TROPICAL DATA

Training system for trachomatous trichiasis population-based prevalence surveys

VERSION 2

ICTC International Coalition for Trachoma Control

Contents

Please note
The Tropical Data training system includes this manual, a number of PowerPoint presentations and various other electronic tools. These training system components are intended to complement each other and should be deployed as a complete system.

Please contact **admin@tropicaldata.org** for access to the complete training system.

Peter Caton/Sightsavers

Above
A patient undergoing trichiasis surgery in Uganda.

Foreword

It has been recognised that there are many districts with a prevalence of trachomatous trichiasis (TT) that is above the World Health Organization (WHO)'s threshold for elimination (‹0.2% in adults aged ≥15 years).

WHO recommends that the following trachoma prevalence surveys take place:

- Baseline surveys: to determine the need for trachoma elimination interventions (five years of "AFE" where the prevalence of TF is ≥30% in 1–9-year-olds, three years of "AFE" where TF is 10–29.9%, and one year of "AFE" where TF is 5–9.9%; S interventions are needed where the prevalence of TT unknown to the health system is ≥0.2% in ≥15-year-olds);
- Impact surveys: conducted 6–12 months after the last round of MDA, to guide the need for further interventions;
- Surveillance surveys: conducted at least two years after an impact survey has shown the TF prevalence to be ‹5% in 1–9-year-olds.

TT-only prevalence surveys can also be conducted. However, they are not routine, and are recommended only for specific epidemiological contexts, particularly:

1. If at baseline survey in an evaluation unit, the estimated prevalence of trachomatous inflammation-follicular (TF) in children aged 1–9 years is ‹5% and of TT in adults is ≥0.2%, an impact survey to again measure the TF prevalence is not indicated; after interventions, a TT-only survey to re-estimate the TT prevalence is indicated.
2. If at surveillance survey, the estimated prevalence of TF in children is ‹5% and of TT in adults is ≥0.2%, further surveys to again measure the TF prevalence are not indicated; after interventions, a TT-only survey to re-estimate the TT prevalence is indicated.
3. If a survey at any stage of the programme estimated the prevalence of TT with a questionable methodological approach, the programme may wish to conduct a TT-only survey.
4. If at baseline survey, the estimated prevalence of TF in children is ≥30% and of TT in adults is ≥0.2%, at least 5 years of A, F and E interventions are recommended before an impact survey to again measure the TF prevalence. During this time, the programme may wish to undertake a TT-only survey to assess progress in tackling the TT backlog, facilitating adjustments in delivery of the S component as needed.

This training system is intended to be used to train, in a globally standardised way, the staff needed to complete these TT-only surveys. It is designed to provide the trainer with a complete programme for training field teams to undertake estimation of the prevalence of TT using cluster sampling methodology. Theoretical teaching has been kept to a minimum, focusing on what field staff "must" know. This manual is primarily aimed at trainers of survey field staff, but programme managers and supervisory personnel are also strongly encouraged to become familiar with the manual and to attend the training programme.

Most trachoma surveys performed to date have been built around the WHO trachoma survey guidelines. In most cases, surveys have generated sample size calculations based upon the needs for assessing active trachoma and have been underpowered to estimate TT prevalence. This training system, based on WHO guidelines, involves only sampling those aged ≥15 years. We have borrowed heavily from the Global Trachoma Mapping Project (GTMP) and Tropical Data training systems. Other previous publications informing the design are listed in

the bibliography. We are extremely grateful to a number of national programmes (Benin, Malawi, and Nigeria) who provided GTMP data to conduct simulations and to others (Cameroon, Chad, United Republic of Tanzania, and Uganda) where pilot testing was undertaken. Without their contributions this training system would have been much harder to produce. We have attempted to list all contributors to the development of new material in the acknowledgements.

Good luck with your training, and with your surveys!

Peter Caton/Sightsavers

Above
Patient Zewnlance Namubali has her bandages removed following surgery in Uganda.

Acknowledgements

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It is based and builds on investments into the GTMP and Tropical Data prevalence survey systems which were funded by the United Kingdom's Department for International Development (DFID) and the Queen Elizabeth Diamond Jubilee Trust through grants to Sightsavers; Pfizer through a grant to the International Trachoma Initiative, the ENVISION project, led by RTI International and funded by the United States Agency for International Development (USAID), and the World Health Organization. Support for this training system was provided by Sightsavers with funding from DFID and the Queen Elizabeth Diamond Jubilee Trust, as well as USAID through a grant to Helen Keller International.

Key updates in version 2 include: changes reflecting the new definition of TT agreed at the 4th Global Scientific Meeting on Trachoma; greater emphasis on TS training; and a greater emphasis on supervision.

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Note for training coordinators: selecting and preparing trainers

As in the GTMP, community guides and supervisory staff are necessary to undertake TT-only surveys. Due to the more limited amount of data collected, however, the grader will also record his or her findings. Ideally, surveys would use graders who have already been trained and certified by the GTMP or Tropical Data. However, they also require specific TT-only survey training, as per this manual.

Training may require two trainers: one to train on grading and one to train on recording (depending on the individual trainer and their skills, only one may be necessary). The grader trainer(s) must be certified by Tropical Data and will have extensive survey experience. The Tropical Data team can provide the names of international experts who are able to assist.

If new trainers are required to be trained in-country, grader trainers must be very experienced in grading trachoma in the community using the WHO simplified grading system. They need not be ophthalmologists; experienced ophthalmic nurses or ophthalmic assistants may be ideal. Recorder trainers should be experienced in data collection; and if Android smartphones are to be used to collect data (as recommended here), experience with such devices is important.

Being good at performing a task is not enough to qualify an individual to be a good teacher for that task. *Choose trainers who have both a strong skill set for the tasks at hand* ***and*** *an ability to impart that skill set to others*. Ideally, both grader and recorder trainers will have had previous experience in training others. Section 2 describes elements of being an effective trainer.

Even if they are experienced in training teams for trachoma surveys, **both grader trainers and recorder trainers should be completely familiar with all the details in this manual before commencing training**. This is likely to require up to four hours spent studying the manual.

Please follow this training system as closely as possible to ensure that the results from all TT-only surveys are comparable, and to maintain quality control.

Jo Mitchell/Sightsavers

Above
Trachoma patient Evasoni after his successful trichiasis operation in Chikwawa District, Malawi.

Definitions of terms

Clusters: geographically defined collections of communities or households used to construct a sampling frame in a cluster-sampling strategy.

Corneal opacity (CO, a sign in the WHO simplified trachoma grading system): easily visible corneal opacity over the pupil, so dense that at least part of the pupil margin is blurred when viewed through the opacity.

Data approver: the individual with responsibility for reviewing and approving data on behalf of the Ministry of Health or equivalent.

District: for trachoma elimination purposes, a district is defined as the normal administrative unit for health care management, which for purposes of clarification (generally) consists of a population of 100 000–250 000 persons.

Evaluation unit (EU): the population unit selected for implementation of trachoma surveys. This is a more politically neutral term than "district", and avoids the confusion that can arise when locally-defined administrative districts are much larger or smaller than the recommended population unit for surveys. EUs generally encompass a population of 100,000–250,000 persons.

Global Trachoma Mapping Project (GTMP): The multi-year collaborative effort, supported by various donors, to undertake baseline mapping of trachoma in settings where mapping was indicated.

Grader/recorder: in this training system, an individual given responsibility for examining community residents for clinical signs of trichiasis in a survey and recording his or her findings.

Impact survey: Survey generally undertaken 6-12 months after the last azithromycin mass drug administration (MDA) for a district that has undergone the standard period of AFE intervention.

International Coalition for Trachoma Control (ICTC): an umbrella organisation of non-governmental development organisations, academic institutions and pharmaceutical companies engaged in trachoma elimination.

Objective Structured Clinical Evaluation (OSCE): a structured, standardised system for evaluating clinical skills.

Pre-validation surveillance survey: an EU-level trachoma prevalence survey done two years after the last impact survey in that EU showed a TF prevalence in 1–9-year-olds of <5%.

Programme manager: the individual with overall responsibility for planning and executing activities related to trachoma control and elimination.

Surveillance survey: see pre-validation surveillance survey.

Supervisor: in this training system, an individual given responsibility for overseeing the work of a number of grader/recorders and assisting them where necessary.

Survey coordinator: the individual with responsibility for deploying trained grader/recorders to undertake a survey in one or more EUs, and ensuring that all necessary logistical arrangements are in place so that those surveys can be conducted successfully.

Trachomatous conjunctival scarring (TS, a sign in the WHO simplified trachoma grading system): the presence of easily visible scars in the tarsal conjunctiva.

Trachomatous trichiasis (TT, a sign in the WHO simplified trachoma grading system): at least one eyelash from the upper eyelid touches the eyeball, or evidence of recent epilation of in-turned eyelashes from the upper eyelid.

Training coordinator: the individual with overall responsibility for identifying, inviting and preparing trainers; choosing and booking the training venue; choosing and preparing sites for field-based training sessions; and making other logistical arrangements necessary for the training sessions to be a success.

Trichiasis: at least one eyelash (from either the upper or lower eyelid) touches the eyeball, or evidence of recent epilation of in-turned eyelashes (from either the upper or lower eyelid).

Tropical Data: a service that helps countries to collect globally standardised, high quality data by providing epidemiological, training, logistical and data management support to national programmes carrying out all types of cross-sectional surveys on trachoma.

TT-only survey: an EU-level survey, recommended for specific epidemiological contexts, to estimate the prevalence of TT.

WHO simplified trachoma grading system: a trachoma grading system designed for use in population-based surveys or for the simple assessment of the disease at community level.

Index of abbreviations

CO	corneal opacity
EU	evaluation unit
GTMP	Global Trachoma Mapping Project
ICTC	International Coalition for Trachoma Control
OSCE	Objective Structured Clinical Evaluation
SAFE	surgery, antibiotics, facial cleanliness, environmental improvement
TS	trachomatous scarring
TT	trachomatous trichiasis
WHO	World Health Organization
TF	Trachomatous inflammation-follicular

1 Introduction

Trachoma is the leading infectious cause of blindness. It causes blindness by scarring the eyelids, which ultimately turns the eyelashes inwards so that they scratch the eye. Trachoma is controlled through the "SAFE" strategy, which comprises Surgery for in-turned eyelashes, Antibiotics to reduce the prevalence of infection, and Facial cleanliness and Environmental improvement to reduce infection transmission.

Using SAFE, the World Health Organization (WHO) and its partners plan to eliminate trachoma as a public health problem by 2020 (defined as a prevalence of trachomatous trichiasis (TT) unknown to the health system of <0.2% in adults and a prevalence of TF in 1–9-year-olds of <5%.

"S" is offered to individuals, while "A", "F" and "E" are community-based interventions applied to whole populations. WHO recommends that the unit population for these interventions be the normal administrative unit for health care management, nominally "districts" of 100,000–250,000 people.

Knowing the prevalence of in-turned eyelashes (trichiasis) is important to allow programmes to plan for surgical and other services, as well as to determine if TT elimination targets have been reached. TT-only surveys are likely to also identify people who have non-trachomatous trichiasis: to help explore the possible contribution of trachoma to the overall burden of trichiasis, survey procedures include the diagnosis of upper lid trichiasis, lower lid trichiasis and trachomatous conjunctival scarring (TS) in eyes identified to have trichiasis. Assessment of previous use of trichiasis management services by individuals found to have trichiasis, is also included. This information is useful to the programme to [a] determine the prevalence of TT unmanaged by the health care system and [b] determine if there are a large number of trichiasis cases who have had surgery previously (likely an indication of poor outcomes).

This training system is designed to train teams to use electronic data collection on Android smartphones in the field. Doing this has significant advantages over recording data on paper forms with subsequent manual entry into a database.

Unlike for the GTMP and Tropical Data training system for trachoma prevalence surveys, there is no inter-grader agreement testing for trichiasis grading; the relative rarity of the finding in most trachoma endemic communities would make this very difficult to do. Instead, this training uses Objective Structured Clinical Evaluation (OSCE) techniques to quality-assure clinical evaluation. Since in TT-only surveys, trainees perform both the clinical examination and enter the data on the Androids, trainees are also required to pass a recorder reliability test. In order to receive Tropical Data TT-only survey certification, grader/recorders are required to pass both the OSCE and the recorder reliability test.

2 Before training starts: being an effective trainer

Train to meet the objectives, not to demonstrate your own skill set. Use a "trainee-centered" approach focused on the objectives of the training. An effective trainer will 1) consider what the trainee already knows; and 2) consider what the trainee needs to know in order to do the required task. This approach relies on the required task being well defined, so that objectives can be set for each step of training. In the case of TT-only surveys, the tasks required are well defined; it is up to you to make sure that trainees completing the course have the knowledge and skills they need to perform the tasks. Highly educated people sometimes tend to "over-train" others, that is, to try to teach trainees everything they know. Such an approach is not the best way to meet training objectives. The goal is not to turn the trainees into "trachoma experts," but into excellent trachoma graders and recorders.

Keep in mind the "target concept" of teaching, as shown in Box 1. For any particular skill or piece of information that you consider passing on to trainees, decide whether it is something that they *must* know, something they *should* know or something it would be *nice* for them to know.

Emphasise those in the first and second category – and especially the first.

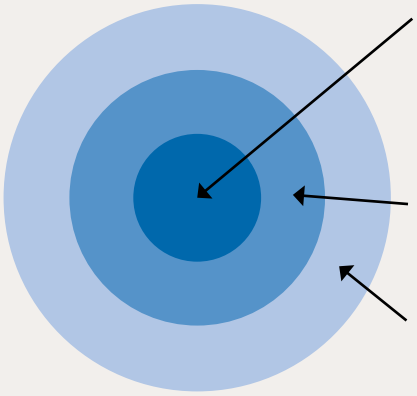
Use a variety of ways to share and impart knowledge. The learning objectives are based on tasks required in TT-only surveys and are defined for each day of training. The manual outlines several different teaching methods, including

- Discussions that can be highlighted with PowerPoint slides
- Role play scenarios for trainees
- Practical exercises for trainees
- A system for evaluation of and feedback to trainees

Wherever possible, avoid lecturing from slides; instead get the trainees involved and make them part of the training: this will be more effective than even the most articulate lecture. Skills are much more readily transmitted by demonstrating and doing, rather than by listening to a lecture.

Do not read slides to the class. When slide-based lectures are required, it is still possible to involve trainees in interactive ways. A trainer who knows the material will be able to guide the trainees, prompting them to suggest many correct responses without being intimidating or unkind. Asking your trainees questions requires them to be active in the learning process, and done politely and respectfully, it is a good technique to draw out the shy and to wake up the sleepy. It will also provide you with information as to whether your audience understands the material or not.

Box 1 The target concept of teaching



Incorporate trainees' backgrounds and experience into the training experience. This acknowledges trainees' existing level of expertise, engages them in building on that knowledge, and creates a comfortable and respectful learning environment. Even if trainees' pre-course level is that they have only heard of trachoma, this can be a foundation.

Use every opportunity for role play and practice. Teaching trainees how to examine eyelids by practising on each other in the training setting helps avoid the possibility that grader trainees will inadvertently use rough techniques on others. Handing out survey tools and having recorder trainees apply them to each other, and using role playing to practise tough situations provides an experience, rather than just a handbook of guidelines. Preparing some key scenarios ahead of time and (where available) using those already provided in this manual, can help guide the role play and allow for larger discussions to occur among the trainees. Allow enough time for debriefing and discussion on the learning or take-away points from the activity, this will help reinforce the key learning objectives and improve understanding of the key concepts. Role play can also highlight areas that need further reinforcement of learning.

It is important to consider the groups that you form for role-play activities. Sometimes groups constructed arbitrarily will work well, but at other times you may consider purposefully pairing individuals together, such as someone who has a lot of trachoma and Tropical Data survey experience with a new trainee. Consideration also needs to be given to role play group sizes, and whether they should be one-on-one between two trainees, small groups with observers providing feedback within the group afterwards, or larger groups with guided discussion.

Use evaluation tools to gauge progress. A final evaluation tool to certify that the trainees are qualified to carry out the tasks is essential. It is possible that some trainees simply cannot perform the tasks. Trainers must certify that trainees have met the standard, and thus are eligible to participate in the surveys.

Peter Caton/Sightsavers

Above Trichiasis patient Edisa Nalubanga from Uganda, about to have her bandages removed following surgery.

3 Before training starts: practical issues for trainers and the training coordinator

TT-only surveys require considerable planning and preparation to ensure that the necessary official clearances have been obtained, field teams have everything that they need on hand at the time they need it, and that the communities they intend to visit are prepared to welcome them. Similar planning and preparation are required for the field-based component of training. These tasks are the responsibility of the training coordinator. Trainers should ensure that they have been completed, or field-based training sessions may be difficult or impossible.

Classroom-based training sessions also require considerable practical preparation.

It is therefore recommended that, before training starts, you ensure that:

1. The necessary official clearances have been obtained

Requirements for ethical clearance for TT-only surveys will vary from country to country. Ethical clearance for surveys themselves may not be required because they can be conceptualised as being a programme activity; however, obtaining formal review of the protocol by an ethics committee in advance of fieldwork is best practice to ensure that the proposed methods are locally acceptable, will help make the results publishable, and is strongly recommended.

Ideally, the National Trachoma Task Force or Neglected Tropical Disease Task Force will have taken the lead in communication and coordination with all relevant national, regional, and district personnel; outlined the planned survey locations and schedules; and assisted in obtaining all the necessary ethical and political clearances.

2. Guidelines for obtaining consent for examination are understood

Official clearances do not equate to getting consent from individuals for clinical examination. Obtaining informed consent (in the local language) from each person to be examined is the responsibility of the survey team. In planning for surveys and survey training, it is important to discuss and decide who can give informed consent, and whether this consent can be verbal or must be written.

3. An appropriate training site has been selected

If at all possible, training should take place at a site where trachoma is endemic, to increase the likelihood of finding trichiasis cases. It is recognised, however, that due to the rarity of trichiasis, identifying cases might not be possible. Avoid conducting training elsewhere, such as in a capital city, just because it is convenient for the trainer or trainees. A good training site has the following characteristics:

- Is close to some rural communities in trachoma-endemic areas.
- Has enough chairs and tables for trainees and trainers.
- Has electricity (or a generator) for a projector.

- Has facilities for tea and lunch so that trainers and trainees do not have to travel long distances at break times.

4. Identify trichiasis cases for practice

Finding and demonstrating live cases of trichiasis is not a formal requirement of the training. However, if it is possible, trainers/coordinators should ask the community (while doing field practice or during sensitisation for the field practice) if there are any known cases of trichiasis locally. If there are, ask if those individuals would be happy to be examined by the trainees as part of the field practice, in order to be able to demonstrate live examples of trichiasis. It is important that people identified with trichiasis have surgery or other management offered to them as soon as possible. Local eye care providers are likely to be in the best position to identify and refer trichiasis cases for training practice. Management should be provided shortly after the practice day. If individuals with or without trichiasis take part in the training practice day, a small gift (to thank them for their time) should be offered to them by the programme.

5. Android smartphones prepared for use

The Androids should be purchased or obtained from Tropical Data. SD cards should be loaded and SIM cards purchased. The Tropical Data app and project-specific forms should also be downloaded and checked prior to the start of training.

6. Local officials are informed

Informing local officials of the training (and upcoming survey, if appropriate) is necessary. Ideally, they should be engaged in the process as much as possible.

7. Drivers and vehicles for field-based training sessions are arranged

The number of drivers and vehicles required will depend on the number of trainees and trainers that need to be taken to the field each training day.

RTI International

Above Mactar Sissoko, a Senegalese Master Trainer, explains the purpose of the surveys to community leaders.

8. All the materials required for training and survey work are available

Ensure that the following materials and equipment are ready for the training:

- LCD projector
- Laptop computer for projecting using the LCD projector, with LCD connecting cables, power adaptor and extension cords
- PowerPoint presentations
- Microphone and amplifier if the group (or the training space) is large
- Flip chart (or a whiteboard) and markers
- Torches (1 torch for each grader/recorder) and spare batteries
- 2.5x loupe (Optivisor recommended; 1 for each grader/recorder)
- Alcohol gel hand disinfectant (or soap & water, or gloves). If gloves are used, disposable, non-powdered gloves are recommended. (Alcohol hand gel is by far the best solution to preventing carry-over contamination from one subject to the next.)
- Copies of trichiasis and TS images from PowerPoints *G1* and *G2* (ideally laminated) for the OSCE, if a laptop is not available
- Laminated 3D trichiasis images and instructions (Annexes 5 and 6) for practising using 3D goggles
- 3D goggles (1 for each grader/recorder)
- OSCE mark sheets
- Cotton swabs (for **single**-subject **use** on individuals whose eyelids are very difficult to evert)
- Android smartphones (1 for each grader/recorder plus 1 for the recorder trainer); with appropriate surveys loaded and SD cards and SIM cards in place
- Extra battery packs (1 for each Android)
- Chargers (1 for each Android) and surge protectors (1 for each Android)
- Paper household data form (Annex 2)
- Recorder IDs
- List of households in practice village
- Notebooks (1 for each grader/recorder)
- Rain-proof carry bags (1 for each grader/recorder)
- If rain is likely, umbrellas or rain gear
- Pens (3 for each grader/recorder)
- Tetracycline eye ointment (or azithromycin) to give to subjects found to have presumed bacterial conjunctivitis
- Laminated sheet listing the TT-only survey questions in the local language (if the forms on the Android are not in the local language)
- Referral forms (Annex 3; for subjects incidentally found to have trichiasis, other ophthalmic or general medical problems).
- Stamp and stamp pad for referral forms (if required locally; 1 for each survey team – or forms could be stamped after photocopying, in advance of fieldwork)
- Clip-boards (1 for each grader/recorder)
- Consent forms (if required)
- Certificates of attendance for trainees
- Per diems
- Grader/recorder trainees should bring their normal health service ID cards, if they have them, to wear during fieldwork.

Personal items may also be necessary if trainers and trainees are expected to stay away from home overnight as part of training.

9. Trained trichiasis surgeons are available to treat patients identified in the survey

It is unethical to conduct a survey that identifies patients who have trichiasis without having the personnel and supplies available to treat them. Sufficient trained surgeons must be readily accessible to the residents of areas in which surveys are planned.

10. Pathways for referral of patients to medical services are defined

The training coordinator should identify local eye care and health care providers, identifying how patients with trichiasis, cataract or other medical problems diagnosed during training should be referred. A list of individuals discovered during training fieldwork to have trichiasis should be

generated, and a plan should be in place for providing services to them.

Responsibility for generating this list belongs to the grader/recorders. Arrangements should be made to treat trichiasis patients without cost to the patients themselves.

11. Per diem rates for fieldwork have been agreed and communicated to trainees

There is no point in training individuals who do not want to undertake fieldwork at the set per diem rate. If no one is willing to undertake fieldwork for the set per diem rate, the rate may be too low.

12. Trainees have been assigned grader/recorder IDs

These are four-digit numbers, one of which will be assigned to each grader/recorder. To obtain grader/recorder IDs, please email a list of names to **support@tropicaldata.org** at least five business days before the start of the training week.

13. Trainers are identified as early as possible to aid planning

If international trainers are attending the training, ensure plans are communicated in advance of their arrival. Ensure that time is allowed once they arrive and before the training starts for all trainers (national or international) and coordinators to meet and finalise preparations.

RTI International

Above Patrick Massae, a Master Trainer, coordinating field work for a training in Tanzania.

4 Selection of personnel

Each survey team will include at a minimum one community guide, and one grader/recorder. It is possible that other people (such as a driver) may also join the team in the community. Local circumstances will dictate whether other people should be added to the team.

To ensure high quality standards are maintained, it is usually preferable for a country to train fewer teams and have them move around, rather than train many teams that all work in parallel. A decision on the optimal number of teams must be made at country level.

Strong supervision is also crucial to ensure high quality data.

1. Generic requirements

Conducting TT-only surveys requires people with a number of generic skills. All personnel should know how to interact well with residents of rural communities. This means some fluency in the local language, an understanding of the importance of greetings, and good inter-personal communication with village leaders, individuals being examined and their families. Community residents volunteer their time to participate in training and surveys and must be considered to be our partners in this work: survey teams must treat them with respect.

The grader/recorders should be able to walk long distances and work long hours in the field.

2. Requirements for grader/recorder trainees

Trainees should have already been trained and certified through the GTMP or Tropical Data. Healthcare workers who have significant experience of working with trachoma can be trained as grader/recorders, but they may take longer to train in the survey methodology, including everting an eyelid without touching the cornea. Grader/recorder trainees should have good near vision, using presbyopic spectacles if needed. They must be able to read and write, and have excellent attention to detail. Prior experience with smartphones is helpful.

3. Requirements for supervisors

Ideally, a survey supervisor should be an ophthalmologist or other highly-skilled eye care worker who, by virtue of their skills, experience, and personal relationships, commands respect and authority.

It is strongly recommended that supervisors have been certified as GTMP or Tropical Data graders or recorders, and also pass the TT-only survey training (if a grader). At the very least, they should have attended both the trachoma prevalence survey and TT-only trainings and studied the training manuals and survey protocol in detail to have the appropriate knowledge to ensure fieldwork is conducted accordingly. Ideally, they should also have previous field supervision experience.

Good supervisors should have the following skills:

- Ability to problem-solve quickly
- Ability to command respect
- Lack of fear of reprisal in the event that they need to “fire” a team member
- Good clinical skills
- Good communication skills

4. Requirements for community guides

Within each survey community, a community guide will be needed to help the team. The guide's role includes introducing the team to survey households, providing crowd control, and assisting the team in other ways, as needed.

5. Requirements for drivers

Settings in which drivers are hired as part of vehicle rental may have little flexibility in engaging drivers to assist the survey teams. If practical, it helps motivation to have drivers join part of the training in order to understand the purpose of, and overall plans for, the survey. Where possible, the driver may also help the team in the community in the following ways:

1. Assist with introductions in the community
2. Assist with 'crowd control'
3. Bring adults who are not at home but who are in the village, to the grader/recorder during the survey, with the help of local village residents

Peter Nicholls/Sightsavers

Above
A woman being examined for trachoma as part of the GTMP mapping in SNNPR, Ethiopia.

5 Training schedule

Day 1:

Time	Activity	Module (*PowerPoint if applicable*)
0800-0830	Opening of training	A
0830-0900	Global overview of TT-only surveys and objectives of training	B *(B)*
0900-0930	Trachoma and the SAFE strategy	C *(C)*
0930-1045	Cluster sampling and household selection	D *(D)*
1045-1100	Break	
1100-1300	1. WHO simplified trachoma grading system and examination techniques	E *(E1)*
1300-1400	Lunch	
1400-1600	2. WHO simplified trachoma grading system and examination techniques	E *(E2)*
1600-1615	Break	
1615-1715	Review of hard copy of data collection form	F *(F)*

Schedule continues over page ➤

Day 2:

Time	Activity	Module (*PowerPoint if applicable*)
0830-1030	Using the Androids & recorder reliability test	G *(G)*
1030-1045	Break	
1045-1115	Obtaining consent	H *(H)*
1115-1215	Supervision	I *(I)*
1215-1315	Lunch	
1315-1515	Objective Structured Clinical Examination of trichiasis and TS	J *(J1&J2)*
1515-1530	Break	
1530-1700	Practice in the classroom and feedback	K

Day 3:

Time	Activity	Module
0830-1200	Field practice (includes travel time)	L
1200-1300	Lunch	
1300-1400	Review of field practice	M
1400-1700	Graduation and review of survey plans	N

6 Trainer's notes for each module

For each module the following have been included where relevant:

- Module summary
- Objectives
- Duration of module
- Location
- Materials for use during the module
- Training procedures

A. Opening of training

Module summary: At the beginning of the day it may be important to have some officials formally open the training. This can be scheduled to occur in the first 30 minutes, along with brief introductions. Rather than delay the start for officials (who may arrive late) it is suggested that introductions are started and then interrupted if necessary to accommodate officials when they arrive.

Objectives:

1. To formally open the team training.
2. To introduce trainers and grader/recorder trainees to each other.

Duration: 30 minutes (Day 1, 0800-0830)

Location: classroom

Training procedure:

1. Welcome participants to the training course.
2. Ask each participant to introduce themselves.

B. Global overview of TT-only surveys and objectives of training

Module summary: The TT-only surveys for which you are training these trainees are part of a much larger initiative to help countries assess their progress to elimination of blinding trachoma. It is important to inspire the teams with this vision so that they will realise the importance of their work. PowerPoint *B* has been prepared to facilitate this.

Objectives:

1. To ensure that survey teams understand the global importance of the work for which they are being trained.
2. To present the agenda for training.

Duration: 30 minutes (Day 1, 0830-0900)

Location: classroom

Materials: computer, projector and PowerPoint *B*

Training procedure:

1. Start PowerPoint *B*.
   Slide B-2. Ask trainees if they have heard of trachoma. Ask a trainee who has heard about trachoma to explain it to the others. Go through the materials on the slide.
2. Slide B-3. The definition of TT is "At least one eyelash from the upper eyelid touches the eyeball, or evidence of recent epilation of in-turned eyelashes from the upper eyelid".
3. Slide B-4. Use the relevant map to point out: how many gaps there are in our knowledge of where TT-only surveys are likely needed; the number of districts in your country where TT-only surveys are required.

4. Slide B-5. Explain that Tropical Data is a partnership between different organisations (International Trachoma Initiative, RTI International, Sightsavers, and London School of Hygiene & Tropical Medicine) that helps support national programmes to ensure: that surveys are conducted using standardised, WHO-approved methodologies; that outputs are of the highest quality; and that ministries of health have full ownership of their data.
5. Slide B-6. The use of Androids to collect data in the field may be new to trainees. Explain that such methods are fairly new to public health in general. Ask them to describe some of the advantages of using electronic data capture.
6. Slide B-7. Go through each objective of the training. Ask for questions.
7. Slide B-8. Go through the key aspects of TT-only surveys. Ask for questions.
8. Slide B-9. Describe the epidemiological contexts in which TT-only surveys could be carried out. Ask for questions.
9. Slide B-10. This slide shows what will happen over the next 3 days. Ask if this fits their expectations and encourage questions and discussion.

C. Trachoma and the SAFE strategy

Module summary: This module provides the trainees with the overall context for the survey work. The basics of trachoma will be presented and discussed, as will the WHO-endorsed SAFE strategy, which is being used to control and eliminate trachoma. It is important that the trainees understand the different aspects of both preventing and treating the disease. Though the module relies on a PowerPoint presentation, it is important that you recognise the trainees' previous knowledge and experiences by asking them questions prior to presenting information. This also helps you to know their level of knowledge, enabling you to tailor the presentation to the trainees' level.

Objectives:

1. To present an overview of trachoma, including the causes and consequences of the disease.
2. To present the SAFE strategy and reasons for its success.

Duration: 30 minutes (Day 1, 0900-0930)

Location: classroom

Materials: flip chart (or whiteboard), markers, computer, projector and PowerPoint *C*

Training procedure:

1. Start PowerPoint C and go through the materials on the slide.
2. Slide C-8. Ask the group to think about factors that might make trachoma likely to occur, and suggest risk factors. Write this list on the flip chart/whiteboard. After they've listed all they can, review the list on the slide with the group.

D. Cluster sampling & household selection

Module summary: This module provides an overview of trachoma survey principles and begins to focus the information from the previous module into the immediate task at hand, i.e., conducting surveys. This module looks at the two stages of sampling, the first stage of cluster selection and the second stage where households are selected. Annex 1 is designed to complement this module and to provide an aide memoire for those working in the field.

As trainees should either have already been trained and certified through the GTMP or Tropical Data, or be healthcare workers who have significant experience of working with trachoma, this module is a good opportunity for the trainer to gauge the trainees' trachoma survey knowledge and experience.

Objectives:

1. To confirm trainees' knowledge of the basic principles of prevalence survey methodology and key components of a trachoma survey.

2. To introduce the roles and responsibilities of the various members of the trachoma survey team.
3. To ensure teams have a thorough understanding of the different methods for selecting households in a village and can understand why a particular method has been chosen.

Learning objectives: By the end of this module, the trainees should be able to:

1. State the most important principle of sampling in a survey.
2. Explain why sample selection is critical in surveys.
3. Describe the roles and responsibilities of the various members of a trachoma survey team.
4. Demonstrate good etiquette with both village leaders and villagers.
5. Know how and be able to select households in villages using appropriate methodologies.

Duration:1 hour 15 minutes (Day 1, 0930-1045)

Location: classroom

Materials: flip chart (or whiteboard), markers, computer, projector, PowerPoint *D*

Training procedures:

1. Ask the trainees about their previous survey experience. Elicit from them what they feel are the basics of surveys and sampling. For those that have not taken part in surveys previously, ensure they are given the chance to input.
2. Present slides 2-4 referring to any of the trainees' responses where appropriate and ensuring to promote discussion on each slide. Ensure the multi stage sampling technique, and who is responsible for each step, is understood.
3. Discuss with the trainees what "good etiquette" means when interacting with village leaders and villagers and what is meant by a "household" in their setting.
4. Ask trainees if they know what the two most common methods of household selection are, then show slides 5-6. Go through each of these, asking frequent questions at each stage and using the flipchart and markers to demonstrate examples.
5. Ensure trainees are in agreement that the method of household selection chosen for their national/local context is appropriate.
6. Use slide 7 to support a classroom practice, using the classroom as a village. Have the trainees work through each scenario/sampling methodology.
7. Ask participants to describe the different roles in the team, showing slide 8 to confirm.
8. Use slide 9 to do a final review of the module, ensuring that all trainees are confident in all learning outcomes, and that each question has been fully discussed.

E. WHO simplified trachoma grading system and examination techniques

Module summary: In this module, the signs of the WHO simplified system for community assessment of trachoma will be presented. This will be done using a PowerPoint presentation that will introduce trainees to the system, describing its five signs and indicating the role of each sign in the survey work.

This module also requires the trainees to examine the eyes of their fellow trainees, in preparation for examining subjects in the field. Trainees will learn to look for TS and trichiasis (upper and lower eyelid) and they will gain experience in how to evert the lid to assess trachomatous scarring. This part of the module is a combination of a PowerPoint presentation and demonstration, with the trainees then practising on each other.

Objectives:

1. To demonstrate the WHO simplified grading scheme, using slides, emphasising the importance of TS and trichiasis (upper and lower lid).
2. To learn how to use 3D goggles to view 3D images.
3. To ensure that the trainees know the necessary steps of cleaning hands or changing gloves before examining an eye.
4. To train the grader/recorders in the various ways to evert an eyelid.
5. To provide an opportunity for the trainees to practise using loupes and a torch.
6. To know how to examine for trichiasis (upper and lower eyelid) and TS and collect information about previous surgery for trichiasis or advice to epilate.

Duration: 4 hours
(Day 1, 1100-1300 and 1400-1600)

Location: classroom

Materials: computer, projector, PowerPoints *E1* and *E2*, Instructions for viewing 3D images (Annex 5), 3D image set E1 (Annex 6 Printed or viewed on computer screen), 3D goggles (1 per trainee), loupes (one per trainee), torches, soap and water or alcohol gel, cotton swabs (to evert lids).

Note: If 3D goggles are not available, it is possible to view the left photograph of the two "split images" to view in 2D.

Training procedure:

1. Start PowerPoint *E1*, which describes the WHO simplified trachoma grading system.
2. Make sure the room is dark enough that the clinical pictures show up well. If the room cannot be made dark enough, then you will need to use a computer screen for the training. Depending on how many trainees you have, this may make it difficult for all of them to see the slides clearly.
3. Go through the slides one by one.
4. Ask frequently if the participants have any questions about the pictures or the WHO simplified trachoma grading system.
5. Looking at slide 8, explain that upper lid trichiasis is graded as present or absent separately for each eye.
6. Trichiasis is graded separately for the upper eyelid and the lower eyelid. Looking at slide 9, ask participants to describe upper lid trichiasis and lower lid trichiasis.
7. Show slide 10 and inform the trainees that any eye identified with trichiasis (upper or lower eyelid) will require assessment of TS (trachomatous conjunctival scarring) in the upper eyelid. Ask a trainee if all trichiasis is due to trachoma (the answer is "no") and to describe TS. This requires everting the upper eyelid. Where the eyelid cannot be everted due to stiffness, it should be graded as "not able to grade".
8. Ensure each trainee has a pair of 3D goggles. Talk through the instructions in PowerPoint *E1* for using the 3D goggles. Note that the 3D goggles can be used with or without glasses; if any trainees are using bifocals they should view through the upper part of the glasses.
9. Ask the trainees to practise viewing the images in the 3D image set *E1* with the 3D goggles. These must be viewed on a laptop, or these can be printed from Annex 6 and a copy given to each trainee to use. 3D goggles cannot be used with projected slides. The 3D images will work best if they are well-lit but not reflecting light into the 3D goggles. Ask the trainees what they can see and how this compares to the 2D image (the left-hand image of the split 3D image).
10. Review the trichiasis examination method from Slide 27.
11. Demonstrate cleaning your hands with either alcohol gel or soap and water. Emphasise: a) thorough cleaning of hands prior to each examination, b) the necessity of letting hands dry prior to touching the eyelid, and c) improper hand cleaning technique poses a risk to people examined, and is therefore grounds for dismissal.
12. Ask for a volunteer. Once a volunteer has come to the front of the room, clean your own hands. Demonstrate putting the loupe

on first, before examining the eye. Explain that the lid is always examined for trichiasis before everting it, since eversion of the lid may make later detection of mild trichiasis more difficult.

13. Always examine the right eye first, then the left eye. This helps to avoid confusion in recording results.
14. While examining the uneverted eyelid, ask the trainees what they should be looking for, based on the slides seen previously (eyelashes touching the globe, or evidence of recent removal of in-turned eyelashes, differentiating between upper and lower lid trichiasis).
15. Demonstrate how to evert the eyelid using either a) a cotton swab, or b) your finger. Ensure that the eyelid is returned to the normal position after examination. While examining the everted eyelid, ask the trainees what they should be looking for, based on the slides they saw in previous sessions.
16. Ask the trainees to form pairs and distribute the magnifying loupes, and torch, and cotton swabs if available, to each pair.
17. Demonstrate on a volunteer how to use the loupes and torch in examining an eye.
18. Request trainees to practise on their partners, always using the loupes and torch, with each person examining their partner's eyelids for trichiasis and then everting each of their partner's eyelids. Remind the participants to wash hands before examining their partner's eyes.
19. Ask the participants if there are any situations in which it will be impossible to assess TS. This would include eyes that have been enucleated, phthisical eyes, or eyes in which the scarring is so severe that stiffness makes eversion impossible. Eyes where it is not possible to assess TS should be graded as "not able to grade".
20. Among those diagnosed with upper or lower lid trichiasis, ask the participants what might be some of the possible histories. Make a list of possible patient histories, including options such as, "I didn't know I had trichiasis", "I've never seen a health worker about my in-turned eyelashes", "I was told I had trichiasis and should have surgery but didn't want it", "I was told to have surgery and agreed, but couldn't go", "I was told to pull out the eye lashes", "I have been pulling out eye lashes for years", "I had surgery in the past", etc.
21. The trainees may think of many other possible histories. Explain that we need to record the history by answering specific questions. Show slide 33, which lists the specific questions they must ask and the response options. These questions will be asked separately for the upper eyelid and lower eyelid. Discuss how each of the possible histories they have listed would be entered in the Android. Note that some patients will fit response (d), which covers all cases in which a health worker has never seen the upper or lower lid trichiasis, or the patient was not aware that he or she had upper or lower lid trichiasis.

Kate Holt/Sightsavers

Above
A member of the Global Trachoma Mapping Project team examines a man's eyes near Khartoum, Sudan.

– Q1. Have you ever been offered surgery by a health worker to correct the trichiasis (in-turned eyelashes) in this eye? [This question will be asked separately for the upper eyelid and lower eyelid, and left and right eye.]

Response options:

a. Yes, a health worker informed me and offered me surgery, and I had surgery
b. Yes, a health worker informed me and offered me surgery and I accepted the offer but I did not get surgery
c. Yes, a health worker informed me and offered me surgery, but I declined it
d. No health worker informed me and offered me surgery
e. Don't know

22. Explain that we also need to ask specifically about epilation. Show slide 34. Explain again that both question 1 and question 2 must be asked and answers recorded, regardless of the response to question 1.

– Q2. Have you ever been offered epilation by a health worker to correct the trichiasis (in-turned eyelashes) in this eye? [This question will be asked separately for the upper eyelid and lower eyelid, and left and right eye.]

Response options:

a. Yes
b. No
c. Don't know

23. PowerPoint *E1* slide 35 shows how to treat people who have trachoma. Discuss who should be treated with antibiotics. Discuss what to do with a person found to have trichiasis.
24. Decide on what referral form will be used for patients with any other conditions needing treatment (e.g., cataract), including where patients will go for treatment, how they will get there, and the costs they may incur. You may use Annex 3 as a template for referrals.
25. Show PowerPoint *E2* to the trainees. There are slides that show some examples of trichiasis (major and minor; upper eyelid and lower eyelid).
26. Remind trainees that any eye identified with trichiasis (upper or lower eyelid) will require assessment of TS in the upper eyelid.
27. Show the slides of TS starting with the slides of a normal eyelid. As conjunctival scarring can range from mild to severe, it is important to show a variety of slides. Moderate or severe scarring is considered an easily visible scar as per the WHO simplified grading system definition.

F. Review of hard copy of data collection form

Module summary: This module prepares grader/recorders for recording relevant household and individual level information.

Objectives: By the end of this module the trainees should be able to explain what data will be entered into each field of the form.

Duration: 60 minutes (Day 1, 1615-1715)

Location: classroom

Materials: survey form (Annex 2), PowerPoint *F*

Training procedures:

1. Introduce the household data form (Annex 2). Give everyone a paper copy of this to look at so that they get an idea what will be asked.
2. Explain that consent must have been given before GPS recording begins with the Android.
3. Go through PowerPoint *F*.

Section A: Cluster questionnaire

Date	Day/month/year that the examination is done (this will be automatically entered by the Android)
Grader/recorder	A four-digit numeric code unique to you (provided by the supervisor/ coordinator)
1. Country	This will be automatically entered by the Android
2. Evaluation Unit	A five-digit numeric code (provided by the supervisor/coordinator)
3. Cluster	A three-digit numeric code (provided by the supervisor/coordinator)

Section B: Household questionnaire

The details of the household questions are as follows:

Date	Day/month/year that the examination is done (this will be automatically entered by the Android)
Grader/recorder	A four-digit numeric code unique to you (provided by the supervisor/ coordinator)
1. Country	This will be automatically entered by the Android
2. Evaluation Unit	A five-digit numeric code (provided by the supervisor/coordinator)
3. Cluster	A three-digit numeric code (provided by the supervisor/coordinator)
4. Household	Enter the number of the household within the cluster (in other words, if it's the second house visited in the cluster, write"2"), then the full name of the head of the household. This is to help you return if any family members are missing. If the name of the head of the fifth household visited is "Anthony Solomon", you would enter, "5 Anthony Solomon". If many household heads share a common name, it also ensures that the records are easily differentiated. Definition: a discussion should be had to ensure all trainees share a common definition of what a household is. Options include all those who eat from the same pot or those who live under the same roof.
G1-G4. GPS	These fields will be automatically entered by the Android upon clicking the 'Record location' button. The Android may take up to 60 seconds to do this. You should stay outside the house while the Android does so.

Section C: Census and examination findings

Every resident of the household aged ≥15 years should be listed and asked to take part in the survey by being examined, providing that informed consent is provided. During the survey, the grader/recorder will conduct the clinical exam on each consenting household resident and record it on the Android smartphone. The grader/recorder will examine the right eye first, recording upper lid trichiasis as absent (0) or present (1). The grader/recorder will then record whether lower lid trichiasis is absent (0) or present (1). If trichiasis is present in either the upper or lower eyelid, they will then examine the conjunctiva of the everted eyelid for TS and record findings as absent (0) or present (1), followed by two questions on use of trichiasis management services for the respective eyelid(s). After this, the left eye will be examined and the same steps will be followed for grading upper lid trichiasis, lower lid trichiasis, TS, and questions on trichiasis management. If the grader/recorder cannot evert an eyelid, he/she should record TS as "not able to grade". Do not leave any questions blank.

ID number	This will be automatically entered by the Android.
Name	It is not necessary to include the full name. The goal is to be able identify who has been examined in each household.
Sex	1 = male; 2 = female
Age	In years at last birthday (range is ≥15 years). Note: discussion may be useful on how to help gauge the ages of individuals who are unsure of their age. A calendar of well-known national or local events may be a useful guide, for example a great flood or a political milestone.
Examined	Yes (with consent) will enable further information to be collected. If not examined, record why.
Upper lid trichiasis (right eye)	0 = absent; 1 = present; 2 = not able to grade
Lower lid trichiasis (right eye)	0 = absent; 1 = present; 2 = not able to grade
If trichiasis present (right eye)	If trichiasis (upper or lower lid) is present, examine for TS. Record as: 0 = absent; 1 = present; 2 = not able to grade
If trichiasis present: TS (right eye)	If trichiasis (upper or lower lid) is present, questions will need to be asked about whether surgery for trichiasis or advice to epilate have been offered.
Upper lid trichiasis (left eye)	0 = absent; 1 = present; 2 = not able to grade
Lower lid trichiasis (left eye)	0 = absent; 1 = present; 2 = not able to grade
If trichiasis present (left eye)	If trichiasis (upper or lower lid) is present, examine for TS. Record as: 0 = absent; 1 = present; 2 = not able to grade
If trichiasis present: TS (left eye)	If trichiasis (upper or lower lid) is present, questions will need to be asked about whether surgery for trichiasis or advice to epilate have been offered.

G. Using the Androids & recorder reliability test

Module summary: This session provides the trainees with an introduction to the Android smartphones that will be used to collect and transfer data. Though most trainees will probably be familiar with smartphone technology, do not assume that everyone is: cover the basics thoroughly.

Objectives: By the end of this session the trainees will be able to:

1. Demonstrate the basic functions of the phone and how to operate it.
2. Demonstrate how to enter data on households and individuals.
3. Demonstrate how to upload data.

Duration: 120 minutes (Day 2, 0830-1030)

Location: classroom

Materials: one Android for each trainee, Recorder IDs, PowerPoint *G1*, Annex 4 (recorder reliability test)

Training procedure:

1. Distribute an Android to each trainee.
2. Give each trainee their Recorder ID.
3. Explain that during the surveys, the Android must be checked every night to make sure that the data have been sent, then switched off and charged through the surge protector. Before leaving for the field in the morning, the Android must be switched on briefly to make sure that it is fully charged, then switched it off until it is needed.
4. Explain that they should not download other apps to the Android, use it for email or Facebook, or otherwise employ it for anything other than collecting TT-only survey data.
5. Demonstrate how to turn the Android on and off.
6. Demonstrate how to turn on GPS and ensure trainees are able to do this. To make GPS readings easier to obtain, it is advisable to set the "location settings" to "high accuracy" even when on Airplane mode and the phone cannot use mobile networks or Wi-Fi.
7. Demonstrate how to put the Android in "Airplane Mode": in "Settings", press "More...", then press "Airplane Mode". (Airplane Mode saves battery by disabling any mobile, Wi-Fi or data connections, but the GPS function will still work.) Ensure trainees can turn this setting on and off.
8. Ask trainees to turn on their Android.
9. Ensure all trainees are able to "unlock" the Android, turn it off, and turn it on again.
10. Explain that it is only possible to turn off the Android when it is unlocked.
11. Ask trainees to check the date and time settings on the phone are accurate and ensure they all know how to do this. This should be done on any new phone they use to ensure there is an accurate time stamp on each completed form.
12. Ask trainees to check whether they are connected to the mobile network or Wi-Fi. This will be essential for sending data whilst in the field and during the training.

Trainer note: For the following steps it is advised to use PowerPoint *G1* to demonstrate use of the Android, ensuring all trainees are following what the trainer is doing on their own Android. An alternative is to connect the trainer's Android screen to the laptop projector to demonstrate the different forms and actions, ensuring the trainees follow on their own Androids. Whichever method used, do ensure that all trainees are following you at each stage. For small groups you could have them hold up their Androids and show you. Another method is to ask trainees to show the person next to them at each stage.

13. Ask trainees to open the Tropical Data app.
14. A menu will appear with the following items:
    - Fill blank form
    - Send finalised form

Explain briefly what each of these items refers to.

15. Ask trainees to select Fill Blank Form by touching that menu item.
16. Point out the keyboard keys: del, numbers, return.
17. Another menu appears with the following four options:
    - ‹Project name› CLUSTER (where "‹Project name›" is the name of your country, region [in Ethiopia] or state [Nigeria])
    - ‹Project name› HOUSEHOLD
    - ‹Project name› RESIDENT
    - ‹Project name› ABSENT RETURN
    - ‹Project name› SUPERVISOR
18. Explain to the trainees what each item is.
19. Ask trainees to choose ‹Project name› CLUSTER.
20. The screen provides a choice to return to previous 'prompt' or to go forward to the next prompt (by swiping the screen from right to left).
21. Ask the trainees to go forward.
22. The next screen asks the user to enter their Recorder ID (and the keyboard immediately appears).
23. Demonstrate typing on the keyboard. Ask a trainee to demonstrate how to find numbers on the keyboard.
24. Take the trainees through completion of each of the forms, in the order CLUSTER, HOUSEHOLD, RESIDENT, ABSENT RETURN, encouraging questions. During training, the Evaluation Unit code used should be ooooo, and the Cluster code used should be ooo or oooo.
25. Instruct the trainees that, in the HOUSEHOLD form, when the Android prompts to "Capture GPS data", the recorder should stand outside the main door of the house and press the "Record Location" button. This function requires that the Android receives signals from satellites, which is harder if there is a roof overhead. GPS data should be captured after consent is obtained from the head of the household (see module H).
26. Note: If the trainee experiences difficulty in capturing GPS data, instruct them to check the "Location" access in the "Settings" folder on the Android, to be sure that these settings are active.
27. Once the "Record Location" button is pressed, a "Loading Location" box appears. Once the accuracy is ‹10m, the recorder should press the small "Record Location" button below the "Loading Location" box.
28. Note that problems with GPS data acquisition usually result in a "false" reading of 999, which will also occur automatically after 60 seconds of unsuccessful attempts to record the location. In these instances, the grader/recorder should try again, and only if the problem still persists should they move to the next question keeping the false reading. In these cases, the supervisor should be notified of the issue.
29. Instruct trainees that the way that resident records are linked to household records, and household records are linked to cluster records, only works within a single Android. It's therefore important that one Android is used to enter all the data from any one cluster. If, for some reason, more than one Android is used for a cluster, the team will need to enter CLUSTER data into the new Android to be able to select that cluster in a new HOUSEHOLD form.
30. Instruct trainees that the Head of Household entry must be unique for each Household within a cluster. This is one reason for entering the number of the household within the cluster as well as the full name of the head of the household, in the "Household" field. When a new cluster is started, the household numbering should re-start from the number "1".
31. ABSENT RETURN:

- As noted earlier, all adults aged ≥15 years are to be enrolled. Instruct trainees that the

ABSENT RETURN survey is only for enrolling individuals who are both previously entered as being "absent" on the Android in use **and** currently available for examination.

- If an adult is missing, record this individual as absent. Write the person's name in your notebook so you can find him/her again. Ask the trainees what are the possible ways to ensure that those who are absent are seen later. Possible options include: [a] return to the household and examine later, [b] have the survey vehicle find the adult and bring him/her to the team to examine, [c] make a plan to meet the adult at a central site in the village.
- Show the participants how to include the data using the ABSENT RETURN form. Include the relevant information at that time.

32. Practise recording all survey data with the Androids. Suggest that trainees demonstrate through role play that they can do all these tasks. Observe them and critique.
33. When trainees seem comfortable with the system and you have worked through different examples and/or role play, ask them to undertake the recorder reliability test (at least two households), by reading aloud to them the data in Annex 4. All the trainees can do this at the same time. It should be done outside so that GPS data can be easily collected.

Require all the trainees to show you the summary of each form before they save it in order to check their responses. Trainees that don't show you their responses must be required to re-do the form. Upon presenting each form, make a note of the number of correct answers which will form part of their final score, any subsequent corrections will not receive marks. **A score of 90% on initial or repeat testing is needed to pass.** Only those who pass the recorder reliability test and the subsequent OSCE can qualify as a grader/recorder. Following the test, ensure to leave time to feedback and discuss.

H. Obtaining consent

Module summary: This module prepares the trainees to introduce themselves at the household and to obtain consent for the examinations and interview.

Objectives: By the end of this module the trainees should be able to demonstrate how to make introductions and ask for consent at the household.

Duration: 30 minutes (Day 2, 1045-1115)

Location: classroom

Materials: flipchart (or whiteboard), markers, computer, projector, PowerPoint *H*

Training procedure:

1. Introduce the module by commenting on how access to the household and obtaining consent is critical to the survey. Ask the participants what the first step of this process would be. Use this to lead into introductions.
2. Start a discussion of how introductions will be made. Discuss locally appropriate ways to make introductions.
3. Verbal consent for inclusion in the survey must be obtained at each household. Discuss appropriate ways to ask for verbal consent to interview and examine adults.
4. Through discussion with trainees, discuss what is meant by a "household" locally. For example: "a unique doorway for people who sleep in the same house"; "people who have slept in the house in the last month"; "people who usually share their meals together". Be sure to be as inclusive as possible. For the purpose of the TT-only survey, an adult member of the household is defined as a person aged ≥15 years.
5. Get trainees to list the essential elements that should be included in the verbal consent process. Write these on the flip chart as they are suggested. Be sure that the following are all included:

- Here is what is going to happen during the survey:

  - The household GPS coordinates will be collected
  - You will be asked to answer some questions
  - The eyes of adults aged ≥15 years will be examined for trichiasis
  - Antibiotic treatment will be offered to anyone found with active trachoma – a decision will be made at country level regarding treatment type
  - People with trichiasis will be offered referral for surgery
- You have the right to refuse to participate.
- You will have access to the same services regardless of whether or not you decide to participate.

You may show PowerPoint *H* as a reminder of these elements that must be included on consent. (This is not necessary if all the elements have been discussed, but may be useful for reinforcement.)

Once the list above is agreed on, have each grader/recorder practise (using role play) what he or she will say at the household. Others can critique.

I. Supervision (for all trainees, proposed supervisors & coordinators)

Module summary: This module outlines the importance of supervision in ensuring quality, the steps needed to ensure the survey proceeds well and ensures that both the supervisors and team members understand the role of the supervisor.

Objectives:

1. All team members appreciate the importance of good quality data collection and the role of the supervisors to assist them in achieving high quality survey findings.
2. Supervisors to know what they are supposed to do to support teams and to have the necessary knowledge to develop a more detailed supervision plan prior to surveys starting.

Duration: 60 minutes (or more time as required, especially for the supervisors to review the checklist), (Day 2, 1115-1215)

Note: This presentation provides an overview and examples to facilitate discussion. It will not include every possible task that requires supervision or all supervision methods. Supervisors will also need to allocate time on Day 3 or before the field work starts to develop and finalise a supervision plan.

If supervisors are trained (as recommended) as either graders or recorders, they will also need to take time to review the modules of the other relevant role to be able to support with any issues that arise in the field. For example, a grader qualified supervisor, should be able to check if both household and clinical data are being collected accurately and be able to use the phones. A recorder is not expected to be able to verify clinical diagnosis, but can ensure the examination process is followed, e.g. using hand gel, and examining right eye first, followed by left eye.

Location: classroom

Materials: PowerPoint *I*, Flip chart (or whiteboard), phone based app, Annex 7 Supervisor checklist

Training procedures:

1. Ask participants to discuss why supervision of field work is important; you may want to write these on the flip chart. Afterwards the facilitator can show slide 2 to confirm that the main points have been covered.
2. Ask participants to define supervision and the role of a supervisor in the context of survey work. Write these on the flip chart/ board. The facilitator should show slide 3 on the role of a supervisor to confirm that these points have been covered.
3. Ask participants to suggest all possible supervision methods that can be used during surveys and discuss the practicality of each. Slide 4 can be shown to confirm.
4. Ask participants to make a list of specific critical tasks that must happen *during start* up to ensure a high-quality survey, as well as the types of issues that may be encountered. Write this list on the flip chart

or board. Encourage proposed supervisors to also note these down separately, to later feed into their supervision planning. Some suggestions are given on slide 5.

5. Ask participants to make a list of specific critical tasks that must happen *throughout the fieldwork,* as well as the types of issues that may be encountered. Write this list on the flip chart or board. Encourage proposed supervisors to also note these down separately, to later feed into their supervision planning. Some suggestions are given on slide 6.
6. Ask participants to identify challenges in relation to following the survey protocol. Compare these to those listed on slide 7.
7. Ask participants to consider logistical and coordination challenges they may face. Note these on the board and discuss ways to overcome them. Supervisors and coordinators can use this section to further develop their notes to feed into their plans. Compare responses to slides 8 and 9.
8. Discuss and confirm participants know what issues should be reported to their supervisor. Compare responses with those on slide 10.
9. The remaining slides (slide 11 onwards) can be discussed separately with just supervisors, or you can continue as per previous slides, so all participants have a good understanding of supervision. This may be necessary if supervisors have not yet been identified or confirmed.
10. Use slide 11 to highlight and discuss who should be acting as supervisor and the qualities and experience they should have. Participants may have other ideas to share , including discussing their local setting to establish the ideal number of supervisors.
11. Slide 12 outlines how supervisors can take their notes from this session to put together a supervision plan before the fieldwork commences.
12. Participants should be paired up, and each pair given both the paper-based checklist (Annex 7) and an Android smartphone with the electronic supervisor form, so that both forms can be talked through, enabling participants to understand what they contain. Inform supervisors that the paper version (or an equivalent of their own design) should be used as a minimum. The electronic form can also be used and uploaded and kept alongside the survey data, allowing a formal record of any issues and relevant observations. Review with reference to slide 13.

J. Objective Structured Clinical Examination of trichiasis and TS

Module summary: Following training in grading of trichiasis and TS and recording results, the trainees will undergo an objective structured clinical examination (OSCE) to assess their grading and recording skills.

This module determines which grader/recorder trainees qualify to be certified grader/recorders and which do not. Those who pass the OSCE (no more than two grades of "below expectation"), will qualify as grader/recorders. Those that do not pass (more than two grades of "below expectation"), even with re-training and a repeat OSCE, will not qualify as grader/recorders. Those who do not pass may be able to play another role in the survey, such as field coordinator or supervisor (see page 15 for requirements for supervisors), dependent on previous training and field experience. It is important to emphasise though that as they have not passed the OSCE, they will not be certified as a grader/recorder.

Objectives:

1. Trainees will demonstrate proper clinical grading of trichiasis and TS.
2. Trainees will demonstrate proper hand washing techniques.
3. Trainers will be able to evaluate if trainees follow the correct sequence for examination and data recording, and whether they are ready to proceed to field practice, whether re- training and a repeat OSCE is required, or whether training should be discontinued.

Duration: 120 minutes (Day 2, 1315-1515)

Location: classroom

Materials: Loupes, torch, alcohol hand gel, OSCE mark sheet, 3D trichiasis images and 2D TS images from PowerPoints *J1* and *J2* (either using laminated pictures or displayed on laptops, depending on resources available and number of trainees), 3D goggles, Androids, J3 OSCE mark sheet.

Note: If 3D goggles are not available, it is possible to view the left photograph of the two "split images" to view in 2D.

Training procedures:

1. Establish 2 stations in the room prior to the start of the session. Inform the trainees that they will cycle through both stations as noted below.

Station 1: The trainee will be examining the trainer as if they are a member of a household and recording the examination data in the Android. Trainees should therefore complete a household form on the Android before the examination begins (using the trainer as the head of the household). The trainee can use the same cluster as used earlier for the recorder exercise and reliability test. Starting a resident form, the trainee should then make the necessary recordings in the Android alongside conducting the examination.

Trainees will follow the standard sequence for examination, assuming the trainer has bilateral upper lid trichiasis and lower lid trichiasis in the left eye. The trainer will evaluate whether the trainee: follows the correct sequence for examination; demonstrates their ability to evert both right and left eyelids of a normal individual and examine the conjunctivae for TS; and records the data appropriately in the Android phone. The correct sequence for examination is:

1. Put on loupes and ensure that you have good illumination: a bright torch is ideal. Bear in mind that you do not want to contaminate the body of the torch with your hands after you have touched the subject – for this part of the examination, it may be best to have the torch held by an assistant.
2. Ask the subject to sit tall or stand up, and to look up.
3. Use illumination and loupes to examine the right eye, as follows (steps 4-10).
4. Locate the lid margin and eye lashes, and looking from different angles, determine if any eyelashes from the upper eyelid touch the eyeball, or if there is evidence of recent removal of in-turned eyelashes from the upper eyelid.
5. Use the thumb of your left hand to exert mild pressure on the subject's right upper eyelid, so that the eyelid lifts slightly, enabling you to better examine the lid margin and position of the eyelashes.
6. Ask the subject to look to the right, then to the left, and watch to see if any eyelashes touch the eyeball.
7. Slightly lift the chin of the person you are examining. Place the fourth and fifth fingers of your left hand on the subject's right temple, stabilising your hand in relation to the subject's head. Ask the subject to look down without moving their head.
8. Use the middle finger of your left hand to exert mild upward pressure on the subject's right upper eyelid, so that the eyelid margin and eyelashes are pulled slightly upwards and outwards.
9. Ask the subject to look down, and grasp the eyelashes between the index finger and thumb of your left hand. Gently pull the eyelashes out and down so that a small space forms between the eyelid and the eye.
10. Use the index finger of your right hand placed in the middle of the eyelid as a fulcrum over which to evert the subject's right upper eyelid, then examine the conjunctiva. Ensure that the eyelid is returned to the normal position after examination.
11. Use illumination and loupes to examine the left eye (repeating steps 4-10, but this time using your right thumb in step 5, the fingers of your right hand in steps 7, 8 and

9, and the index finger of your left hand in step 10).

12. Clean your hands with alcohol hand gel.
13. As the subject has bilateral upper lid trichiasis, and lower lid trichiasis in the left eye, ask the appropriate questions about previous management.
14. All clinical results and management question results should be appropriately recorded in the Android.

Station 2: The trainee will demonstrate his or her ability to identify trichiasis and the absence of trichiasis in a series of 3D photographs (PowerPoint *J1*: two slides per diagnosis), and identify TS and the absence of TS in a series of 2D photographs (PowerPoint *J2*).

Note: If 3D goggles are not available, it is possible to view the left photograph of the two "split images" to view in 2D.

The trainee should be able to correctly identify the following:

- Neither trichiasis nor entropion
- Upper lid trichiasis with upper lid entropion
- Upper lid major trichiasis (>5 eyelashes touching the globe) without entropion
- Upper lid minor trichiasis (1–5 eyelashes touching the globe) without entropion
- Evidence of epilation
- Lower lid trichiasis
- Trachomatous scarring (TS)

K. Practice in the classroom and feedback

Module summary: This module is a chance for trainees to show that they understand all the survey procedures before they go into the field. The trainers will describe various situations to them to be sure they agree on how to handle them.

Objectives: By the end of this module, trainees should be able to demonstrate that they know

Sumon Ray, ITI

Above
Teams conducting surveys in Ethiopia, 2018.

their roles and know how to deal with difficult situations in the field.

Duration: 90 minutes (Day 2, 1530-1700)

Location: classroom

Materials: flip chart (or whiteboard), markers

Training procedure:

1. Start a role play exercise with the trainer acting as a non-communicative household head. Get the trainees to probe for information.
2. Get the trainees to describe all the problematic situations they can imagine and list these on a flip chart. Discuss what to do in each case. Include all the following situations. Examples include:
    a. No one aged ≥15 years is present. [An informal (paper) record will need to be made of this household and the team should try and visit it again later if they have time and if the adults are likely to be present].
    b. No one is sure of the age of the grandmother. [Participants would have discussed how a calendar of nationally significant events may be helpful in these scenarios to help people be able to work out their age. For example, the date of a great storm or significant political event.]
    c. The grandmother wants children to be examined. [Any family members can be examined, with their data entered into the Android. The database will limit data analysis to those aged 15 years and over.]
    d. The 47-year-old mother has told you she has had surgery and it is not necessary for you to examine her eye. [Explain the purpose of the TT-only survey, and request to examine.]
    e. The 55-year-old father tells you he was examined at the health centre last week and they found no trichiasis. He wonders why you want to examine him again. [Explain the purpose of the TT-only survey, and request to examine.]
    f. The family has no idea when the grandfather will be back. [Write his name in your notebook so you can find him/her again, and explain you will return later that day to try and see him.]
    g. The 48-year-old is not present in the household, but will be back later. [Come back later if you have time.]
    h. The 60-year-old is not present in the household but will be back around 9 pm. [Due to the late hour, no need to return to examine.]
    i. The family report that a woman aged 14 years has trichiasis. [Examine; if trichiasis, refer for management, Annex 3.]
    j. The household head refuses consent for household participation, after the TT-only survey purpose has been explained to them. [Move onto the next household. It is not recommended to replace the household with another].

The trainer needs to be sure that all trainees respond the same way to "problems". Everyone should hear the same information and all should record the answers the same way.

Explain to grader/recorders that they should keep a list in a notebook of those aged ≥15 years who are absent from the household at the time of the first visit, with information that will make it easy to find their households again.

L. Field practice

Module summary: The module will take place in a village to allow practice in household selection, completion of the questionnaire and examination of adults in the household.

Objectives: Demonstrate successful practice of the procedures.

Duration: 3.5 hours (Day 3, 0830-1200, including travel time)

Location: field

Materials: all materials needed for survey, including a list of households (if available)

Training procedure:

1. Remind trainees that it is critical that they work efficiently, not wasting time at any household. If any adults are absent and due to return later, they should make arrangements to examine them later rather than waiting at the household for them to return.
2. At the village, one trainee should greet the village head and discuss the survey.
3. Have the trainees discuss how to select the households from a list (or draw a map and select a segment for survey) and be sure everyone understands the procedure. Discuss any disagreements.
4. For this practice, two or three trainees may work together, taking turns to "take the lead" in making introductions and doing the interviews while others critique and time the visit.
5. Every group of trainees should visit as many households as possible in order to get practice and uncover any problems.
6. At the end of the session, discuss as a group the problems that were encountered.
7. Depending on how many households are selected, it is possible that not all will be visited during this practice but every trainee should have as much practice as possible.

Note on organising field practice:

Finding and demonstrating live cases of trichiasis is not a formal requirement of the training. Doing so would be practically difficult given that trichiasis is generally relatively rare. However, if it is possible, trainers/coordinators should discuss with the community (while doing field practice or during sensitisation for the field practice) if there are any known local cases of trichiasis. If yes, ask if those individuals would be happy to be examined by the trainees as part of the field practice, in order to be able to demonstrate live examples of trichiasis.

M. Review of field practice

Module summary: The module will take place in the classroom directly after the field practice. It is an important opportunity to provide feedback on the field practice and address any remaining issues as the training comes to an end.

Objectives: Ensure a thorough understanding of survey procedures by the trainees, and address any remaining issues, questions or concerns.

Duration: 60 minutes (Day 3, 1300-1400)

Location: classroom

Materials: flipchart (or whiteboard), markers

Training procedure:

1. Give feedback on how the trainees performed in the field. Discuss as a group the problems that were encountered and how these were or should have been addressed (these can be listed on the flipchart/whiteboard). Ensure to highlight what was done well by the teams.
2. Give trainees the opportunity to ask final questions about any aspects of the surveys and take the time to revise or revisit any outstanding areas of concern, as highlighted by the practical exercise.

N. Graduation and review of survey plans

Module summary: In this session, the survey teams will be formed and materials for fieldwork provided.

Duration: 3 hours (Day 3, 1400-1700)

Location: classroom

Materials: all materials needed for survey including per diems, certificates

Procedure:

1. A graduation ceremony may be held if desired. (A template certificate is stored alongside the other electronic training materials.)
2. Discuss survey logistics which include:
    a. Timing and means of deployment of grader/recorders (according to cluster selection). Ensure these plans align with the agreed protocol.
    b. Supervisor(s) assigned to grader/recorders
    c. Drivers assigned to grader/recorders
    d. Materials given to grader/recorders
    e. Communications plan (in case of incidents or to report progress/issues to the supervisor(s) or coordinator(s)
3. Distribute first round of per diems.

Tom Saater/Sightsavers

Above
Mrs Kikelomo Adeleke is a grader who examines members of the household for signs of trachoma during surveys in Nigeria.

7 After training finishes: clearing data from Androids

Before the Androids that are used for training are taken to the field to collect data in real surveys, it is important to delete any records made during training exercises. To avoid accidental deletion, the screen to remove the data will require a password. This step will therefore need to be done by the training coordinator or survey coordinator, who will be given a password to carry out this task. **Don't enter any training data after the real surveys have begun!**

A. Open the Tropical Data app and click the menu button on the app homepage.

B. Select Admin Login and enter password.

C. Click "Delete saved form" button.

D. Under the Saved Form tab (underlined blue when selected) there is a "Toggle all" button. Click Toggle All, then click Delete Selected. This will remove all saved forms and clear the local database.

Kate Holt/Sightsavers

Above
A member of the Global Trachoma Mapping Project team checks a woman's eyes for trachoma, Sudan.

Annex 1 Cluster sampling and household selection – Aide memoire

Sampling is typically done in 2 stages:

First stage:

- Selects the **clusters** (or villages) from a complete list of clusters in the EU.
- Sampling is done by the survey coordinator and/or epidemiologist and communicated to the teams in advance of the survey to aid planning.
- Following WHO recommendations, 20-30 clusters are selected per EU, with the exact number defined by the programme, in consultation with the epidemiologist.

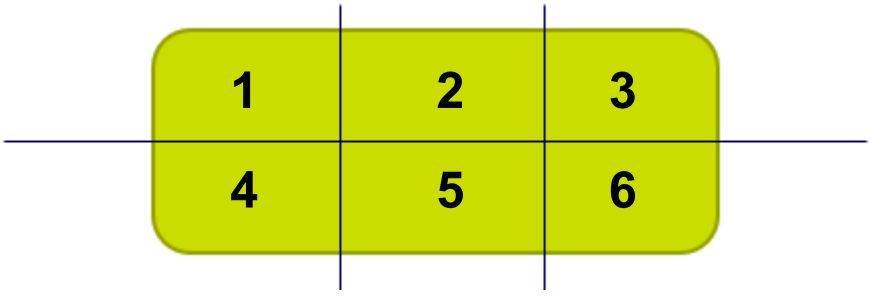
Second stage:

- Selects **households** within the clusters.
- This is done by the teams, most commonly using either "compact segment" or 'simple random" sampling, depending on whether a list of households in the village is available.

The number of households to select (generally 25-30) will be determined by the programme (number of households a team can reliably see in a day of fieldwork)

Compact Segment Sampling:

- Teams (or those sent to conduct sensitisation ahead of the team's arrival) request a village leader to make a rough map of the village and to estimate the number of households (e.g. 180).
- The total number of households should be divided by the number of households to be examined per cluster (e.g. 180/30 = 6).
- The village should then be split into segments based on the previous calculation (6), one of those segments is randomly selected and all eligible households are surveyed to achieve the required number of households.



Simple random sampling:

- Each household on the list of village households should be given a number (e.g. 1-180).
- The required number of households (as set by the programme) should be randomly selected from that list, visited and enrolled for the survey.

Annex 2 Survey form

TT-only survey

(A) Household questionnaire

Date

Recorder

Section 1: Identifying information		
1	Country	
2	Evaluation Unit [put 5-digit code in boxes]	
3	Cluster [put 3-digit code in boxes]	
4	Household (name and number)	
Section 2: Household GPS		
G1	Latitude (N)	
G2	Longitude (E)	
G3	Elevation (metres)	
G4	Accuracy (metres)	

(B) Census and examination findings

Country | EU | Cluster | Household

Recorder | List all household residents. Ask for consent to examine everyone aged 15 years and over

Name	Sex 1 = M 2 = F	Age (years)	Examined? 1 = Yes (with consent) 2 = Absent 3 = Refused 4 = Other	Right Eye 0 = Sign absent 1 = Sign present 2 = Not able to grade			Left Eye 0 = Sign absent 1 = Sign present 2 = Not able to grade			Notes
				Trichiasis upper*	Trichiasis lower*	TS**	Trichiasis upper*	Trichiasis lower*	TS**	

* Where trichiasis is present, additional management questions will be asked

** Examination for TS will only occur where trichiasis is found to be present

Annex 3 Referral form

TROPICAL DATA

Feel free to modify this or to substitute with any official referral form. An electronic copy is available so that it can be modified to your requirements.

Patient referral

Date:

Name of patient:

To:

During a community survey in the area, this patient was discovered to have

I would be grateful if you could please assess and manage as you think appropriate.

Thank you.

Yours sincerely,

Annex 4 Recorder reliability test

Evaluation Unit Code: 12345 **Cluster Code: 321**

Trainees should show the trainer each completed form prior to submitting it, in order for it to be marked. Trainees will need to complete a cluster form using the details above, which should be different to the ones used for previous practice exercises.

Household 10: Mark David (Head of the household)

There are four people in the household age 15 years and above.

Name	Age	Sex	Consent	Findings
1. Mallon	15	Male	Absent	He is at school and will return home after 2 pm
2. Rosa	25	Female	She consents	There is no upper or lower lid trichiasis in either the right or left eye.
3. Hope	56	Female	She consents	There is upper lid trichiasis and TS in the right eye; she was offered surgery, which she refused; she was not offered epilation. There is no lower lid trichiasis. Upper and lower lid trichiasis are absent in the left eye.
4. Mark David	75	Male	He consents	Mark has bilateral upper lid trichiasis, as well as bilateral TS. He has lower lid trichiasis in the left eye only. Mark was informed by a health worker about the trichiasis in both eyes and he was offered surgery, but due to personal reasons the surgery was not performed. He was offered epilation which was performed.

Later on, before you leave the village, you are informed that Mallon, who was absent from home at the time of your visit, has returned. He consents for examination. The examination result shows that he has no trichiasis in either eye.

Household 12: Mohammed Omar

There are three people in the household aged 15 years and above.

Name	Age	Sex	Consent	Findings
1. Semira	25	Female	She consents	There is no upper or lower lid trichiasis in the right eye. There is upper lid trichiasis and TS, but no lower lid trichiasis, in the left eye. She has never seen a health worker for her eye.
2. Kadija Ali	56	Female	She consents	There is no upper or lower lid trichiasis in either the right or the left eye.
3. Mohammed Omar	86	Male	He consents	Mohammed has upper and lower lid trichiasis, in the right eye, but not in the left eye. The grader was not able to evert the eyelid of either eye. Mohammed has never seen a health worker for his eyes. Mohammed informed you that previously he used to epilate the trichiasis (in-turned eyelashes from either lid) in the right eye using traditional epilation forceps. However, he has never been offered epilation by a health worker.

Household 19: Chala Boku

There are two people in the household aged 15 years and above.

Name	Age	Sex	Consent	Findings
1. Almaz	49	Female	She consents	There is upper lid trichiasis and TS in the right eye but not in the left eye. Lower lid trichiasis only is present in the left eye. Almaz was informed and offered surgery for the trichiasis in both eyes previously, but she refused the surgery. No health worker informed her about epilation.
2. Chala Boku	77	Male	He consents	Chala has upper lid trichiasis and TS in both the right and left eyes. He has no lower lid trichiasis in either eye. He was informed and offered surgery for the trichiasis by a health worker. Surgery was performed on the right eye, but not on the left eye as he refused. He was offered epilation by a health worker for the trichiasis in the left eye which he also refused.

Annex 5 Instructions for viewing 3D images

Images have been photographed using a special lens that splits each image into two, taken from two slightly different angles. When these are viewed without 3D glasses, one can see two very similar images, side-by-side.

If one wears the 3D glasses, it is possible to view these images stereoscopically, i.e. in 3D, so that elements in the image that are projecting forwards, such as eyelashes, look like they are projecting forwards, as they do in real-life.

These images can be viewed either on a computer screen or as print outs. For optimal results, the photograph being viewed needs to be 10–13 inches / 25–33 cm wide. Any larger or smaller than this will not work well.

To view the image, take the 3D viewers out of the cardboard case. Ensure you don't touch the lenses as this will make marks and make the image harder to see. Hold the lenses with both hands, gently squeezing the cardboard so that it creates a rectangular box (Figure 1). Hold these in front of both your eyes as if you were wearing glasses. There are two elastic loops that you can loop around your ears (optional – if you find this uncomfortable it will not help with the viewing).

Start at about 60 cm from the image being viewed, gently moving forwards until the image comes into sharp focus, usually at around 43 cm (Figure 2). You should then be able to see the image in 3D. You can try getting a little closer to see more detail but if you get too close, the 3D effect will be lost. It is possible to move around the image as if examining a patient to view it from slightly different angles.

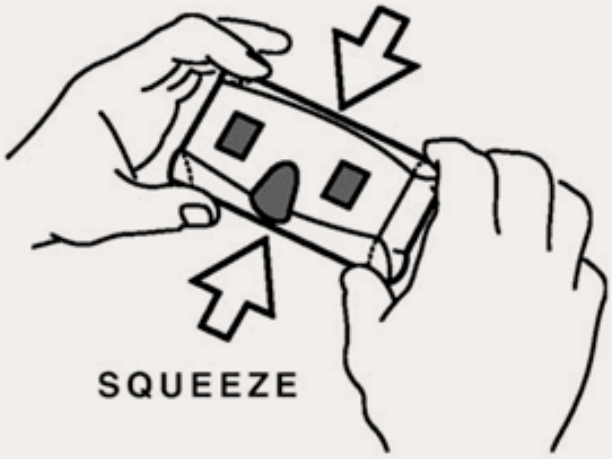


Figure 1: Gently squeeze the 3D viewer to create a rectangular box

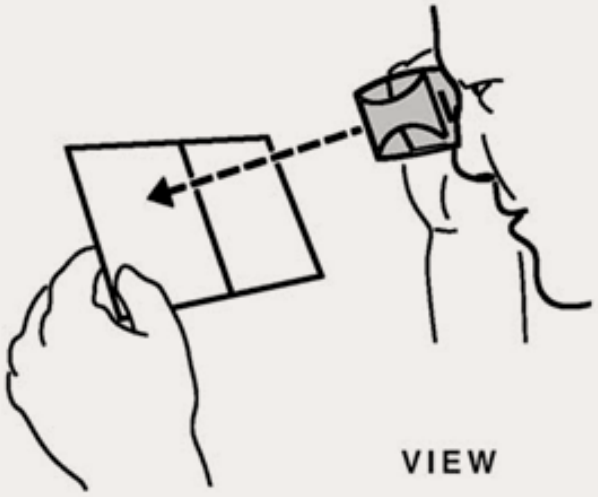
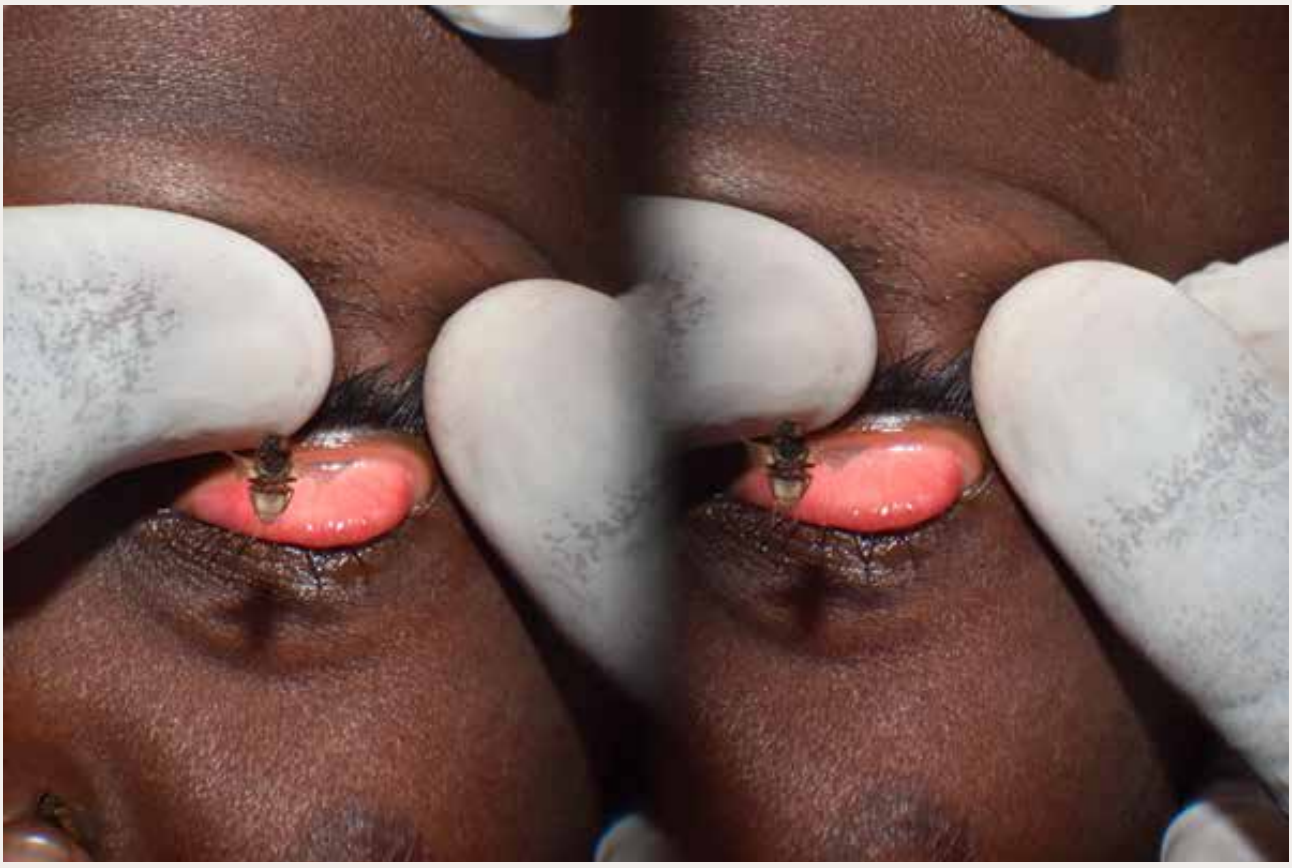


Figure 2: View the images, starting at about 60 cm and coming forwards until the photo comes into 3D focus

Tips from the 3D viewers' manufacturer:

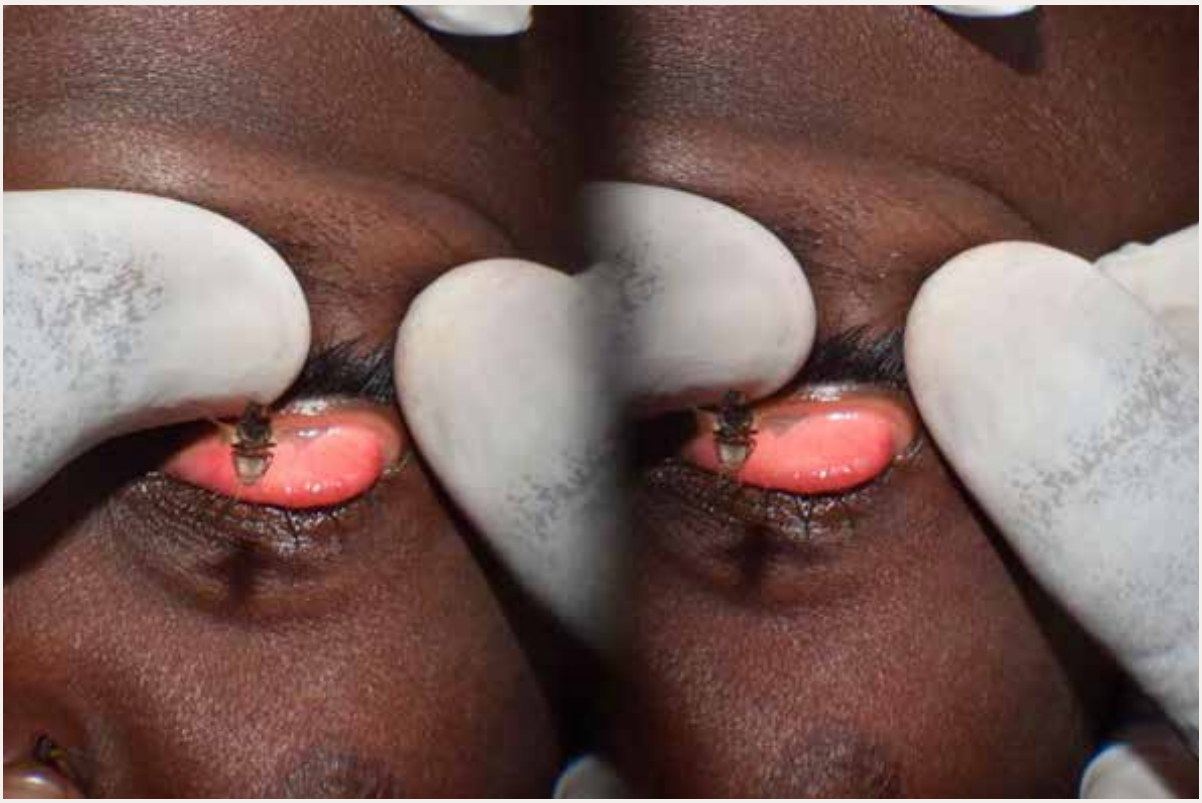
1. The viewer may be used with or without eyeglasses. If you are severely long or short sighted it is recommended that you keep your glasses on.
2. Please note that this is not a "back-lighted" viewer. It works best when the 3D prints are well lit but not directly reflecting light into the viewer.
3. If you use bifocals please view the image through the upper part of your eyeglasses, not the lower part, which is for reading. Viewing the pictures appears to be a close-up task, but viewing 3D images through this viewer will not work well if you use the reading lens.



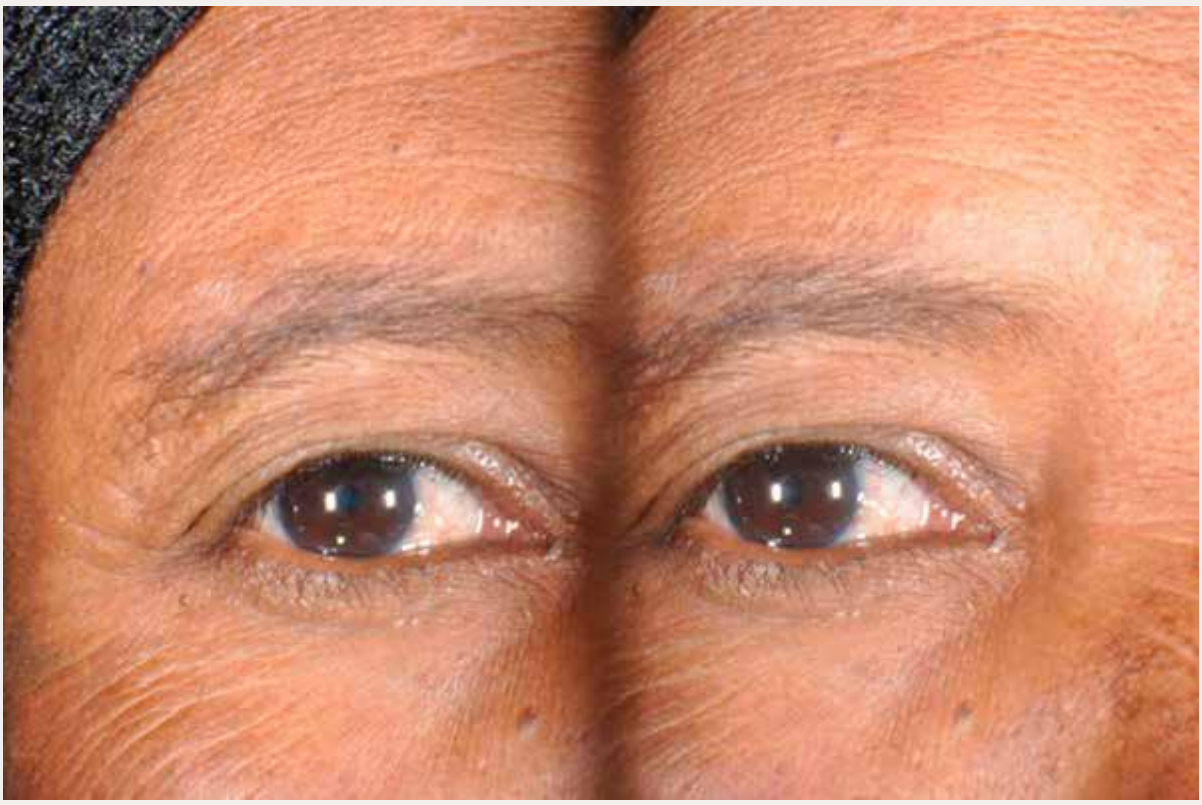
Example image showing fly flying towards the camera (taken in Kilimanjaro region, Tanzania) (courtesy J Hoffman).

Annex 6 3D Photo & Trichiasis Diagnosis Practice

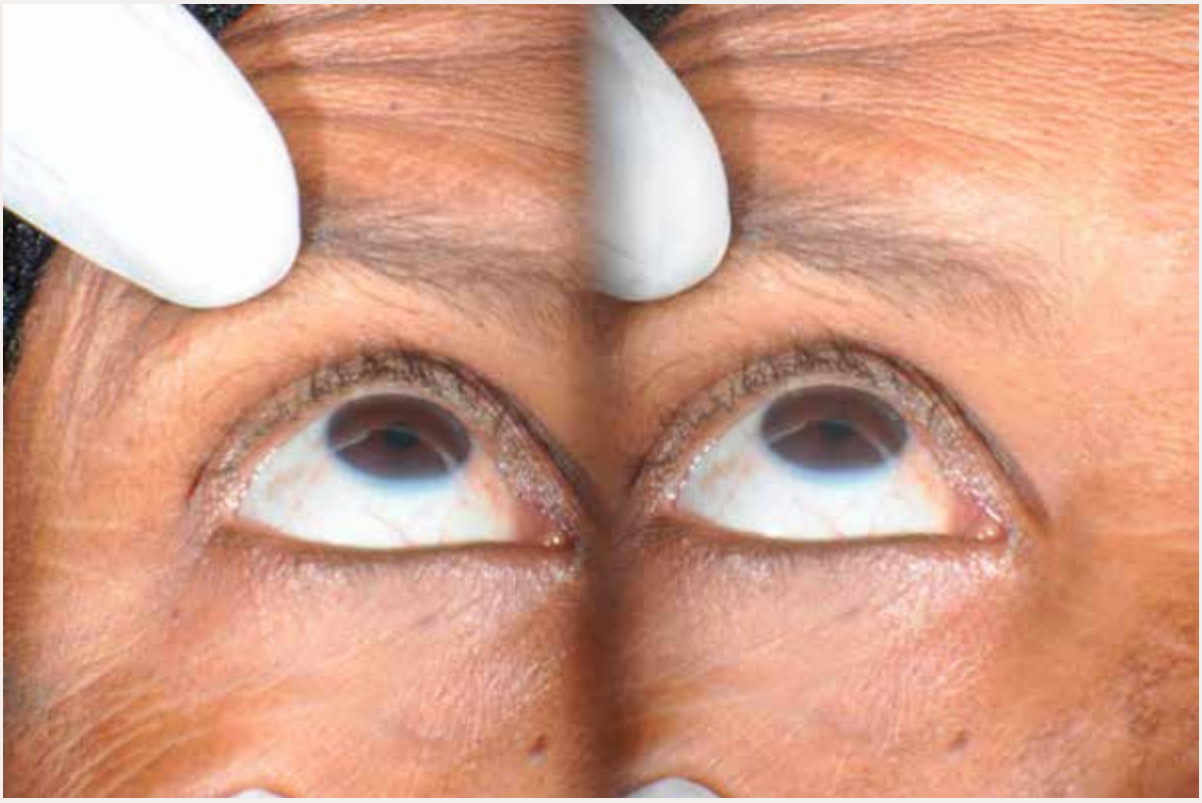
Above and below: examples of 3D images. An everted upper eyelid with flies flying in foreground

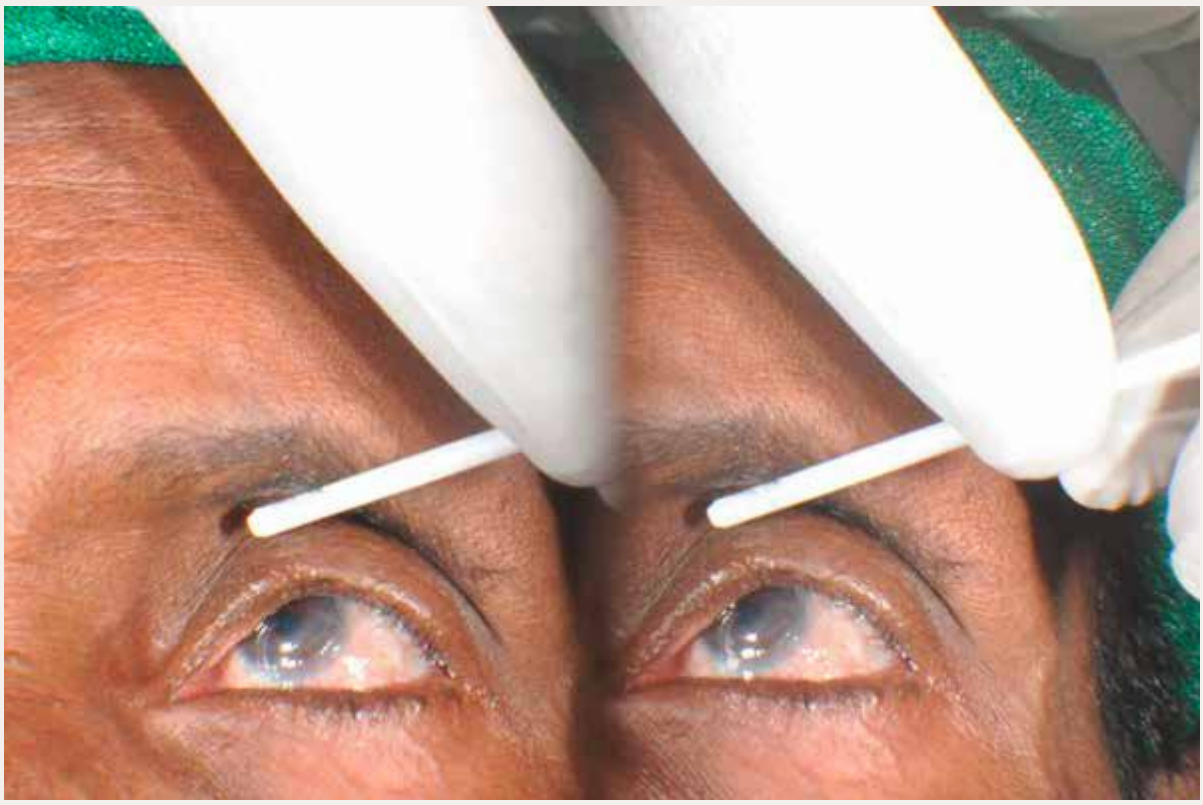


Above: severe trichiasis and corneal opacity. Below: mild trichiasis



Above and below: 1 eyelash touching the eye (primary gaze, above; upgaze, below)





Above: Epilated lashes. Below: Multiple lashes touching the eye (different patient)

Annex 7 Supervisor form/checklist

TROPICAL DATA

- To be completed before departing from the team.
- Observations should be completed and notes made for each section, also detailing any feedback given to the teams. The specified bullet points in each section are for guidance only, feel free to include any other relevant points or not to address these specifically as you may not have time to observe all these aspects during a visit.

Date & time :		Supervisor ID:	
Recorder ID of observed team:		EU code:	
Community name (or GPS reading):		Cluster code:	

Consent, Communication & Sensitisation:

- Are teams treating communities/households with respect, making appropriate introductions and ensuring to gain consent? Have there been any issues around sensitisation?
- Are teams communicating regularly with the supervisor and escalating issues?

Recording:

- Are WASH questions being asked correctly? Are form responses being entered accurately and questions answered in the right order? Is GPS being recorded?
- Is a paper record of absentees being kept and were efforts made to return to households if time allowed at the end of the day?
- Are data being sent daily or as per the agreed schedule?

Grading:

- Are you satisfied with the quality of the grading and the process of examination?
- Were those in need of treatment appropriately managed?

Protocol:

- Are the right number of households and clusters being visited? Have there been any challenges?
- Are all households members being examined and selected as per the protocol?

Logistics:

- Do teams have all the materials they require? If not, what is the solution?
- Have there been, or do they foresee, any challenges? (e.g. weather, security, financial, etc.)

Personnel:

- Are graders and recorders working well together? Are they motivated? Are they coping physically and emotionally? Have any steps been taken to address any issues?

General:

- Any other comments, feedback or observations not already given? What is going well?
- Do any issues need escalating to the survey coordinator or data team?

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Above
Bishal Dhakal, Trachoma Grader, checks the eye of Jyoti Rayamajhi, a female community health volunteer.

Notes

Notes

For further enquiries about Tropical Data or this manual,
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