, pen lights, WHO manual, *Trichiasis Surgery for Trachoma – Second Edition* (p. 3)

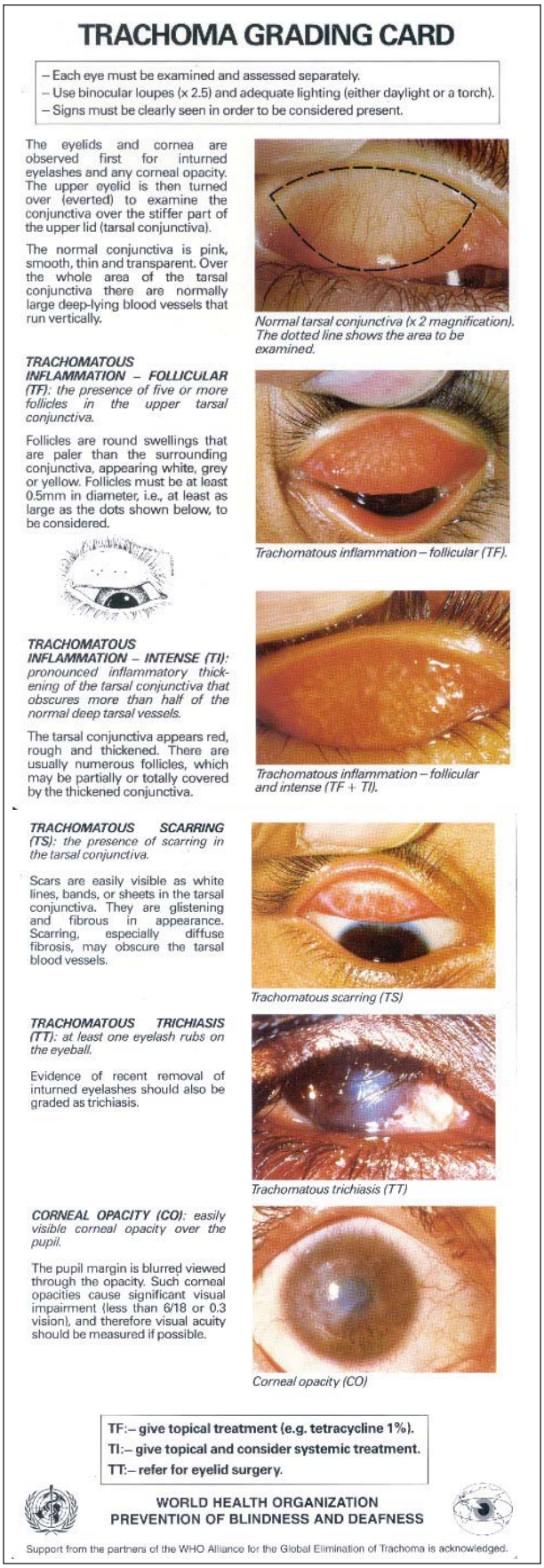
Handouts: Handouts of the slides, if desired

Training Procedure:

1. Ask participants to name the various parts of the eye; write the responses on the flip chart.
2. As participants name each part, ask them the function of that part.
3. Show the first slide of the front of the eye and ask the participants to indicate the parts of the eye that comprise the front (eyelids, eyelashes, punctum, cornea, conjunctiva, pupil, sclera).
4. As they do so, describe in more detail, as needed, the characteristics and function of each part.
5. Show the cross-section view, indicating the already named parts but with an emphasis on the eyelid.
6. Indicate the eyelashes, noting that they grow from roots 2 mm deep and emerge just above the eyelid margin. Explain that in a normal eyelid, the lashes point away from the cornea and the globe of the eye, and the margin is visible beneath the lashes at the edge of the eyelid.
7. Describe the four key layers of the eyelid, using the provided picture.
8. Ask the participants to pair off. Distribute a pen light to each pair and ask them to examine the eyes and eyelids of their partner.
9. After the practical exercise, ask the participants if they have any questions.

Tips:

To perform trichiasis surgery, a surgeon must be able to readily identify the punctum and eyelid margin. When participants are paired off, it may be useful to visit each group and ask them to point out some of these key features.



TRACHOMA GRADING CARD

– Each eye must be examined and assessed separately.
– Use binocular loupes (x 2.5) and adequate lighting (either daylight or a torch).
– Signs must be clearly seen in order to be considered present.

The eyelids and cornea are observed first for inturned eyelashes and any corneal opacity. The upper eyelid is then turned over (everted) to examine the conjunctiva over the stiffer part of the upper lid (tarsal conjunctiva).

The normal conjunctiva is pink, smooth, thin and transparent. Over the whole area of the tarsal conjunctiva there are normally large deep-lying blood vessels that run vertically.

Normal tarsal conjunctiva (x 2 magnification). The dotted line shows the area to be examined.

TRACHOMATOUS INFLAMMATION – FOLLICULAR (TF): the presence of five or more follicles in the upper tarsal conjunctiva.

Follicles are round swellings that are paler than the surrounding conjunctiva, appearing white, grey or yellow. Follicles must be at least 0.5mm in diameter, i.e., at least as large as the dots shown below, to be considered.

Trachomatous inflammation – follicular (TF).

TRACHOMATOUS INFLAMMATION – INTENSE (TI): pronounced inflammatory thickening of the tarsal conjunctiva that obscures more than half of the normal deep tarsal vessels.

The tarsal conjunctiva appears red, rough and thickened. There are usually numerous follicles, which may be partially or totally covered by the thickened conjunctiva.

Trachomatous inflammation – follicular and intense (TF + TI).

TRACHOMATOUS SCARRING (TS): the presence of scarring in the tarsal conjunctiva.

Scars are easily visible as white lines, bands, or sheets in the tarsal conjunctiva. They are glistening and fibrous in appearance. Scarring, especially diffuse fibrosis, may obscure the tarsal blood vessels.

Trachomatous scarring (TS)

TRACHOMATOUS TRICHIASIS (TT): at least one eyelash rubs on the eyeball.

Evidence of recent removal of inturned eyelashes should also be graded as trichiasis.

Trachomatous trichiasis (TT)

CORNEAL OPACITY (CO): easily visible corneal opacity over the pupil.

The pupil margin is blurred viewed through the opacity. Such corneal opacities cause significant visual impairment (less than 6/18 or 0.3 vision), and therefore visual acuity should be measured if possible.

Corneal opacity (CO)

TF:– give topical treatment (e.g. tetracycline 1%).
TI:– give topical and consider systemic treatment.
TT:– refer for eyelid surgery.

WORLD HEALTH ORGANIZATION
PREVENTION OF BLINDNESS AND DEAFNESS

Support from the partners of the WHO Alliance for the Global Elimination of Trachoma is acknowledged.

Session 2: Trachoma and its effect on the eye

Session Summary: This session explains the impact trachoma may have on the eye. The various stages of trachoma are presented with frequent references to the previous session, contrasting the normal eyelid with the trachomatous one. The key point here is how entropion/trichiasis develops; however, an understanding of the other aspects of trachoma provides an overall clinical context for the surgeons-in-training.

Objective: To describe the various stages of trachoma and how trichiasis develops.

Duration: One hour

Materials: Flip chart and markers, PowerPoint slides showing the various stages of trachoma, WHO manual *Trichiasis Surgery for Trachoma – Second Edition* (p. 4)

Handouts: None

Training Procedure:

1. Ask the participants what the various signs of trachoma are and write the responses on the flip chart. Responses should include: trachomatous inflammation – follicular (TF), trachomatous inflammation – intense (TI), trachomatous scarring (TS), trachomatous trichiasis (TT), and corneal opacity (CO).
2. Ask the participants how these various stages progress.
3. Present the PowerPoint slides on the stages of trachoma, filling in any details the participants might have missed.

Tips:

This session can be used as an opportunity to review the SAFE strategy. Ask the participants what options can be offered to the patient, based on the various manifestations of disease. Facilitate a discussion (not a debate!) on the benefits, risks, and indications for surgery, based on the recommendations from the Second Global Scientific Meeting on Trachomatous Trichiasis (Cape Town, 2015).

Define the concept of minor (< five eyelashes touching the eyeball) and major trichiasis and explain that risk of recurrence following surgery is higher in those with major trichiasis.

Session 3: History and examination for upper eyelid trichiasis

Session Summary: The first step in managing trichiasis is verifying that the patient has trachomatous trichiasis with an indication for surgery, and determining whether the patient can be operated on by a TT surgeon in the community or needs to be referred to an eye care specialist or a secondary health care facility.

The four steps for determining this are: taking a history from the patient; examining the eyelid; examining the cornea; and evaluating the presence or absence of defective eyelid closure. These steps are found in the WHO manual *Trichiasis Surgery for Trachoma – Second Edition* (p. 5-6). This session walks the participants through the four steps.

Objectives:

1. To ensure that TT surgeons can carry out a screening for trichiasis and confirm TT cases identified by case finders.
2. To have the participants demonstrate the elements of an examination for trichiasis.

Duration: One hour

Materials: WHO manual *Trichiasis Surgery for Trachoma – Second Edition* p. 5; prepared flip chart or slide with the examination steps and patient history questions written down; tools for eyelid examination, including torches; ×2.5 magnifying loupes (at least one for every two participants); hand washing station/hand sanitizer; PowerPoint slide showing incorrect/correct positioning for screening; samples of data collection forms (see annexes)

Handouts: Steps (and questions) for the trichiasis examination. (This is optional, as participants can write the steps down in their notebooks.)

Training Procedure:

1. Present the four steps of the examination, using either the flip chart or a computer projector.
2. Discuss the details of each step.
3. Demonstrate the examination using a torch and magnifying loupe, clearly explaining the various steps.
4. Show the participants the slide on incorrect/correct positioning for screening, and ask them to describe what they see.
5. Ask the participants if they have any questions.
6. Ask them if there is any additional step they would want to include. Discuss the suggestions.
7. Ask the participants to pair off. If the facilitator feels that there is a participant who would benefit from working with a particular individual, ask them to work together.
8. The facilitator should observe the participants to ensure that everyone understands the steps and that they demonstrate the necessary competency to examine the eye.
9. At the end of the practice, review with the participants the data collection tools, and show them how to complete them.

Tips:

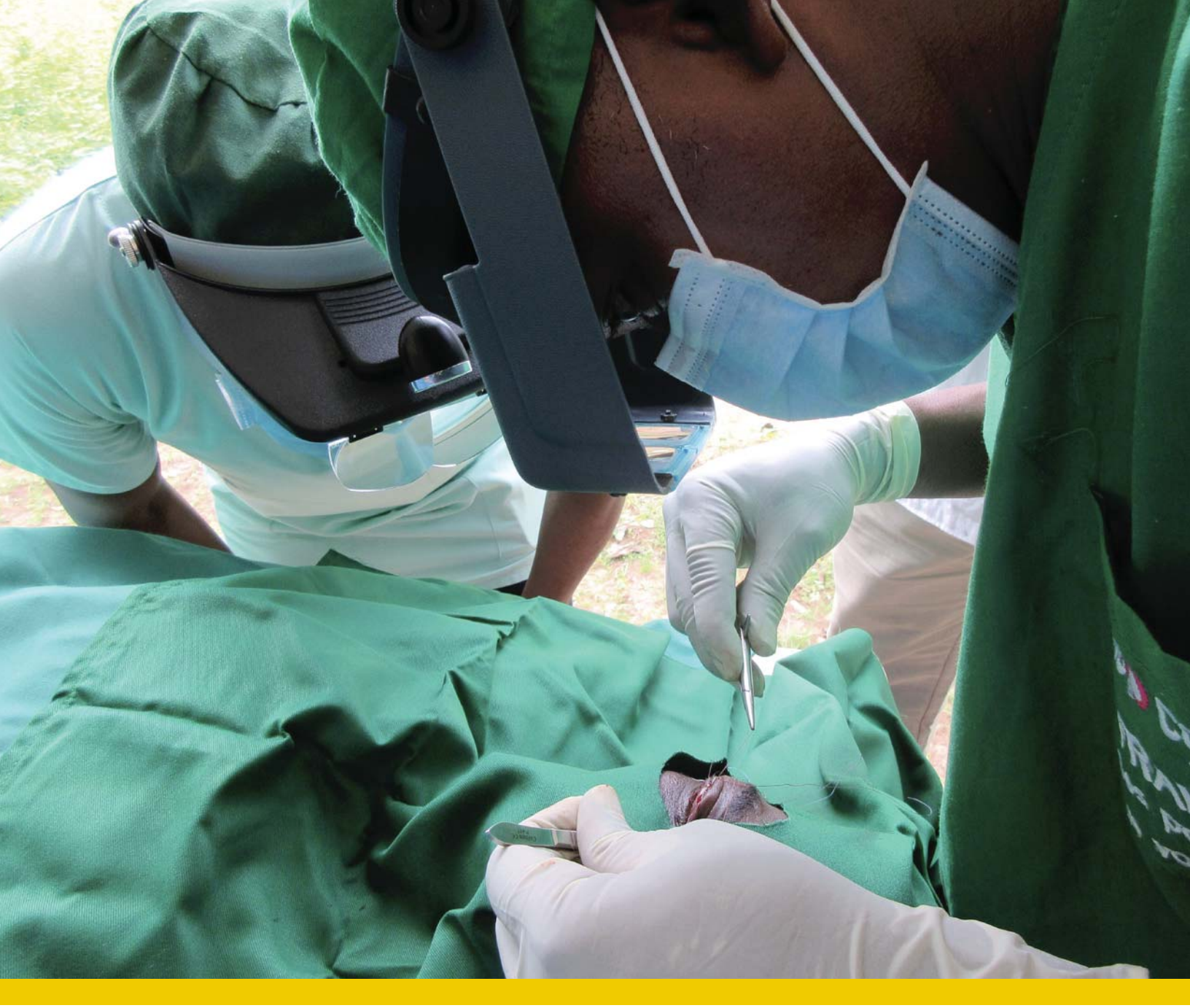
Questioning: Ask the patient if they have a problem with their eyes, if they feel pain or discomfort (e.g., discomfort in direct sunlight, watery eyes).

Positioning: Look up at the eyelid FROM BELOW. Right eye then left eye. If the patient is lying down and cannot stand up easily, there is no need to ask him or her to stand.

Examine the patient indoors or in the shade. Also search for signs of epilation. Sometimes it can be difficult to see if an eyelash is touching the eyeball or not. In this case, the examiner can ask the patient to look up, as it is easier to see dark eyelashes against a white sclera. While still looking from below and from the side, look for lashes that are pointed downward. The examiner may also need to examine the eye from the side to see if the lash actually touches the eye. If so, while the patient looks from one side to another, the eyelash will move together with movement of the eyeball. If trichiasis is noted, evert the eyelid to assess TS. Discuss what to do if there is no evidence of scarring.

Counselling: Screening is often the first opportunity to provide information and counselling to the patient. The main messages (explanation of trachoma and its consequences, where to access services, description of the surgery) must be given at this time to encourage the patient to seek services.

After screening each person, the examiner needs to wash his or her hands or rub them with hand sanitizer to prevent the spread of infection to the next person.



TT surgery performed in the community.
(Photo: Sabrina La Torre)

Session 4: Surgery – Indications and contraindications

Session Summary: This session is a continuation of the previous one and presents the indications and contraindications for surgery. This session also allows the facilitator to refer to previous information on trichiasis, when surgery should be offered, and how to manage individuals who decline surgery even if they are eligible.

All people with entropion trichiasis should be offered surgery. If the patient refuses after counselling about the consequences of trichiasis, the patient may be counseled about epilation and advised to come for follow-up at a designated place such as a health center. Details regarding the indications and contraindications are found on page 7 of the WHO manual *Trichiasis Surgery for Trachoma – Second Edition*. They are also listed below:

Definite indications for eyelid surgery in the community:

1. One or more eyelashes which turn in and touch the cornea when the patient looks straight ahead
2. Evidence of corneal damage from trichiasis
3. Severe discomfort from trichiasis
4. TT patient requests surgery

Contraindications to performing surgery in the community:

1. Childhood[1]: Children need surgery in a hospital, possibly with general anaesthesia.
2. Poor general health (see Session 3 of this section).
3. TT of the lower eyelid. There is no WHO-recommended surgical technique to address lower eyelid trichiasis. More research is needed on how best to manage lower eyelid trichiasis. In the meantime, lower eyelid trichiasis should be managed by the most experienced eye specialist available. Between diagnosis and review by that specialist, epilation should be encouraged.
4. Defective eyelid closure or repeat trichiasis after surgery. Unfavorable outcomes following trichiasis surgery can be common. The incidence of these outcomes varies widely between settings. Post-operative trichiasis can be a particularly bad problem and is more common with severe initial trichiasis. As repeat surgery is more complicated and is more likely to lead to repeat poor outcomes, post-operative trichiasis should be managed by the most experienced trichiasis surgeon or eye specialist available. Cases of post-operative trichiasis will require a different surgical approach than the original surgery and should be referred to an ophthalmologist or the most experienced trichiasis surgeon available. Epilation is advised until the definitive management of such cases by a qualified professional. Between diagnosis and review by that professional, epilation should be encouraged.

In addition, absence of scarring and no evidence of in-turned lid can be noted as a contraindication: operative management is designed to correct entropion. Although many trichiasis patients do not have significant entropion, data suggest that high-quality operative management is generally effective in any case. However, the decision on how best to manage these cases should be made according to the policy set by the health ministry.

Objective: To ensure that the participants can accurately describe which TT cases are eligible for surgery and which are not.

Duration: 30 minutes

Materials: Projector and computer with slide of indications and contraindications; flip and marker; WHO manual *Trichiasis Surgery for Trachoma – Second Edition,* p. 7

Handouts: Guide for epilation (Annex F), list of the indications and contraindications as projected or written on flip chart (optional)

Training Procedure:

1. Ask the participants for their suggestions regarding indications for surgery, writing down responses on the flip chart.
2. Ask the participants for their ideas regarding contra-indications, also noting the responses on flip chart.

1 "Child" usually refers to a person less than 14 years of age. A "child" should be distinguished from a "minor," which refers to anyone less than 18 years of age in many countries. In the TT surgery context, the decision to not conduct surgery at the community level for a child can be based on different justifications, for example:
- — the greater consequence of poor visual outcome in terms of years of life lived with disability
- — the inability of the child to understand the basic requirements for the procedure to be done, e.g.: unable to lie still during the surgical procedure or undergo the procedure without interrupting the surgeon.

Session 4: Surgery – Indications and contraindications (continued)

3. Show the list from the WHO manual *Trichiasis Surgery for Trachoma – Second Edition* (p. 7), discussing any differences between the participants' suggestions and the list.
4. Describe different scenarios of patients presenting for surgery and ask the participants if surgery is indicated or contraindicated. Ask them to justify their responses.

Tips:

Emphasize that it is critical to ensure that the patient can provide informed consent. This ethical consideration means the patient knows the various options available to him/her, and accepts surgery understanding the risks involved, including the possibility of recurrence of trichiasis. It is the right of the patient to refuse surgery, which then means the person with TT is provided counselling to ensure they understand the consequences of the disease and know what to do and where to go if the trichiasis becomes more painful. If the policy of the national program allows for epilation, the patient should be taught how to properly epilate and be provided with epilation forceps if they are available. Patients who choose epilation should be followed up with regularly by a service that can provide surgery.

A patient who refuses surgery must be registered as having been offered surgery and having declined. The patient is now known to the system and is not counted as part of the elimination target, though services should be made available in case the patient changes his or her mind.

In the case of patients who are eligible for TT surgery but have not received it for any reason, including refusal, the program should gather all data necessary to trace the patients (phone number of patient/relative/neighbor; address and, if possible, GPS location). These data should be recorded systematically. The programs should also define and implement an active tracking/follow-up system for these cases.

For reporting: For medical purposes, TT surgeons should report both the number of eyelids operated on and the number of patients. NOTE: For reporting progress towards achieving the elimination target for trichiasis, the number of people managed is the necessary indicator.

Session 5: Fitness of the patient for surgery

Session Summary: As mentioned above, one of the contraindications for conducting trichiasis surgery is if the patient is in poor general health. The surgical procedure should be performed only if the risk for the patient is minimal. This session presents various considerations for determining if a patient is healthy enough for surgery. *This session can be found on page 8 of the WHO manual* Trichiasis Surgery for Trachoma – Second Edition.

Objective: To provide participants with information that will allow them to accurately assess whether a patient is healthy enough to undergo trichiasis surgery.

Duration: 30 minutes

Materials: Projector and computer with slide of the questions that a patient should be asked to determine his or her fitness for surgery; flip chart and marker; WHO manual *Trichiasis Surgery for Trachoma – Second Edition,* p. 8

Handouts: Questions to determine patient's fitness for surgery (optional)

Training Procedure:

1. Ask the participants about the importance of not putting anyone at risk due to trichiasis surgery. In addition to the welfare of the patient, the facilitator should discuss the need to protect the program from negative perceptions that might develop in the community if a person not fit for surgery is operated on and experiences adverse health consequences.
2. Ask the participants what questions they would want to ask a patient to determine fitness, writing the responses on the flip chart.
3. Present the questions contained in the WHO *Trichiasis Surgery for Trachoma* manual, discussing them with participants particularly in relation to the questions they have suggested.

Tips:

None

Section 3 is now complete. Before starting section 4, it is recommended that the trainer use the following test to recap the previous section.

Test Procedure

1. Distribute the test to each participant or have the test ready to project from the computer onto the screen.
2. Tell the participants that they have 30 minutes to answer the questions.
3. After 30 minutes, divide the participants into groups of three to discuss their answers. If differences arise, group members should generate consensus answers to the questions.
4. After 15-20 minutes, ask the groups to discuss their responses to the test questions.

Trichiasis Test – Part 2

1. What are the four anatomical layers of the eyelid?

2. Please describe the TARSAL PLATE. What is its function?

3. Name and describe briefly the different stages of trachoma.

4.a Screening should be conducted in four steps: taking history from the patient; examining the eyelid; examining the cornea; and evaluating the presence or absence of defective eyelid closure. Please briefly explain the objectives of each step (Why should each step be conducted? What are we looking for?), and link with the indications/contraindications for TT surgery at community level.

4.b When contraindications are mentioned, please also briefly indicate why and to whom these cases should be referred.

5. What should the screener do between cases to ensure correct infection control practice?

6. Please briefly describe how refusal cases should be managed.

7. Please list the different questions that should be asked to determine if a patient is healthy enough to undergo surgery at the community level.

Section 4: Preparation for surgery

Session 1: Infection control and health care waste management

Session Summary: The overall objective of this session is to review the main principles and objectives of infection control and waste management. The session serves to emphasize the importance of proper infection control and waste management in ensuring safe surgery before the training on actual surgical procedures begins.

Infection control: The objective is to minimize the risk of spreading infections, especially in health care facilities. It is very easy for an outbreak to occur in a crowded hospital, especially without proper precautions. One of the shared responsibilities among surgeons, other medical staff, supervisors and program planners is to protect the surgical team, the patient, and the surrounding community from exposure to infection. While infection control is most commonly associated with the prevention of HIV transmission, these procedures also guard against other blood-borne pathogens, such as hepatitis B and C, and should be considered **standard practice**, as recommended by WHO. *Applying Universal Precautions is the primary strategy to prevent nosocomial infections.*

Sterilization: TT surgery involves creating a wound and thus exposes the patient to the risk of infection if sterile practices are not followed. There is also a possibility for transmission of infection between the surgeon and patient and subsequent patients if sterile practices are not followed. **All materials** used as a part of the sterile field for an operation **must be sterile**.

Process for sterilizing instruments:

1. Decontamination: Soak all items in 0.5% chlorine solution for 10 minutes.
2. Cleaning: Wash the instruments with water and soap and a brush. Rinse carefully and dry them.
3. Sterilization: Use of an autoclave is recommended. (If steam sterilization is not available, dry heat sterilization may be used.)

Health care waste management (HCWM): The purpose of waste management is to:

— Protect people who handle waste items from accidental injury

— Prevent the spread of infection to health care workers who handle the waste

— Prevent the spread of infection to the local community

— Safely dispose of hazardous materials (toxic materials, chemicals, etc.)

It is extremely important that surgical sharps are managed safely. Careless handling and disposal of sharps is a serious risk to patients and staff from blood borne infections such as HIV and hepatitis viruses. Good surgical procedures dictate that you count the needles and blades with an assistant at the beginning of the procedure as they are opened onto your sterile surgical equipment table. At the end of the procedure you should then count the sharps with the same assistant as you carefully dispose of into the sharps bin.

Because the disposal of biohazardous materials is time consuming and expensive, it is important to:

— Separate non-contaminated material from contaminated materials (contaminated material usually represents only 20% of the total waste)

— Make separate disposal containers available where waste is created so that staff can sort the waste as it is being discarded

— Organize things in a way that discourages contact with contaminated waste

Waste storage

Maintenance staff must be trained to safely manage health care waste and must wear protective garments (gloves/aprons) while doing so. Waste must be collected daily and stored appropriately. Contaminated or dangerous waste should be stored in a locked area. Such waste should not be stored near patients or areas where food is prepared.

Contaminated waste should not be stored for more than:

— 72 hours in winter and 48 hours in summer (temperate climate)

— 48 hours during the cool season and 24 hours during the hot season (warm climate)

Source: *Safe management of waste from health-care activities – Second edition* (WHO, 2014)

Session 1: Infection control and health care waste management (continued)

Waste treatment and final disposal

All infected waste should be ultimately disposed of by incineration: Incineration is the ideal method for the final disposal of waste. Incinerators must be operated in accordance with local regulations. Keep in mind that the fumes that incinerators produce, particularly at low and average burn temperatures, can be toxic and pose risks for neighboring communities and the environment (WHO no longer recommends low-temperature incinerators). Thus, the distance of the incinerator from the community and the location of the incinerator within the health facility site must be taken into consideration. The ashes remaining after combustion may also pose an environmental risk (soil and water pollution) and so must be buried safely.

If burying waste is the only option, you should do as much as possible to prevent access of animals or unauthorized persons to the burying site, and to avoid environmental pollution, especially of underground water sources.

Small quantities of waste should be soaked in a hypochlorite solution for at least 12 hours, placed in a pit, and covered. Larger quantities should be placed in a pit with a 10% chlorine solution poured on the materials and then covered immediately.

— Never mix chemical products unless you are sure that mixing will not produce a chemical reaction.

— Always be sure that there is no risk of contaminating nearby land or water.

Open burning is not recommended because it is dangerous and unsightly, and the wind will scatter the waste. If open burning must be done, burn in a small designated and secured area, transport waste to the site just before burning, and stay on site until the fire is out.

Objectives:

1. To ensure that participants are aware of the best safety protocols for clinical procedures
2. To ensure that participants are aware of the necessary steps to safely dispose of medical waste to protect both the communities and the environment.

Duration: Two hours

Materials: Flip chart and marker, projector with slides on infection control and waste management, autoclave and cable/fuel and material for decontamination

Handouts: List of WHO Universal Precautions (Annex A); Support documents related to infection control (hand washing, putting on sterile gloves) (Annexes B, C)

Training Procedure:

1. Ask the participants what steps the country's current protocol recommends for infection control, noting the responses on the flip chart.
2. Ask if there are additional steps within the protocol for prevention of HIV transmission, also capturing this information on the flip chart.
3. Present the PowerPoint slides.
4. Present the WHO Universal Precautions for infection control (Annex A).
5. Discuss whether there are any specific challenges participants might face, particularly during outreach campaigns, in complying with the recommendations. Note these challenges.
6. Ask how these challenges might be resolved, highlighting the need to protect all staff and patients from infection.
7. Refer back to the presentation on preferred practices and the need to take surgical services to the affected communities.
8. Ask the participants what steps for waste disposal – from storage and treatment to final disposal – are recommended by the country, particularly for community-based surgical services. Document the responses on the flip chart.
9. Present the WHO recommendations, discussing the challenges they might pose. Discuss how these challenges might be met to protect the community from infection from medical waste.
10. If copies of the WHO *Universal Precautions* and support documents on surgical hand washing/putting on gloves have been printed out for participants, distribute them now. Ask participants to review the documents for later discussion and practice as the training moves into live surgery.
11. If time allows, take the opportunity to demonstrate use of the autoclave.

Handwashing in preparation for surgery.
(Photo: Sabrina La Torre)

Session 1: Infection control and health care waste management (continued)

Tips:

Remember: To avoid accidental needle sticks, do not bend, break or recap needles prior to disposal. The container should be placed at the point of use so that healthcare workers do not have to carry sharp items for a long distance. The risk of injury with sharp objects increases with the distance they are carried and the amount they are manipulated.

About Handwashing: Failure to perform appropriate hand hygiene is believed to be the leading cause of nosocomial infections and is a significant contributor to disease outbreaks. Although the effectiveness of gloves in preventing contamination of healthcare workers' hands has been repeatedly confirmed, wearing gloves does not replace the need for hand washing.

Surgical handwashing: In contrast to the hygienic hand wash, surgical hand preparation must eliminate transient flora and reduce resident flora. It should also inhibit growth of bacteria under the gloved hand. The first handwashing should be a 5-minute procedure. Subsequent handwashing should be done for 3 minutes. (Hydro-alcoholic solution can be used as an alternative after the initial handwashing.)

Key steps:

- *Keep nails short and clean, using a nail file if needed. Most microbes on hands come from beneath the fingernails. Do not wear artificial nails or nail polish.*
- *Remove all jewelry (rings, watches, bracelets).*
- *Before performing surgical handwashing, put on and adjust your cap, mask and loupe. The use of a brush is no longer recommended for handwashing because it may damage the skin and encourage the shedding of cells (WHO Guidelines on Hand Hygiene in Health Care (2009), p. 152).*
- *Wash hands with soap and water for 5 minutes. Next, either wash with 10% povidone iodine and rinse with sterile water or, as an alternative, wash your hands as previously described and then use 70% alcohol only. Hands can be dried using a sterile towel or sterile gauzes. Once hands are scrubbed they must not touch anything until covered with sterile gloves.*

Session 2: Preparation of the surgery location

Session Summary: This session covers the main principles for preparing the space where surgeons will operate, including the necessary equipment and consumables for TT surgery.

The room should be: (a) clean (free from dust) with covered windows to avoid flies; (b) well-lit, using a focused light powered by electricity or a battery; (c) large enough to allow the patient to lie down and the surgeon to work; (d) close to where patients live to avoid excessive expense and inconvenience of travel, and to provide a familiar environment.

Surgery may be performed using daylight illumination, if necessary, but this makes things more difficult for the surgeon.

Objectives:

1. To enable participants to describe the main elements for preparing the surgery location.
2. To enable participants to list key instruments and consumables required for surgery.

Duration: 30 minutes

Materials: Projector; flip chart and markers; WHO manual, *Trichiasis Surgery for Trachoma – Second Edition*, p. 9

Handouts: None

Training Procedure:

1. Ask the participants what criteria should be recommended to set up the OR, and write them on the flip chart.
2. Present the criteria as defined in the WHO manual, *Trichiasis Surgery for Trachoma – Second Edition* (p. 9).
3. Discuss with participants any specific challenges they think they might face, particularly during outreach campaigns, in complying with the recommendations. Note these challenges.
4. Ask how the challenges might be resolved in the field.
5. Present the list of required surgical materials and instruments (*Trichiasis Surgery for Trachoma – Second Edition*, p. 9).
6. Ask the participants if they have any questions.
7. The participants should memorize the list of materials and equipment. This will be reviewed later in the training course, during surgery practice.

Tips: *None*

Surgery being performed next to a window for maximum light. (Photo: William Nsai)

Session 3: Preparation of the patient

Session Summary: This session covers the main steps required to prepare the patient for surgery.

Objectives:

1. To enable trainees to explain in simple terms to a patient what trichiasis is, how the operation is performed, and what the patient should expect after surgery.
2. To ensure that trainees know the main steps required to prepare the patient for surgery.

Duration: 30 minutes

Materials: Projector; two flip charts, markers; WHO manual *Trichiasis Surgery for Trachoma – Second Edition* (p. 13-15)

Handouts: None

Training Procedure:

1. Ask the participants what should be explained to the patient before the surgery and write them on the flip chart.
2. Ask participants what steps are involved in preparing the patient, and write the answers on a different flip chart.
3. Review the answers noted on the flip charts and ask the participants to add additional steps, as needed.
4. Ask the participants if they have any questions.

Ask two groups of two participants each to volunteer to perform a role play. Brief the two groups on the scenarios outside the training room, to make sure the rest of the participants cannot hear them. The first group (one playing the surgeon, one playing the patient) will demonstrate a surgeon with the "correct attitude" providing adequate and appropriate explanations to the patient, and the patient complying with instructions. The second group (one person playing the surgeon, one person playing the patient) will then demonstrate an "inappropriate attitude" (surgeon not providing explanations, patient being stressed and not complying with the surgeon's instructions). Then ask the rest of the participants to comment on what they observed.

Tips:

The trainer should stress the importance of the surgeon taking enough time to explain the procedure to the patient and confirming that the patient has understood. This will help ensure patient compliance. If the surgeon feels that the patient is not able to understand basic recommendations (such as lying down without moving), referral to a hospital (where general anesthesia can be used) might be considered.

An arrow drawn with magic marker on the patient's face shows the surgeon which eye to operate on. (Photo: Talla Photo)

Session 4: Sterile preparation of the surgeon

Session Summary: This session summarizes the main steps required for the surgeon to prepare for surgery. The objective is to begin discussing *in theory* the main components of correct preparation. These elements are critical to ensuring safe surgery with proper infection control, and will be reviewed during the surgery practice.

Objectives:

1. The trainees will learn how to undertake surgical handwashing.
2. The trainees will demonstrate how to put on gloves in a sterile fashion.
3. The trainees will know how to create and maintain a sterile field for the instruments.

Duration: 30 minutes

Materials: Handwashing facilities, sterile gloves (enough for all participants to practice), projector, WHO manual *Trichiasis Surgery for Trachoma – Second Edition* (p. 15)

Handouts: Support documents (handwashing and putting on gloves – Annexes B and C)

Training Procedure:

1. Briefly review the definition and principles of infection control and WHO Universal Precautions.
2. Show participants the slides where sterility is not maintained (included in the PowerPoint).
3. Ask the participants to comment on these slides and identify where sterility is not maintained.
4. Demonstrate correct surgical handwashing and how to put on sterile gloves.
5. Ask some volunteers to perform surgical handwashing and ask the other participants to observe and comment.
6. All participants should then demonstrate how to put on sterile gloves, under the supervision of the trainer.

Tips:

Remind the participants that they are all here to learn, and that it is important to keep a respectful and constructive attitude. Make sure that participants do not make sarcastic comments or tease each other during demonstrations.

Section 4 is now complete. Before starting section 5, it is recommended that the trainer use the following test to recap the previous section.

Test Procedure

1. Have the test ready to project from the computer onto the screen.
2. Propose to the participants that they take part in a quiz. Ask each question to the group. The individual who provides the correct answer the fastest wins.

Trichiasis Test – Part 3

1. Please list four key elements of Universal Precautions.

2. How long should the first surgical handwashing be?

- ❑ A: 3 minutes
- ❑ B: 5 minutes
- ❑ C: The duration is not important if the handwashing is done correctly.

3. Because wearing gloves is an efficient measure for infection control, it is not mandatory to wash hands between patients.

❑ A: Right ❑ B: Wrong

4. Contaminated waste represents 80% of total health care waste.

❑ A: Right ❑ B: Wrong

5. Some measures to ensure the safety of people who handle waste are proposed below. Which one seems the most appropriate?

- ❑ A: Train them and ensure regular supportive supervision
- ❑ B: Provide protective equipment
- ❑ C: Make sure that wastes are correctly segregated at all points at which waste is created, and at all subsequent handling and storage steps
- ❑ D: Define and enforce infection control and health care waste management protocols and procedures for all categories of staff
- ❑ E: All of the above

6. All infected waste should be treated by incineration (ideal method), but the ashes remaining after combustion may also pose an environmental risk. How should these ashes be disposed of?

- ❑ A: There is no recommended procedure to dispose of the remaining ashes
- ❑ B: The remaining ashes can be disposed on the land behind the health facilities
- ❑ C: The remaining ashes should be buried safely

7. Which of the following is the procedure for correctly sterilizing surgical instruments?

- ❑ A: Wash and rinse instruments, then decontaminate them by soaking them for 10 minutes using 0.5% chlorine solution
- ❑ B: Decontamination (soak instruments for 10 minutes in a 10% chlorine solution). Wash, rinse and dry them. Then sterilize the instruments (recommended method: autoclave)
- ❑ C: Decontamination (soak instruments for 10 minutes in a 0.5% chlorine solution). Wash, rinse and dry them. Then sterilize the instruments (recommended method: autoclave)

8. Describe the setup of the OR.

9. List the steps of sterile preparation of the surgeon's (and assistant's) hands and patient's skin, in logical sequence.

Section 5: The surgery

Session 1: Presentation of trichiasis surgery

Session Summary: There are two procedures that are generally used for trichiasis surgery: Trabut and the Bilamellar Tarsel Rotation (BLTR) procedure. WHO recommends that new TT surgeons should be trained in the Trabut method, but refresher sessions can involve either procedure.

Objective: To introduce the surgical procedure (either Trabut or BLTR) that will be taught to the participants.

Duration: 30 minutes

Materials: Computer/projector with video; WHO *Trichiasis Surgery for Trachoma – Second Edition,* p. 13-44

Handouts: None

Training Procedure:

1. Present the video of the procedure that the surgeons will be trained in.
2. As the video is presented, it may be helpful to refer to the WHO *Trichiasis Surgery for Trachoma – Second Edition* manual, stopping at places where you feel there is something to highlight given the context in which the training is taking place.
3. Following the video presentation, open up the floor to any discussion, needs for clarification, or questions the participants may have.
4. The trainer should be prepared to answer questions that might arise about the differences in the two procedures.

Tips:

A randomized controlled trial conducted in Ethiopia provided evidence that the Trabut procedure may be superior to BLTR in reducing post-operative trichiasis. As a result, there has been a recommendation that newly-trained surgeons should be trained on the Trabut procedure. For surgeons that are already using BLTR, there is no need to change.

Session 2: Possible surgical complications

Session Summary: This session provides an overview of the main possible immediate surgical complications: excess bleeding, division of the eyelid margin, overcorrection, and undercorrection

Objectives:

1. To ensure that participants can describe possible surgical complications during surgery and immediately afterward.
2. To ensure that the participants can describe what to do in these situations.

Duration: One hour

Materials: WHO *Trichiasis Surgery for Trachoma – Second Edition*, p. 31-32 and p. 45

Handouts: Pictures of appropriate and inappropriate surgical correction of TT immediately post-operation

Training Procedure:

1. Present the immediate post-operative pictures showing appropriate appearance of the post-operative eyelid (WHO *Trichiasis Surgery for Trachoma – Second Edition,* p. 31).
2. Present pictures of complications (over rotation; under rotation; from WHO *Trichiasis Surgery for Trachoma – Second Edition,* p. 32) and ask the participants to describe what they see.
3. Open the floor to any discussion, needs for clarification, or questions the participants may have.

Tips:

The trainer should emphasize the importance of the surgeon following the correct surgical procedure and examining the eyelid after making the initial knots of all three sutures and having removed the Trabut plate or TT clamp (BLTR procedure) to check and make the necessary adjustments to achieve the desired slight overcorrection. In order to facilitate this, laminated pictures showing examples of successful eyelid surgery outcomes – with the desired slight overcorrection – should be provided to participants, as mentioned in the preparation sections of this manual.

Immediately after surgery: Excessive overcorrection. (Photo: Emily Gower)

One year after surgery: Excessive overcorrection during surgery resulted in eyelid contour abnormality. (Photo: Emily Gower)

Immediately after surgery: Incision is too close to eyelash line nasally. (Photo: Emily Gower)

Within one year after surgery: Poor incision likely led to post-operative trichiasis. (Photo: Emily Gower)

Granuloma. (Photo: Emily Gower)

Session 3: Post-operative care

Session Summary: Post-operative care is critical to ensure that the patient has been managed correctly, that there are no post-operative complications, and that further action or referral to an ophthalmologist can occur if necessary.

Complete post-operative follow-up requires the following steps:

- Day One post-op: The bandage is removed. The wound is checked by the surgeon and corrections are made, if indicated.
- Day 8-14: The sutures are removed. If absorbable sutures were used, the wound should still be checked, but sutures can remain in place.
- 3-6 months: The final outcomes of the surgery are assessed. The assessment includes checking for any complications and ensuring that there is no trichiasis (post-operative trichiasis within six months of surgery indicates surgical failure). The patient's satisfaction with his or her management should also be assessed.

All patients should be assessed at day 1, at 1-2 weeks, and at 3-6 months. Doing so is part of routine care.

Objectives:

1. List the different steps of post-operative care.
2. Describe the objectives of and what to do during each post-operative follow-up check.

Duration: One hour

Materials: Flip chart and marker; pictures of post-operative complications; pictures of appropriate correction immediately post-operatively and up to six months after surgery; WHO *Trichiasis Surgery for Trachoma – Second Edition*, p. 47-48; Annex G: Post-operative complications and care

Handouts: Sample of protocol for the 3-6 month follow-up

Training Procedure:

1. Ask the participants to list the most common complications at the different stages of post-operative follow-up (at day 1, day 8-14, and 3-6 months) and write them on a flip chart.
2. For each complication listed, ask the participants what the signs are and what should be done. Write the answers on the flip chart.
3. Give the participants time to read the WHO *Trichiasis Surgery for Trachoma – Second Edition* chapter on post-operative care (p. 47).
4. Review the answers noted on the flip charts, and ask the participants to add any that are not listed.
5. Give the participants time to read the sample protocol for the 3-6 month follow-up.
6. Ask the participants if they have any questions
7. Discuss the potential challenges posed by the three different post-operative follow-up steps. Write the answers on the flip chart.
8. For each challenge identified, discuss potential solutions and programmatic strategies to address them.

Tips:

Refer to the ICTC report of the Global Scientific Meeting on Trachomatous Trichiasis (Moshi, 2012), highlighting the global need to improve TT surgical outcomes. Ensuring that the patients receive post-operative follow-up at the three time points (one day post-op, 8-14 days post-op, 3-6 months post-op) is essential to providing high-quality care for the patient, and is a routine part of quality of care.

The patient's satisfaction should be assessed, as well, to evaluate the quality of care. People who have been successfully operated on and are happy with the quality of their care and the outcomes can serve as ambassadors by sharing their positive experiences with their peers in the community, encouraging other patients to accept TT surgery.

In some contexts, due to the volume of surgeries, it might be difficult for the surgeon to perform the 3- 6 month follow-up for all patients. In such situations, it is the responsibility of the program to identify the best way (active, passive, or a combination) to ensure complete post-operative care for all patients. The importance of post-operative follow-up should be emphasized to the patient during post-operative counselling. At each phase of the follow-up, an appointment for the next follow-up visit should be provided to the patient.

Documenting surgical outcomes and patient satisfaction during a 3-6 month follow-up. (Photo: RTI International)

Session 4: Poor quality outcomes of TT surgery

Session Summary: Poor surgical outcomes reduce people's motivation to seek surgery and lead to fewer surgeries being conducted. This session is designed to link to the previous session on surgical complications by presenting the participants with photographs of the major surgical errors (overcorrection, undercorrection, lid contour abnormalities), and the consequences of these errors. The session emphasizes the need to improve surgical quality.

Objectives:

1. To understand the most frequent causes of poor TT surgical outcomes.
2. To discuss the consequences of these poor outcomes.
3. To provide an opportunity for participants to correctly identify the various outcomes.

Duration: 75 minutes

Materials: Flip chart and marker

Handouts: Pictures of appropriate and inappropriate surgical correction of TT immediately post-operatively combined with pictures of what can happen when inappropriate contour/correction is not fixed during surgery; scoring sheet

Training Procedure:

1. Referring to the Preferred Practices presentation, introduce the topic of poor-quality TT surgery.
2. Ask the participants what they think the most common problems are and write responses on flip chart.
3. Present the pictures and ask the participants to describe what they see. Ask the participants what they think the problems are for each picture and what the evidence is for their decision.
4. Give each participant a photo packet and score sheet.
5. Ask participants to look at each photo and mark the problem or problems on the score sheet.
6. After 15-20 minutes, ask the participants to form groups of three.
7. Instruct participants to discuss their results among themselves, including why they chose what they did, and to come to a consensus on the correct answer.
8. After 30 minutes, ask the participants to come back together.
9. Project each photo on the screen and ask the various groups what errors they identified. Make sure all the groups agree. If there are disagreements, discuss the various responses.

Session 5: Supportive supervision and surgical audit

Session Summary: This session is intended to facilitate discussion regarding supportive supervision. The main objective of supportive supervision is to facilitate capacity building and professional development for new surgeons. Additionally, supportive supervision should be a mainstay of the quality assurance mechanisms for monitoring the quality of surgical care provided to trichiasis patients.

The session's emphasis on supportive supervision is based on conclusions from two global scientific meetings:

1. Conclusions from Global Scientific Meeting on Trachomatous Trichiasis (Moshi, 2012):

"Supervision is a critical component of all TT surgery programs. It is central to the process of improving the quality and productivity of the service delivered, but unfortunately is often limited or lacking […] To strengthen supervision, the following recommendations should be implemented by all TT programs":

- Supervisors need training in how to supervise.
- Supervision can be done by a team of different people.
- Trichiasis surgeons need a supervisor who has experience in trichiasis surgery.
- Supervision should be both active and supportive, meaning that it is a positive learning experience for the surgeons.
- Periodic surgical audit, selecting a sampling of patients who have had surgery, should be part of ongoing supervision.
- Audits on new TT surgeons should be conducted 3-6 months after certification, including a review of patient cards, the surgeons' productivity, a review of patient outcomes, and observation of the surgeon conducting surgery.

2. Conclusions from the Second Global Scientific Meeting on Trachomatous Trichiasis (Cape Town, 2015):

"Supervision should be an integral part of trichiasis programs at all stages, from conception to planning, budgeting, implementation and evaluation. This is best served by developing a standardized approach to supervision within any given national programs and including a budget line for it. As programs evolve, governments and partners have a shared responsibility to ensure that supervision of surgeons becomes integrated into the general health care or ophthalmic service system."

Objectives:

1. To discuss the benefits of routine supportive supervision, and the next steps that participants should expect after the training.
2. To review the critical elements to ensuring high-quality TT surgery, from screening to post-operative care.
3. To understand the difference between routine outcome assessment and surgical audits.

Duration: One hour

Materials: Flip chart and marker

Handouts: Surgical checklist; supportive supervision checklists (refer to the ICTC manual, *Supportive Supervision for Trachomatous Trichiasis Programmes*); Undertaking follow-up of trichiasis surgical cases and undertaking trichiasis surgical audits (see Annex I of this manual)

Training Procedure:

1. Ask the participants to define supportive supervision, writing the answers on the flip chart.
2. Present the PowerPoint slides.
3. Review the answers together and complete the list as needed, based on the definitions provided in the PowerPoint presentation.
4. Define surgical audit and contrast it with outcome assessment.
5. Ask participants if they have any questions.
6. Present the surgical checklist and ask participants if they have any questions.
7. Present the ICTC supervision checklist.
8. Ask participants if they have any questions.

Tips:

Reinforce the benefits (capacity building, support, opportunity for peer feedback) that new surgeons will gain from routine supportive supervision and surgical audits.

Supportive supervision is a process that uses dialogue and constructive feedback to help employees improve their performance in the context of the organization's mission, while defining objectives for growth and development.

A supervisor, left, stands ready to offer support during a trichiasis surgery. (Photo: William Nsai)

Session 5: Supportive supervision and surgical audit (continued)

It is thus intended to support the team members to improve their performance.

Surgical audit is a quality improvement process that seeks to improve patient care and outcomes through systematic review of surgical care against explicit criteria and the implementation of change. The key component is that performance is reviewed (or audited) through data collection from a sample of randomly selected surgical cases. It is undertaken by the surgeon together with the supervisor.

Audit findings are used to make quality improvements both at the level of individual surgeons and at the program level.

To guide supportive supervision visits and audits, ICTC has developed a set of checklists (see the ICTC manual Supportive Supervision for Trachomatous Trichiasis Programs*, Annex D). These checklists should be discussed with participants so they know what criteria will be used to assess their performance.*

It is also important to note that, to ensure quality outcomes of surgery and security of patients, during supportive supervision or audits visits a supervisor can decide that a surgeon must stop performing surgeries and/or needs to undergo refresher training.

Supportive supervision and surgical audits are key components of quality assurance and help to:

- *Ensure the highest quality care and surgical outcomes for patients*
- *Ensure outcomes are of high quality to promote uptake of services among TT patients*
- *Support surgeons on the job by identifying areas of further performance improvement (capacity strengthening)*
- *Promote positive team dynamics and commitment*
- *Identify challenges and solutions to strengthen the TT program*

The theoretical sessions are now complete. Before starting Section 6 and the practice, it is recommended that the trainer use the following test to recap the previous section.

Test Procedure

1. Distribute the test to each participant or have the test ready to project from the computer onto the screen.
2. Tell participants that they have 15 minutes to answer the questions.
3. After 15 minutes, divide the participants into groups of three to discuss their answers. If differences arise, the group should generate group answers to the questions.
4. After 30 minutes, ask the participants to convene and as a group discuss the responses to the test questions.

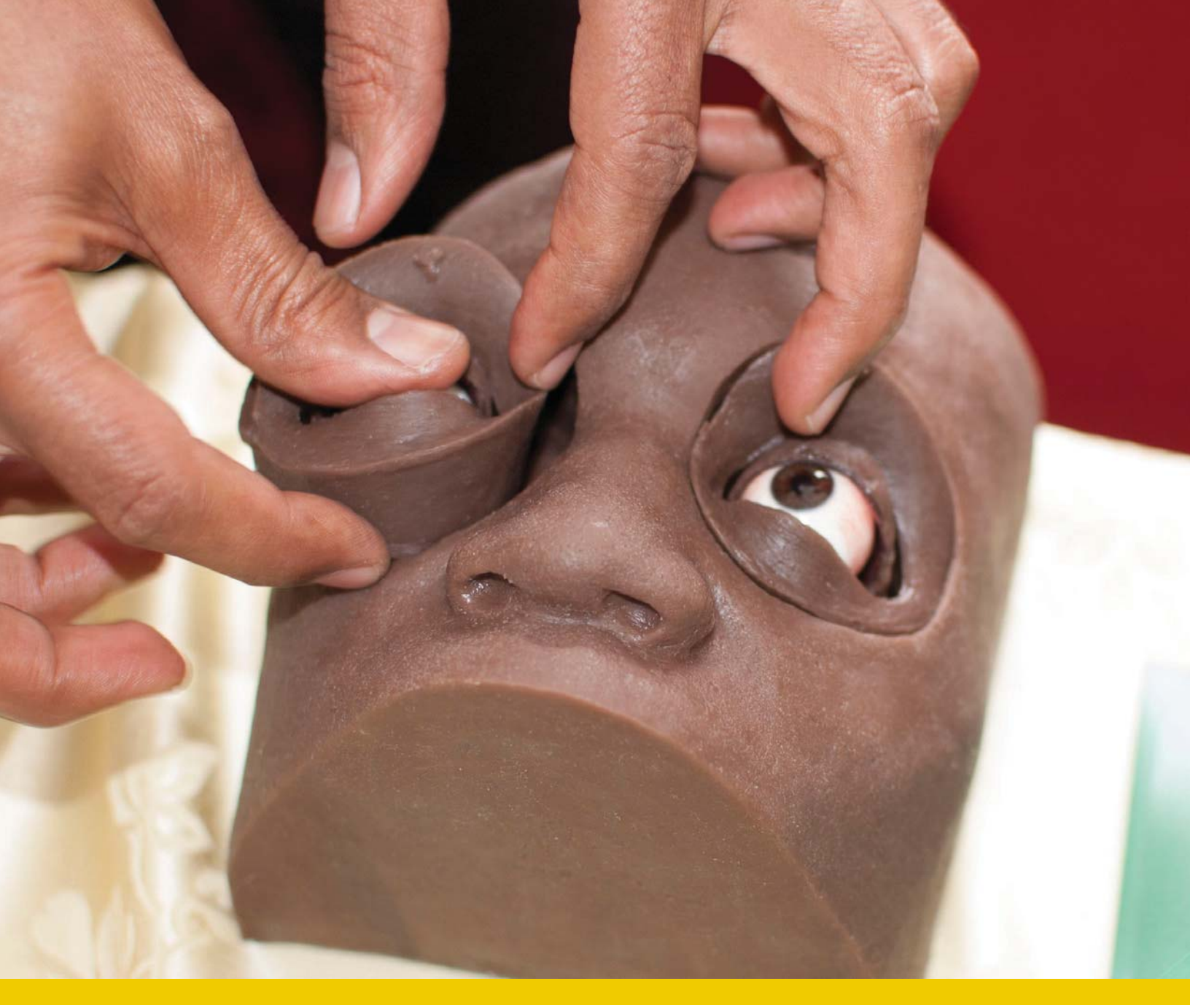
Trichiasis Test – Part 4

1. Please list the main possible immediate surgical complications.

2. Please list the three steps for post-operative follow-up and the main complications that can be encountered at each stage. Briefly describe how each complication should be managed, and by whom.

3. What is the difference between the 3-6 month outcomes assessment and a surgical audit?

4. What are the advantages of routine supportive supervision for the new surgeon?



The HEAD START surgical trainer. (Photo: Carla Johnson/ International Trachoma Initiative)

Section 6: Welcome to HEAD START training!

The Human Eyelid Analog Device for Surgical Training and skills Reinforcement in Trichiasis (HEAD START) program was developed to provide trichiasis surgery trainees with the opportunity to perform surgery in an environment where they can learn and practice major steps of the procedure without risk to a patient. It can be used both for initial training and as part of a refresher training program.

In initial trichiasis surgeon training, HEAD START is used between classroom training and live surgery. It is not intended to replace live-surgery training, but to complement it. HEAD START also provides unique opportunities that foster critical evaluation and self-reflection that are not possible during live-surgery training. HEAD START can be used for either Bilamellar Tarsal Rotation (BLTR) or the Trabut procedure. Practicing surgery on HEAD START before performing surgery on live patients has been shown to increase trainees' confidence when they start live surgery by helping them feel comfortable with the key steps of the surgical procedure.

Trainers who have worked with trainees that participated in HEAD START training felt that HEAD START improved the experience during the first live surgeries by allowing trainees to better understand the surgical procedure and the necessary steps before operating on a live patient, as well as to gain confidence and better control of the surgical instruments before starting live surgery. It has also been shown that initial surgeries by new trainees require fewer interventions by the trainer and less time to complete when trainees practice on HEAD START before live surgery.

HEAD START also can be used intermittently during live surgery training. When a trainer identifies that a trainee needs additional work on a specific skill or skills, the trainer can ask the trainee to return to HEAD START to practice those skills until the trainee is proficient. Additionally, the trainee can request to conduct additional surgeries on HEAD START at any point during or after the live-surgery training.

Kit Replenishment

The supplies needed for one trainer consist of a mannequin base (also called the "head"), orbits (right and left), disposable eyelid cartridges (with a mix of right and left eyelids), TT surgery sets, and consumables. (For more details on the consumables and sets needed according to the surgical technique used, please refer to the trainer checklist on p. 8-9 of this manual.)

With sufficient lead time, additional cartridges and consumables can be ordered to replace a dwindling supply. At the beginning of the training season, the trainer should prepare a training plan for the year, indicating the number of trainees to be trained. If a specific number has not been identified, the trainer should make a best guess (overestimation is better than underestimation). Then he or she should count the number of available cartridges and consumables to determine whether sufficient supplies are available or whether more are needed. To ensure sufficient supply, it is best to estimate 10-15 cartridges per trainee, regardless of whether this is initial training or refresher training. It is important to note that 20-30% of trainees need a second complete HEAD START training session; this should be considered when evaluating supply requirements.

If more cartridges are needed, the trainer (or supply manager) should contact **HEADSTART@gmail.com** to arrange purchase of more supplies. Supplier information is also available on the IAPB Standard List for Trichiasis Surgery **https://iapb.standardlist.org/essential-lists/trachoma**. When placing orders, remember to allow sufficient time for the product to be shipped internationally and for it to clear customs in-country. The entire process can take more than two months, so it is best to prepare well in advance of the planned training sessions.

Session 1: HEAD START – Introduction

Session Summary: This session reviews the critical aspects of TT surgery and introduces participants to the concept of using a mannequin for trichiasis surgery training. The goal is to give participants a good understanding of what HEAD START can and cannot be used for.

For initial training, the goals of HEAD START are to:

- Teach new trainees how to perform the major steps of the surgical procedure(s)
- Teach trainees how to properly handle surgical instruments
- Provide trainees with the opportunity to learn from their mistakes in a safe environment, which would not be possible on a live patient
- Provide trainees with sufficient practice to feel comfortable performing surgery before doing so on a live patient
- Foster self-reflection by allowing trainees the chance to examine all aspects of their work by removing the eyelid cartridges and evaluating their incision and suture placement
- Provide a platform for targeted repeat practice for any steps where the trainee exhibits weakness, lack of confidence, or any other need for additional practice
- Allow trainers to identify trainees who are unlikely to succeed as trichiasis surgeons and to stop their training before they operate on live patients

Objectives:

1. To describe the benefits of working with a surgical mannequin before live surgery.
2. To introduce participants to the HEAD START training system (including what it can and cannot be used for).
3. To describe the role of HEAD START during live surgery training and refresher training.

Duration: One hour

Materials: Flip chart and marker, HEAD START mannequin, surgical equipment, HEAD START video

Handouts: None

Training Procedure:

1. Begin by asking participants to name the most important aspects of trichiasis surgery. Write all responses on the flip chart. As a group, discuss the critical steps and how they have been taught in the past.
2. Provide an overview of the capabilities of HEAD START:
   a. Its primary uses are to practice making the incision and suturing.
   b. It can also be used to teach new techniques, such as using a clamp during BLTR surgery.
   c. A critical benefit is the ability to remove the cartridge and examine the incision and suture placement.
   d. It is not meant to completely mimic the anatomy of a human eyelid, but instead is a training tool for practicing key surgical steps. For example, the HEAD START anatomy does not precisely mimic the shape of the tarsus and the flexibility of the skin, among other details.
   e. Use of HEAD START promotes self-reflection and self-directed learning.
3. Characterize the differences in the way HEAD START is used for initial and refresher training.
4. Show the video of surgery performed using HEAD START, including removing the cartridge to examine the surgery. (The trainer should select the appropriate video for the procedure being taught.) Pass an eyelid cartridge around the room for trainees to examine.

Tips:

HEAD START has many advantages as a training tool, particularly when critiques and feedback are given to the trainee in a respectful, consistent, and transparent manner. All trainees should be provided with verbal feedback about their performance at the end of the HEAD START training session. Trainees should be given specific, meaningful feedback that will allow them to improve their technique as they progress through the training process. It is important that both positive and negative aspects of the trainee's skills are discussed. Keep all cartridges used during the training session, noting which ones were used by each trainee, so that the trainer and trainee can return to the used cartridges to evaluate the trainee's progress. Individual cartridges can be marked with a permanent marker. Writing the trainee's initials and the cartridge number (sequentially based on the procedure number) is often sufficient to uniquely identify each cartridge. Visual feedback provides an added dimension beyond simply trying to explain the issue to the trainee.

Session 2: HEAD START – Demonstration and familiarization

Session Summary: This session is designed to give participants the opportunity to become familiar with performing surgery on HEAD START. Participants will be paired into teams of 1-2, with one trainer assigned to each team. Each participant will have his or her own mannequin base, surgical instruments and eyelid cartridges to work with. During the demonstration session, the trainer introduces the trainee to the HEAD START system. The trainer begins by introducing the name, function and handling of each instrument needed to perform TT surgery. Then the trainer performs all steps of the surgical procedure while the trainee watches. The trainer should describe each step of the procedure as he or she does it. During the familiarization session, each participant will have the opportunity to perform two HEAD START surgeries.

Objectives:

1. To allow participants to become familiar with HEAD START.
2. To begin familiarizing the participants with trichiasis surgery.
3. To provide an opportunity for self-reflection about surgical skills and practice.

Duration: Two hours

Materials: Flip chart and marker, HEAD START mannequin and cartridges for each participant, surgical equipment

Handouts: None

Training Procedure:

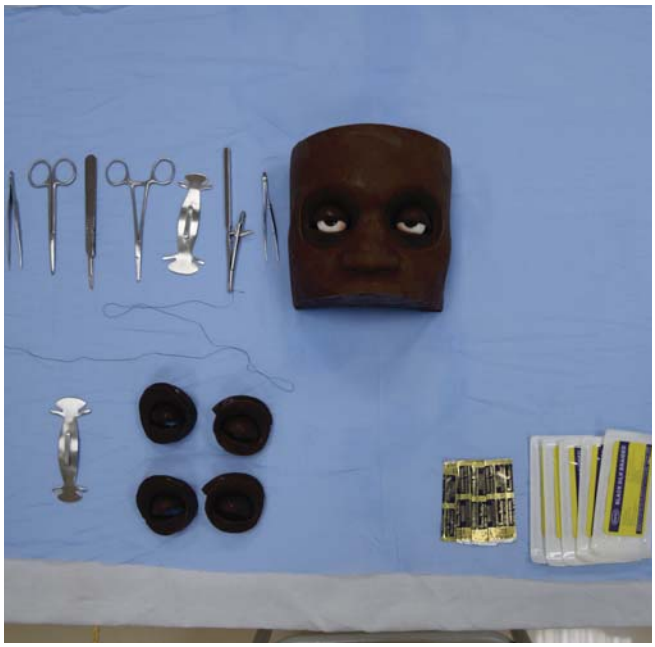
1. Describe the initial steps of training with HEAD START, beginning with the demonstration and familiarization steps.
2. Organize trainees into pairs. This may be done by district and/or region. Assign one trainer to each pair.
3. Start with the demonstration phase, done by the trainer.
4. During the familiarization phase, the trainer should perform one step of the procedure and then have the trainee perform the same step on the opposing eyelid. The trainer should sit to the right of the trainee and perform surgery on the left eyelid cartridge (the one closer to the trainee). The trainee will perform surgery on the right eyelid cartridge (the one closer to the trainer).

5). Begin by performing the first step of TT surgery by placing the TT or Wadell clamp (BLTR) or the everting suture (Trabut). Then pass the base to the trainee for the trainee to complete the same step on the opposing eyelid.

6. For Trabut, the next step should be for the trainer to place the Trabut plate on the left eyelid and then for the trainee to place the Trabut plate on the right eyelid.
7. When both clamps/plates have been placed, the trainer should make the incision, and then the trainee should make the incision.
8. Continue this step-by-step process through the entire surgical procedure.

Tips:

This incremental, step-by-step process allows the trainee to copy the trainer's technique immediately after watching the step being performed. For certain steps of the procedure, such as instrument placement and suturing, the trainer can stop and have the trainee repeat the step until the trainer feels that the trainee is ready to move on to the next step. Multiple incisions cannot be made on one cartridge, so if more incision practice is needed, a new cartridge should be used for each new incision.



The setup for a HEAD START practice session. (Photo: Emily Gower)

Session 3: HEAD START – Practice

Session Summary: During the practice phase, the trainee performs the entire surgical procedure from start to finish on BOTH the left and right eyes, with the trainer providing feedback throughout the procedure, as needed. As in the familiarization step, the trainer can ask the trainee to repeat any steps that the trainee has not fully mastered.

Objectives:

1. To allow the trainee to practice surgery on both eyelids under trainer supervision.
2. To allow the trainer to assess if the trainee needs more practice or is ready to move on to the solo observed procedure.

Duration: One hour

Materials: Flip chart and marker, HEAD START mannequin and cartridges for each participant, surgical equipment

Handouts: None

Training Procedure:

1. The trainer should sit to the right of the trainee.
2. Ask the trainee to demonstrate all the steps of TT surgery. The demonstration should start with the surgeon preparation (including handwashing and correct wearing of sterile gloves), and the equipment preparation.
3. The trainee will then perform all steps of TT surgery under the trainer's supervision.
4. The trainer will provide guidance and support during the procedure, and can ask the trainee to repeat a step that has not been performed satisfactorily.

Tips:

All surgical steps on HEAD START should be done with surgical gloves on. This will ensure that trainees are accustomed to performing surgery and handling instruments while wearing gloves, a task that some trainees in the past have had trouble with when moving to a live-patient setting. It is important to note that the trainee must be able to perform surgery on both eyelids, and therefore should practice on both sides during HEAD START training. All trainees must perform at least one surgery per eyelid (and a minimum of three surgeries) before they can graduate from HEAD START training.

Session 4: HEAD START – Solo observed surgery

Session Summary: The trainee should complete one surgery from start to finish without input from the trainer. The trainer should watch closely throughout the procedure, taking notes about areas of excellence and areas needing improvement. At the end of the procedure, the trainer should decide whether more HEAD START training is needed or whether the trainee is ready to perform surgery on live patients.

Trainees should be made to feel that there is no rush to move to live-patient surgery, and that it is an honor and a benefit to be able to practice as much as possible on HEAD START, even after performing live surgeries.

When the trainer feels that the trainee is ready to move on to live surgery, he or she should still ask if the trainee would like more practice on HEAD START before moving on to live surgery.

If a second complete HEAD START session is needed, the trainer should conduct an honest appraisal of his or her training approach and the trainee's learning style to decide whether he or she is best suited to continue training this individual on HEAD START, or whether a fellow trainer might be better placed to continue with this element of the training. Again, it is important for the trainer to be honest with himself about his approach and the trainee's learning style to make sure that the two are well-matched.

Objectives:

1. For the trainee to practice solo surgery on both eyes.
2. For the trainer to assess if the trainee needs more practice or should move on to live surgery practice.

Duration: Two hours

Materials: Flip chart and marker, HEAD START mannequin and cartridges for each participant, surgical equipment, HEAD START assessment form

Handouts: None

Training Procedure:

1. The trainer should sit to the right of the trainee if the surgery is performed on the right eyelid cartridge.
2. Ask the trainee to demonstrate all the steps needed for TT surgery. The demonstration should start with the surgeon preparation (including handwashing and correct wearing of sterile gloves), and the equipment preparation.
3. The trainee will then independently perform all steps of the TT surgery.
4. The trainer will not provide any guidance or support during the procedure.
5. The trainer will assess if there is a specific area in which the trainee needs more practice or if the trainee should move to live surgery, using the recommendations described below.
6. Complete the HEAD START assessment form during the training session and review each area with the trainee at the end of the training session.

Tips:

Approximately 20-30% of trainees benefit from a second complete HEAD START training session, working again through the stages outlined above with assistance and observation from the trainer. Most other trainees will also benefit from performing additional solo practice procedures before moving to live patients. At this stage, the trainer also can decide if there is a specific area in which the trainee needs more practice (e.g. general suturing practice, placing parallel sutures, making a straight incision, maintaining a sterile field) and they can focus on that aspect of the procedure for targeted additional surgeries. This is a key benefit of HEAD START that cannot be done in live surgery, and one that should be encouraged. In other specialties, such as obstetrics, surgeons with more than 10 years of experience often will go back to the laboratory to practice cutting and suturing. This is a way for a surgeon to refine skills and become more efficient in the operating room.

Recommendations for determining whether a trainee is prepared to advance to live-surgery training

Individual trainees progress at different speeds. Some may be prepared to begin live-surgery training after one complete HEAD START training session, while others may need more practice with an aspect of the procedure. Still others may need at least one additional HEAD START training session. It is important to remember that surgery training on live patients needs to be of the highest quality possible to produce the best outcomes and to minimize the potential for harming a person. If there is any doubt as to whether a trainee is ready to progress to live-surgery training, it is best to have him or her complete additional HEAD START surgeries until both the trainer and trainee are comfortable that the trainee is ready to perform live surgeries under supervision. This is a distinct difference from the previous approach to trichiasis surgery training in which trainees did most of their practical learning on live patients. By making HEAD START available to training programs, the goal is to ensure that trainees do not operate on live patients until they have adequate skills to perform surgery with minimal risk of harming the patient. Trainees should be encouraged, where possible, to reflect on their personal progress and made to feel comfortable in returning to or continuing with HEAD START whenever appropriate.

Evaluation during HEAD START surgery training

During training, the trainer should use the evaluation sheet provided in Annex H. If a trainee scores less than a 3 on any aspect, they should continue to practice on HEAD START before moving to live surgery training. As the number of planned trichiasis surgeries is ramping up to tackle the TT backlog, it is critical that all trichiasis surgeons have excellent knowledge, skills and attitudes for the highest quality outcomes. This will allow efficient reduction in the backlog by limiting the number of repeat surgeries required and addressing one of the key barriers to surgery uptake, which is poor outcomes. As such, it is important to provide a critical appraisal of the trainee and not to certify any trainees as competent surgeons unless they have high skill levels. When evaluating an individual trainee, ask yourself, *"Is he or she truly capable of moving on to live surgery training and successfully performing live surgery?"* If the answer is no, it is important to stop the training before the trainee performs live surgery on any patients. If the answer is maybe, consider continuing HEAD START practice, focusing on the areas that need improvement, and then reevaluating. In some instances, it may make sense to practice more on HEAD START, move to live surgery for 1-2 surgeries, and then reevaluate whether the trainee has adequate skills to continue the training.

Return to HEAD START during live-surgery training and beyond

During the live-surgery training period, HEAD START should be made available for additional independent or supervised practice for all the trainees who have completed the initial HEAD START training. This will allow the trainees to continue practicing and improving their skills in an environment where they do not risk harming someone. While it is recognized that there are differences between performing procedures on HEAD START and live patients, HEAD START offers a unique platform to improve skills, and trainees should be encouraged to continue practicing until they are confident and efficient with all steps of the procedure, and to return to HEAD START between live surgeries whenever it is noted that they are having difficulty with a particular step or steps.

The trainer should help facilitate and encourage the trainees to practice solo on HEAD START. For example, if the trainer is working with 3-4 trainees and only wants two in the operating room at a time, the other trainees should use this time to practice suturing on HEAD START.

Additionally, the trainer can recommend that a trainee return to HEAD START for more supervised or independent practice surgeries at any time during the live-surgery training session. After the first 12 live surgeries, the trainer should ask the trainee if he or she would like to conduct additional practice surgeries on HEAD START. Returning to HEAD START at some point during the live-surgery training period allows for a period of self-reflection. Provision should be made in live-patient training environments for the use of HEAD START and for adequate space for trainees to continue their practice.

A surgeon and his patient immediately after surgery.
(Photo: Talla Photo)

Annex A: Infection control and standard precautions
(To be printed)

- **Consider everyone (staff and patients)** as potentially infected.
- **Wash your hands.** ***This is the most important precaution to prevent the risk of cross-contamination.***
- **Wear a pair of gloves of the proper size.** *Change them between each patient.*
- **Strengthen physical barriers:**
  - **During TT surgery:** Wear sterile gloves, a cap, a mask (single-use, if available; if single-use masks are not available, change the mask every three hours); a clean surgical gown (change the gown if it becomes wet from body fluids or the surgeon's perspiration);
  - During a treatment that may result in the projection of bodily fluids and when cleaning contaminated instruments.
- **Use antiseptic solutions** to clean the skin/membranes before surgery or when cleaning wounds.
- **Always note the date of opening and the expiration date of antiseptic solutions.**
- **Use safe work practices.** For example, NEVER recap a needle, always pass sharp instruments safely, NEVER use the same instruments (for example, a syringe) on more than one patient.
- **Ensure that contaminated wastes are managed safely** to protect medical staff and maintenance workers from blood exposure accidents and to prevent the risk of contamination within the community.
- **Follow standard procedures to sterilize instruments and materials.**
  - Decontamination (soak instruments in 0.5% chlorine solution for 10 minutes, wash, rinse, dry) and sterilization.
- **Immunization:** For patients and health care staff.
- **Specific to sterile/surgical procedures:** Ensure and maintain sterility, with a specific focus on putting on sterile gloves and maintaining a sterile field.

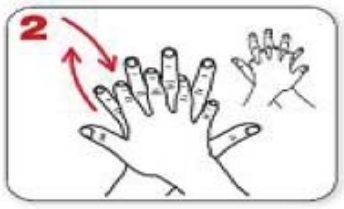
Sources: Prevention of hospital-acquired infections (WHO, 2002); Best Practice Safety Protocols-Clinical Procedures Safety (WHO, 2004/ 2012); WHO Guidelines on Hand Hygiene in Health Care (WHO, 2009); Basic Surgical Practice in Medium-sized Structures (WHO, 2011)

Annex B: Surgical handwashing

Key points:

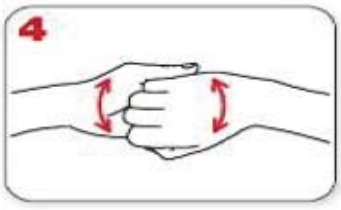
- Keep fingernails short and clean. Most bacteria found on the hands come from underneath the fingernails. Do not wear artificial nails or nail polish.
- Remove all jewelry (bracelets, rings, and watches).
- Do not use a brush to wash the hands, as this is no longer recommended by WHO.
- Before performing a surgical hand scrub, put on and adjust hair net, surgical mask, and loupe.

Rub hands palm to palm

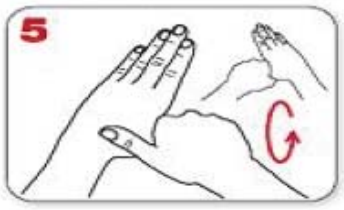


Right palm over left dorsum with interlaced fingers and vice versa

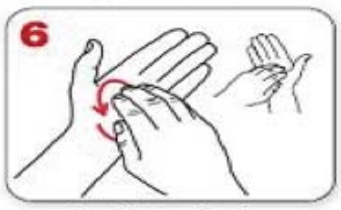
Palm to palm with fingers interlaced



Back of fingers to opposing palms with fingers interlocked



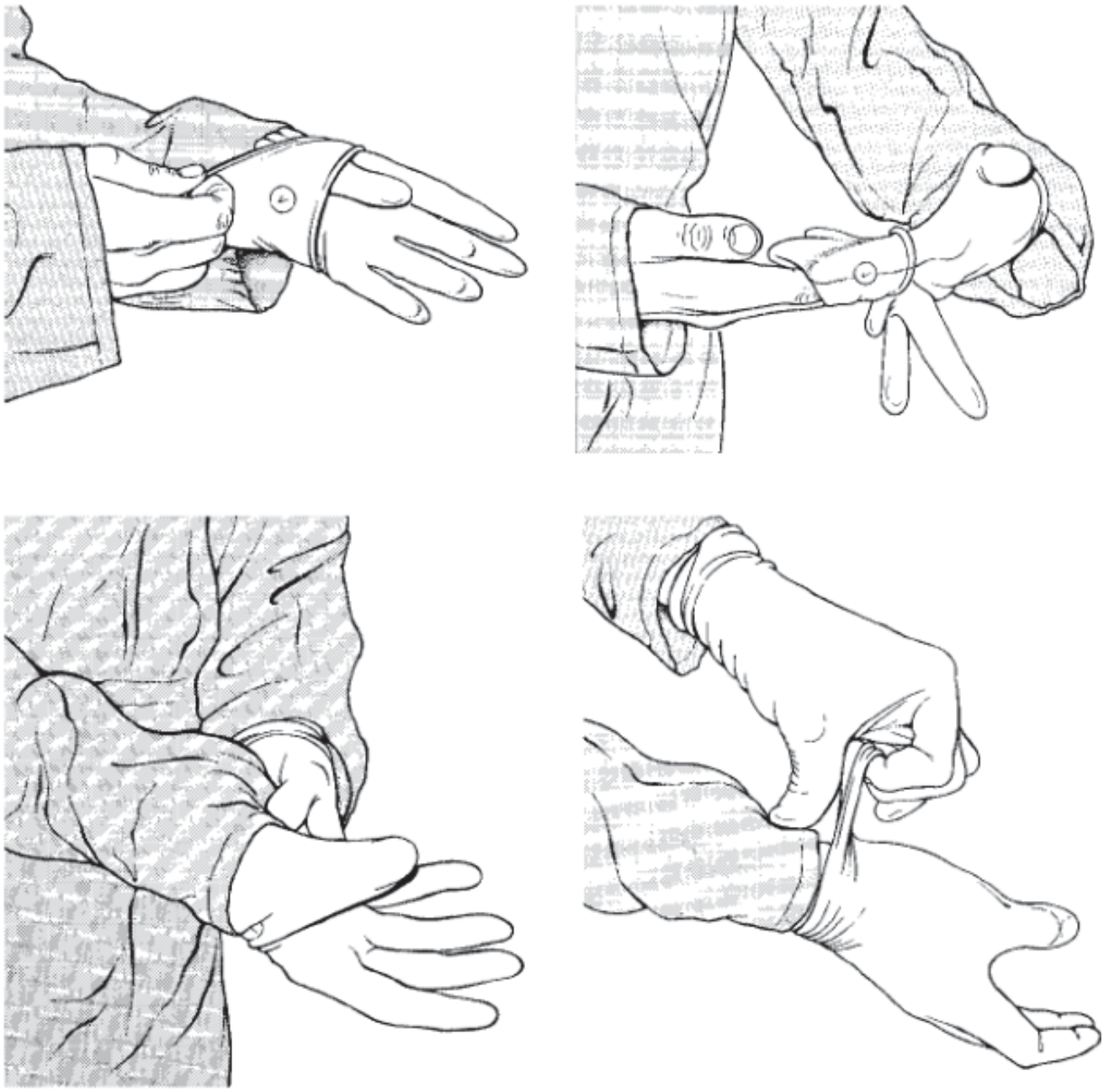
Rotational rubbing of left thumb clasped in right palm and vice versa



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa

Source: WHO Guidelines on Hand Hygiene in Health Care (WHO, 2009)

Annex C: How to put on sterile gloves



Source: Surgical Care at the District Hospital (WHO, 2003)

Annex D: Second Global Scientific Meeting on Trachomatous Trichiasis (Cape Town, 2015)

The below is a subset of recommendations that pertain to trichiasis surgery, specifically. A complete list of recommendations from the meeting report can be downloaded at:

http://www.who.int/trachoma/resources/who_htm_ntd_2016.5/en/

1. The use of a clamp (TT clamp or Waddell clamp) during BLTR is recommended. Trichiasis surgery kits, therefore, should include the largest size of either the TT clamp or the Waddell clamp; each surgeon should also have the other two sizes of clamp (ideally two of each size) readily available The current recommendation to place incisions 3 mm from the eyelid margin. Incision line measurements and markings should be made before injecting local anaesthetic, because injection of anaesthetic distorts the eyelid tissues.
2. New trichiasis surgeons should be trained to use the Trabut procedure. Surgeons already using BLTR should not be required to change to the Trabut procedure. A randomized controlled trial comparing the Trabut procedure with BLTR should be conducted in an area where surgeons have previously been primarily trained to use BLTR.
3. There is no WHO-recommended surgical technique to address lower eyelid trichiasis. More data are needed on lower eyelid trichiasis, including data that will contribute to characterizing its phenotype and likely aetiology. Collection of such data will be encouraged by making standard trichiasis patient tracking systems available to programs. More research should be conducted on how best to manage lower eyelid trichiasis. In the meantime, lower eyelid trichiasis should be managed by the most experienced eye specialist available. Between diagnosis and review by that specialist, epilation should be encouraged.
4. Epilation may be offered as a reasonable alternative to surgery in cases in which the patient declines, or has no immediate access to, high-quality surgery. It is ethically important to inform the patient with minor trichiasis about both surgery and epilation, and to discuss the benefits and risks of each procedure so that an informed decision can be made. Patients who choose epilation should be provided with high-quality epilation forceps that have durable frames and rounded tips with non-cutting opposing edges, in a size that enables the instrument to be used comfortably by individuals with fingers of different sizes. Patients who choose epilation should be regularly followed up by a service that can provide trichiasis surgery.
5. Revision trichiasis surgery often leads to poor outcomes; in some patients the status of the eyelid is worse after, than immediately before, revision surgery. Post-operative trichiasis should be managed by the most experienced trichiasis surgeon or eye specialist available. Between diagnosis and review by that professional, epilation should be encouraged. More research is needed on post-operative trichiasis and its management.
6. Only surgeons who have been certified according to the protocols described in the second (2015) edition of *Trichiasis Surgery for Trachoma* should be allowed to conduct unsupervised practice.
7. Both new surgeon training and refresher training should include the use of mannequins as part of a comprehensive training package. To facilitate this recommendation, more trained trainers, more mannequins and an adequate supply of eyelid cartridges will all be required. The latest estimates of the trichiasis backlog should be used to predict the likely need for trainers, surgeons, mannequins and cartridges.
8. When selecting individuals to train as trichiasis surgeons, programs are encouraged to use the recommendations of *WHO Trichiasis Surgery for Trachoma* (2nd edition). Programs could consider using a mannequin-based screening test as part of the selection process encouraged. Programs are encouraged to seek out individuals who are highly motivated to serve in the community. After training, programs should provide an employment environment that encourages retention and productivity.
9. Supervision should be an integral part of trichiasis programs at all stages, from conception to planning, budgeting, implementation and evaluation. This is best served by developing a standardized approach to supervision within any given national program and including a budget line for it. As programs evolve, governments and partners have a shared responsibility to ensure that supervision of surgeons becomes integrated into the general health care or ophthalmic service system.
10. Programs should review the performance of new trichiasis surgeons 3–6 months after certification, and existing trichiasis surgeons' performance at least annually.
11. Every program should have a system for updating personnel at all levels on new evidence-based preferred practices. New developments should be rapidly incorporated into supervision practices.

Note: The findings from the 2012 Moshi meeting are contained in the document, *Global Scientific Meeting on Trachomatous Trichiasis* (Moshi, 2012), available at: www.trachomacoalition.org

Annex E: ICTC – List of key messages for counselling (to be adapted based on local barriers identified)

- Trichiasis may result in blindness if it is not treated in a timely fashion.
- Trichiasis treatment is free during outreach services.
- Trichiasis surgery takes 15-20 minutes per eyelid.
- The operation is done under local anesthesia.
- You will feel some pain during the injection of the local anaesthestic, but the surgery should be pain free.
- The operation involves only the eyelid that covers the eye, not the eyeball itself.
- Your operated eyelid will be patched until the morning of the next day.
- You may return home after the surgery.
- You must come back the next morning for patch removal and wound assessment.
- You may return to work one or two days after the operation.
- If you have problems after the operation, contact the appropriate health worker.
- Trichiasis can come back in a few patients. If this happens, seek help immediately.
- Some people have both trichiasis and cataract (or another condition that may cause loss of vision). It is important to treat trichiasis before you have cataract surgery. If a person has an eye infection, it must be treated before considering TT surgery.

Annex F: Epilation Counselling and Training Guidelines – MMDP Project

The following guidelines are used in Helen Keller International's MMDP Project for counselling for epilation for TT when a patient has refused TT surgery. For any TT patient who refuses TT surgery, epilation should be offered, but the counselling must clearly discuss the risk to patients who have eyelashes touching the center of the eye (suggested language below). Ideally, counselling for epilation should be provided at the same time to both the TT patient and a caregiver, relative, or friend, who will act as an epilator for the person with TT. If the TT patient did not arrive with a person who can be trained as an epilator, then the patient can be counseled and trained in epilation and can transfer the knowledge to an appropriate person at a later time. High-quality epilation forceps that have durable frames and rounded tips with non-cutting opposing edges, in a size that enables the instrument to be used comfortably by individuals with fingers of different sizes, should be used.

Introduction

- Explain to the patient that TT surgery is recommended, but that epilation can be used as a TT management strategy for people who refuse surgery.
- Explain to the patient that eyelashes touching the center of the eye will damage the eye and may lead to blindness.
- Instruct the patient that if they have eyelashes touching the center of the eye, or their TT becomes worse, they should go to a health center to request TT surgery.

Demonstration and training of proper epilation technique: It is important that the person epilating have an opportunity to practice while the trainer is observing. If the patient has more than One eyelash to epilate, the surgeon can epilate the first lash, talking through the steps below, demonstrating the proper technique. Then the care giver can epilate the next one, under supervision by the surgeon. If the patient has only One eyelash to epilate, the surgeon should closely observe the trainee epilator while outlining the points below, step-by-step.

1. Before you begin, ask the patient if they have any questions.
2. Reinforce the need for good lighting and ensure there is sufficient light in the training space.
3. Show the forceps to the patient and the epilator and instruct that forceps should be washed before and after each use. Forceps must NOT be used for other purposes or shared with other TT patients.
4 Clean the forceps with water and a clean towel or cotton.
5. Show the epilator which eyelashes are in-turned and require epilation.
6. Show the epilator how to identify and then grip the base of the in-turned eyelash using the tip of the forceps. (Please see photo on the next page of the guide.)
7. Instruct the epilator NOT to grip the tip of the eyelash, as it will break the eyelash rather than remove it.
8. Reinforce that one eyelash should be epilated at a time to avoid breaking the eyelashes.
9. Inform the epilator that if a lash is accidentally broken above the root, they should carefully try to remove it from the root.
10. Ask the epilator to clean the forceps using water and a clean towel or cotton.
11. Explain that steps 2-10 should be repeated whenever the lash(es) grow back.
12. Ask if the epilator and/or the patient have any questions.
13. Explain that if the trained epilator is unable to continue epilating, the patient should train another person to conduct proper epilation. Remind patients that if epilation is not addressing their trichiasis adequately, they should return to the health center to request TT surgery. Provide the epilation forceps used for the training to the patient.

Annex G: Post-operative complications and care

Potential post-operative complications	To do
Post-operative trichiasis: Eyelashes touching the eye	A second operation may be necessary. The patient should be referred to the most experienced TT surgeon or eye specialist available. Meanwhile epilation is a possible option.
Infection of the wound:	If pus is seen on the wound, remove any involved sutures and clean with gauze and boiled water three times daily. Treat with antibiotics.
Cellulitis: Bacterial infection	Check for cellulitis: If the patient has pain, spreading redness, fever, and elevated pulse, then give antibiotics (for example Ampicillin) by mouth, and refer the patient to a doctor immediately. Hospitalization may be necessary.
Granuloma: Feeling of a foreign body in the eye, accompanied by a visible lump on the inner side of the eyelid, which causes discomfort.	It can be excised with a scalpel or scissors after applying anesthetic drops and everting the eyelid. Remove any remaining suture at the site.
Defective eyelid closure (= lagophthalmos): a portion of the eye is visible when the eyelid is closed gently as if in sleep.	Defective eyelid closure is a serious condition. Remove the suture and massage the upper eyelid downwards. If this does not correct the problem, refer the patient to an ophthalmologist to correct the excessive rotation.
Necrosis of the eyelid margin: A portion of the eyelid margin is missing or has pus/scabbing present.	This is a defect in the eyelid margin, which is the result of poor blood supply caused by making the incision too close to the eyelid margin or leaving hemostats or a clamp on too long. It will gradually heal without any treatment, but will leave a scar and/or will always be missing. The patient should be closely monitored for the possible development of an eyelid closure defect.
Over-correction: More than 2 mm of tissue are showing below the eyelashes.	Early on, slight overcorrection is desired. However, at longer follow up (six months) the eyelid should appear normal. If significant overcorrection remains the patient should be evaluated for eyelid closure defect and should be asked if she/he is experiencing any dry eye symptoms.

Annex H: Evaluation Forms – HEAD START

Trainee Assessment Form

Trainee Name: _____ Date: _____ Trainer Name: _____

Initial Surgical Skills Assessment on HEAD START

1. Training checklist (filled in by trainer)

- Trainer demonstration undertaken _____ ❑ Yes ❑ No
- Familiarization (step-by-step) undertaken _____ ❑ Yes ❑ No
- Practice sessions undertaken left eye _____ ❑ Yes ❑ No
- Practice sessions undertaken right eye _____ ❑ Yes ❑ No
- Other procedures practiced (e.g. incisions, suturing) _____ ❑ Yes ❑ No

Give details: _____

- Solo observed procedures (both eyes where possible) _____ ❑ Yes ❑ No
- Review of all cartridges undertaken _____ ❑ Yes ❑ No
- Suggested areas of further practice suggested _____ ❑ Yes ❑ No

Give details: _____

2. Rank the trainee on each skill below: (1: excellent 2: very good 3: good 4: poor 5: very poor)

- Ability to place TT clamp properly _____ **1 2 3 4 5**
- Ability to hold and manipulate instruments _____ **1 2 3 4 5**
- Ability to make a straight incision _____ **1 2 3 4 5**
- Ability to take proper bites _____ **1 2 3 4 5**
- Ability to evenly space sutures _____ **1 2 3 4 5**
- Ability to tie knots well _____ **1 2 3 4 5**
- Ability to follow the appropriate logical order and technique _ **1 2 3 4 5**
- Ability to comprehend and implement instructions _____ **1 2 3 4 5**

A 5 means a red flag. Trainee cannot progress until this issue is sorted out/corrected.

3. After a total of five surgeries, do you feel the trainee is ready to go to live surgeries? ❑ Yes ❑ No

If no, why not? _____

_____

Annex H: Evaluation Forms – HEAD START (continued)

Trainee Reflection Form

Trainee Name:_____ Date:_____ Trainer Name: _____

(Questions to be asked by trainer to trainee to foster self-reflection)

1. Has HEAD START helped you prepare for live surgery? _____ ❑ Yes ❑ No

2. Has it helped you with:

- Learning how to handle instruments? _____ ❑ Yes ❑ No
- Knowing the steps of the surgery? _____ ❑ Yes ❑ No
- Becoming more confident as a surgeon? _____ ❑ Yes ❑ No
- Understanding the eyelid anatomy? _____ ❑ Yes ❑ No

3. What areas of the surgical procedure do you feel most comfortable with:

_____

_____

✔ **Do not ask but complete: Do you as the trainer agree with these?** _____ ❑ Yes ❑ No

If no, explain:_____

_____

4. What areas of the surgical procedure do you feel you need to improve?

_____

_____

✔ **Do not ask but complete: Do you as the trainer agree with these?** _____ ❑ Yes ❑ No

If no, explain:_____

_____

Annex I: Undertaking follow-up of trichiasis surgical cases and undertaking trichiasis surgical audits: Appreciating what each has to offer and planning appropriately

Outcome assessment of trichiasis surgical cases

WHO recommends that follow-up after TT surgery be undertaken at day one post-op, at 1-2 weeks, and at 3-6 months. These intervals are primarily used to identify surgical failure and initiate corrective action. Generally, follow-up is performed by the surgeon as part of his or her duty of care, which also enables the surgeon to learn by observing the outcomes of his own work. It is also used to determine the proportion of eyes that have a good or poor outcome after trichiasis intervention. It is recognized, however, that it can be difficult to achieve a high proportion of successful follow-up visits. A few important points are:

- Outcome assessment is part of routine quality of care and focuses on individual patients and their management.
- Outcome assessment should be undertaken at the designated time intervals; undertaking outcome assessment more than one year after the surgery has limited value for patient management.
- If surgeons have been operating for many years without routine outcome assessment, it should be implemented immediately. Patients operated more than one year ago should be part of a surgical audit (described below).
- Outcome assessments should help surgeons and supervisors decide when retraining is required as part of continuing education.

Trichiasis surgical audit

A surgical audit is an additional, standardized tool for monitoring the quality of surgeries being delivered. A surgical audit is carried out by persons other than the surgeons who performed the surgeries. It complements outcome assessment (which provides information for patient management); audits should be used to monitor program performance. A surgical audit measures actual surgical outcomes by individual surgeons and compares them to a desired quality standard. A few important points are:

- Surgical audits are undertaken on a sample of patients who have had surgery performed by a particular surgeon or surgeons, not on all patients.
- Surgical audits are NOT undertaken to determine specific management for patients (which is the goal of outcome assessments); instead, surgical audits are intended to provide information on program performance and the quality performance of individual surgeons.
- Surgical audits ideally should be designed as part of a supervisory program.

Developed by Sightsavers

Annex J: Training agenda

DAY 1	Time	Duration
Section 1: Introduction to the training program		
Session 1 : Introductions	8.30-9.15	45 minutes
Session 2: Expectations, agenda and objectives	9.15-10.15	1 hour
Session 3: Norms	10.15-10.30	15 minutes
Session 4 : The importance of certification	10.30-11.00	30 minutes
Tea break	11.00-11.15	
Section 2: Background and theory		
Session 1: Trachoma and the strategy for elimination	11.15-13.15	2 hours
Lunch	13.15-14.15	
Session 2: Preferred practices	14.15-14.45	30 minutes
Session 3: Organizing an outreach	14.45-15.45	1 hour
Tea break	15.45-16.00	
Session 3: Organizing an outreach (continued)	16.00-16.30	30 minutes
Session 4 : Social mobilization and counselling	16.30-17.00	1 hour
DAY 2	**Time**	**Duration**
Test – Section 2	8.30-9.15	45 minutes
Section 3: Pre-surgical skills		
Session 1 : Anatomy of the eye and eyelid	9.15-10.00	45 minutes
Session 2: Trachoma and its effect on the eye	10.00-11.00	1 hour
Tea break	11.00-11.15	
Session 3: History and examination for upper eyelid trichiasis	11.15-12.15	1 hour
Session 4: Surgery – Indications and contraindications	12.15-12.45	30 minutes
Lunch	12.45-14.00	
Session 5: Fitness of the patient for surgery	14.00-14.30	30 minutes
Test – Section 3	14.30-15.15	45 minutes
Tea break	15.15-15.30	
Section 4: Preparation for surgery		
Session 1: Infection control and health care waste management	15.30-17.30	2 hours

DAY 3	Time	Duration
Session 2: Preparation of the surgery location	9.00-9.30	30 minutes
Session 3: Preparation of the patient	9.30-10.00	30 minutes
Session 4: Sterile preparation of the surgeon	10.00-10.30	30 minutes
Test – Section 4	10.30-11.15	45 minutes
Tea break	11.15-11.45	
Section 5: The Surgery		
Session 1: Presentation of trichiasis surgery	11.45-12.15	30 minutes
Session 2: Possible surgical complications	12.15-13.15	1 hour
Lunch	13.15-14.15	
Session 3: Post-operative care	14.15-15.15	1 hour
Tea break	15.15-15.45	
Session 4 : Poor quality outcomes of TT surgery	15.45-17.00	75 minutes
DAY 4	**Time**	**Duration**
Session 5: Supportive supervision and surgical audit	9.00-10.00	1 hour
Test – Section 5	10.00-10.45	45 minutes
Tea break	10.45-11.00	
Section 6: Welcome to HEAD START training!		
Session 1: HEAD START – Introduction	11.00-12.00	1 hour
Session 2: HEAD START – Demonstration and familiarization	12.00-13.00	1 hour
Lunch	13.00-14.00	
Session 2: HEAD START – Demonstration and familiarization (continued)	14.00-15.00	1 hour
Tea break	15.00-15..15	
Session 3: HEAD START – Practice	15.15-17.00	2 hours
DAY 5	**Time**	**Duration**
Session 4: HEAD START – Solo observed surgery	9.00-17.00	The number of hours to practice on the HS should be defined according to the number of participants , and their progress

International Coalition for Trachoma Control (ICTC)

VISION:
Global Elimination of blinding Trachoma by 2020.

MISSION:
To act as a catalyst for the implementation of the SAFE strategy in support of endemic countries' trachoma control programs.

ICTC has a highly committed and professional multi-stakeholder membership, including Non-Governmental Development Organizations, donors, private sector organizations and research/ academic institutions that demonstrate a commitment to GET 2020 and the WHO-endorsed SAFE strategy.

ICTC members at time of publication:

ICTC observers at time of publication:

ICTC International Coalition for Trachoma Control

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