TROPICAL DATA

Training system for trachoma prevalence surveys

VERSION 1

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.

Kate Holt/Sightsavers

Above
A pupil demonstrates the use of a leaky tin to wash their hands and face as part of their hygeine campaign that helps to prevent trachoma.

Foreword

As the 2020 target for trachoma elimination approaches, it is important to know where interventions against trachoma are required. This is only possible with a comprehensive global map of trachoma that is updated as new data become available, and in which the district-level prevalence estimates have been generated using methodologies that are accurate and repeatable. Producing quality-marked data using internationally agreed survey systems and processes is essential.

This training system is intended to be used to train, in a standardised way, the staff needed to complete such surveys, at baseline, impact and pre-validation surveillance stages. It provides the certified trainer with a complete programme for selecting and training field teams to undertake surveys of trachoma, together with selected water and sanitation indices, 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 and supervisors of survey field staff, but programme managers are also strongly encouraged to become familiar with the manual and, if possible, to attend the training programme.

This training system conforms with World Health Organization (WHO) trachoma survey guidelines. It is adapted from the training system of the Global Trachoma Mapping Project (GTMP), with new material and refinements added based on the GTMP experience. Other previous publications informing the design are listed in the bibliography. We are extremely grateful to the people who contributed to those previous efforts and who added, revised or tested new material, without which 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!

Acknowledgements

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Other individuals who helped to plan the GTMP training system, created materials used to develop it, commented on drafts, participated in field testing, and provided feedback on implementation that led to the current system were: Agatha Aboe, Liknaw Adamu, Wondu Alemayehu, Menbere Alemu, Neal Alexander, Robin Bailey, Ana Bakhtiari, Amir Bedri, Berhanu Bero, Sophie Boisson, Simon Brooker, Chris Brown, Matthew Burton, Simon Bush, Kurt Dreger, Paul Emerson, Diana Paola Gómez Forero, Allen Foster, Solomon Gadisa, Teshome Gebre, Esmael Habtamu, Danny Haddad, Emma Harding-Esch, Erik Harvey, Jeremy Hoffman, PJ Hooper, Khumbo Kalua, Jonathan King, Elizabeth Kurylo, Tom Lietman, Silvio Mariotti, Patrick Massae, Richard Le Mesurier, Addis Mekasha, Tom Millar, Beatriz Muñoz, Jeremiah Ngondi, Nicholas Olobio, Stephanie Ogden, Joseph Pearce, Saul Rajak, Serge Resnikoff, Hillary Rono, Virginia Sarah, Alemayehu Sisay, Jennifer Smith, Hugh Taylor, Jo Thomson and Yael Velleman.

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Note for training coordinators: selecting and preparing trainers

In addition to drivers and supervisory staff, the trachoma survey teams recommended in this training system include two cadres: graders and recorders. Training therefore requires at least two trainers: one to train the graders and one to train the recorders. To ensure quality, you should ensure that your grader trainees are trained by Tropical Data-certified grader trainers, and that your recorder trainees and trained by Tropical Data-certified recorder trainers. Tropical Data (**www.tropicaldata.org**) holds periodic training-of-trainer events, and will be pleased to help you train your trainers. But how should people be selected to be trained as trainers?

Candidate grader trainers should 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. Candidate recorder trainers should be experienced in data collection and be thoroughly familiar with the operation of a smartphone. However, being good at performing a task is not enough to qualify an individual to be a good teacher for that task. *Choose candidate 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.

During the first two days of training (the grader qualifying workshop), one grader trainer will be required for every four grader trainees, as this is the maximum number that can be taught effectively by one trainer in the field. If there are not enough grader trainers to train all grader trainees at the same time, additional workshops may need to be held.

Even if they have experience in training teams for trachoma surveys, both grader trainers and recorder trainers should ensure that they are completely familiar with all the details in this manual before commencing training. This is likely to require up to six hours spent studying the manual. Some things have changed since the GTMP!

Please ask your trainers to follow this training system as closely as possible.

Definitions of terms

Clusters: geographically defined collections of 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 (usually at the Ministry of Health or equivalent) with responsibility for reviewing and approving survey data.

District: for trachoma control purposes, a district is defined as the normal administrative unit for health care management, and for purposes of clarification consists of a population unit between 100 000-250 000 persons.

Evaluation unit (EU): the geographical unit of population selected for implementation of trachoma surveys, whether that is a single "district" or multiple districts.

Global Trachoma Mapping Project: the project, funded by the United Kingdom's Department for International Development and the United States Agency for International Development, that carried out global baseline mapping of trachoma from December 2012 to December 2015.

Grader: in this training system, an individual given responsibility for examining community residents for clinical signs of trachoma in a trachoma prevalence survey.

Impact survey: an EU-level trachoma prevalence survey done 6-12 months after completion of the last programmed round of azithromycin mass drug administration in that EU.

International Coalition for Trachoma Control: a coalition of non-governmental, donor, private sector and academic organizations working together to support the WHO Alliance for the Global Elimination of Trachoma by 2020.

Inter-grader agreement (IGA): the degree of agreement among different graders. Cohen's kappa coefficient is a conservative statistical measure of inter-observer agreement for qualitative parameters that takes into account the agreement that would occur by chance.

Kappa: see Inter-grader agreement.

Pre-validation surveillance survey: an EU-level trachoma prevalence survey done two years after an impact survey in that EU shows the TF prevalence in 1-9 year-olds to be <5%.

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

Recorder: in this training system, an individual given responsibility for ensuring that data collected in a trachoma survey is reliably captured for later analysis.

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

Surveillance survey: see pre-validation surveillance survey.

Survey coordinator: the individual with responsibility for deploying trained graders and recorders to undertake trachoma surveys in one or more evaluation units, 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 inflammation–follicular (TF, a sign in the WHO simplified trachoma grading system): the presence of five or more follicles at least 0.5mm in diameter, in the central part of the upper tarsal conjunctiva.

Trachomatous inflammation–intense (TI, a sign in the WHO simplified trachoma grading system): pronounced inflammatory thickening of the upper tarsal conjunctiva obscuring more than half the normal deep tarsal vessels.

Trachomatous trichiasis (TT, a sign in the WHO simplified trachoma grading system): at least one eyelash rubs on the eyeball, or evidence of recent removal of in-turned eyelashes.

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

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
IGA	inter-grader agreement
SAFE	surgery, antibiotics, facial cleanliness, environmental improvement
TF	trachomatous inflammation-follicular
TI	trachomatous inflammation-intense
TS	trachomatous scarring
TT	trachomatous trichiasis
WHO	World Health Organization

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 clear 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.

"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 should be the normal administrative unit for health care management, nominally "districts" of 100 000 to 250 000 people. "A", "F" and "E" are indicated for five years before re-survey in districts in which the prevalence of the inflammatory sign "trachomatous inflammation–follicular" (TF) in 1-9 year-old children is 30% or greater. Where the prevalence of TF in 1-9 year-olds is 10-29.9%, "A", "F" and "E" are indicated for three years before re-survey. Where the prevalence of TF in 1-9 year-olds is 5-9.9%, a single round of "A", plus "F" and "E", are recommended before re-survey. Knowing the prevalence of TF is therefore critical to allow programmes to plan where and for how long the community-based SAFE components are required. Knowing the prevalence of in-turned eyelashes (trichiasis) is important to allow programmes to plan requirements for surgical services. Trachoma surveys therefore need, as a minimum, to measure the prevalence of TF and TT.

This training system was created to train graders and recorders for the collection of a minimum data set necessary to estimate the prevalence of TF and TT in baseline, impact, or pre-validation surveillance surveys for trachoma. Partly to help trachoma programmes establish the current need for the "E" component of SAFE, and partly reflecting interest from the water and sanitation community to harness the power and reach of these surveys to inform efforts in their sector, data on water and sanitation variables are also collected. Further data of interest to national programmes or their partners (such as information on other neglected tropical diseases) can also be incorporated, but detailed training materials for (and consideration of the logistical implications of) such additions are required.

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 data entry.

A high proportion of time in this trachoma survey training system is spent maximising inter-grader agreement (IGA) between grader trainees and certified grader trainers in grading TF. It is very important that the IGA test that determines whether grader trainees "pass", enabling them to participate in survey work, is conducted using real subjects in the field, rather than with photographs or slides. **Passing this IGA test is difficult, and some trainees, even if they have previous trachoma grading experience, will not pass.** Therefore, the first two days of training are intensive sessions for grader trainees and have been labelled the "grader qualifying workshop". Only those grader trainees who pass the IGA test in the field on day 2 of the grader qualifying workshop will go on to the team training on days 3, 4 and 5. Grader trainees should be aware of this from the time they are invited to attend training; grader trainers and programme managers are responsible for informing trainees who do not pass the test that they are not qualified to continue.

Kate Holt/Sightsavers

Above
Mary Mureru holds out one of the azithromycin tablets she is taking as part of a mass drug administration programme for trachoma elimination

As already mentioned, for programme decision-making purposes, the important parameters to measure are the prevalence of TT and the prevalence of TF. In this system, graders are asked to grade TT, TF and TI: TI has been included so that graders are not tempted to diagnose TF if they see conjunctival inflammation but cannot see five or more follicles in the central part of the upper tarsal conjunctiva, and to guard against future changes in international guidelines. In an eye diagnosed as having trichiasis, the grader should determine whether "trachomatous conjunctival scarring" (TS) is present or absent on the conjunctiva, if it is possible to evert the eyelid.

Field-based IGA testing is only done on TF, because in most endemic areas, the prevalence of TT and TI is so low that meaningful IGA testing for the latter two signs would be extremely difficult.

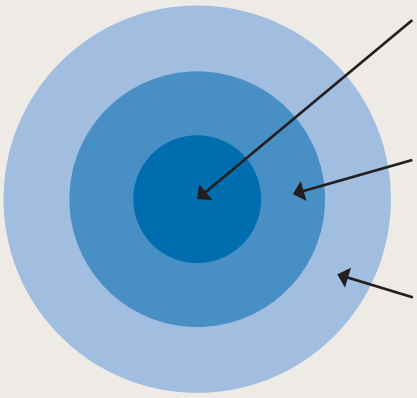
2 Before training starts: being an effective trainer

Train to meet the objectives, not to demonstrate your own skill set. 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. Instead, use a "trainee-centred" approach. This means that you 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 trachoma 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 those tasks. 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 the things in the first and second category – and especially the first. This will be particularly important in training the recorders, some of whom may not come from the health sector, and who do not need to understand much about clinical trachoma to do their jobs well.

Box 1 The target concept of teaching



Use a variety of ways to share and impart knowledge. The learning objectives are based on tasks required in trachoma 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 students
- Practical exercises for students
- A system for evaluation of and feedback to students

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 provided, it is still possible to involve trainees in interactive ways. For example, rather than simply going through a list of risk factors for trachoma, you could show the heading "Risk factors for trachoma" and then ask the class to suggest some. Following this interaction, a slide can be shown that lists the risk factors, for reinforcement. A trainer who knows the material will be able to guide the trainees, prompting them to suggest many correct responses without the trainer 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 trainees understand the material or not.

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 evert eyelids by practicing on each other in the training setting helps avoid the possibility that grader trainees will inadvertently use rough techniques on children. Handing out survey tools and having recorder trainees apply to them to each other, and using role playing to practice tough situations provides an experience, rather than just a handbook of guidelines.

Use evaluation tools to gauge progress. In this training system, a final evaluation tool to certify that the trainees are qualified to carry out the required tasks for their job is mandatory. It is possible that some trainees simply cannot perform those tasks. Trainers must certify that trainees who pass have met the standard, and thus are eligible to participate in the surveys.

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

Trachoma 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 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 trachoma 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 with local officials 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 provide ample opportunity for practicing trachoma grading in the field. 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:

- Be close to some rural communities in trachoma-endemic areas.
- Have two rooms so that graders and recorders can be given role-specific training in parallel. At least one of these rooms should be able to be made dark to ensure that clinical slides of trachoma signs project clearly.
- Have enough chairs and tables for trainees and trainers.

Jamshyd Masud/Sightsavers

Above Delivering personal hygiene education, Pakistan

- Have electricity (or a generator) for a projector.
- Have facilities for tea and lunch so that trainers and trainees do not have to travel long distances at break times.

4. Practice schools or villages and IGA test villages are selected and prepared

This training system includes a lot of field practice and multiple IGA tests on children. Locations for these activities need to be determined and arranged in advance. Village leaders and school headmasters and teachers need to be contacted and provide agreement to assist. Try to find a location where you can include at least 5 (but no more than 35) children with TF - this may need a grader trainer to undertake some pre-screening of children to include in the IGA test. Be sure to provide some form of gift (e.g., school supplies for schoolchildren) for people who agree to be examined in practice and pilot settings.

5. 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.

6. 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.

7. All the materials required for training are available

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

- Two LCD projectors (sometimes sessions running in parallel both need one)
- Two laptop computers (for projecting PowerPoints, using the LCD projector; and for taking to the field for the IGA tests) with 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
- Paper forms for IGA testing
- Excel “Kappa calculator (field)” (requires Excel 2007 or higher)

- Torches (1 torch for each grader) and spare batteries
- 2.5x loupe (*Optivisor* recommended; 1 for each grader)
- Alcohol gel hand disinfectant (or gloves)
- WHO simplified trachoma grading scheme cards (1 per grader)
- Cotton swabs (for single-subject use on individuals whose eyelids are very difficult to evert)
- A 15-metre piece of string
- Android smartphones (1 for each 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 per Android) and surge protectors (1 per Android)
- Notebooks (1 for each grader and each recorder)
- Rain-proof carry bags (1 each for grader and each recorder)
- If rain is likely, umbrellas or rain gear
- Pens (3 for each recorder)
- Tetracycline eye ointment (or azithromycin) to give to subjects found to have active trachoma or presumed bacterial conjunctivitis
- Laminated photos of the water source and sanitation facility categories (1 copy of Annex 5 and 1 copy of Annex 6 for each recorder)
- Laminated sheet listing the trichiasis questions in the local language (if the forms on the Android are not in the local language)
- Referral forms (for subjects incidentally found to have ophthalmic or general medical problems)

Dominic Nahr/Magnum/Sightsavers

Above A recorder captures survey findings on an Android, Ethiopia.

- Stamp and stamp pad for referral forms (if required locally; 1 for each team – or forms could be stamped after photocopying, in advance of fieldwork)
- Clip-boards (1 for each recorder)
- Sticky labels or name badges (to number children during IGA testing)
- Thank-you gift for subjects participating in training field work (consider pencil, pen, soap, sweets; to be decided locally)
- Consent forms (if required)
- Certificates of attendance for trainees

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

8. PowerPoint slide sets C1-C4 have been checked on your computer and projector

Each set of clinical images has been graded by multiple expert graders, and the grades are supplied in this training system. The grader trainer(s) should check that they display well on the projection system that you have.

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

It is unethical to conduct a survey that identifies patients who have TT without having the personnel and supplies available to treat them. Sufficient trained TT surgeons must be readily accessible to 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, determining to whom and how patients with TT, cataract or other medical problems diagnosed during training should be referred. A list of individuals discovered during training field work to have TT providing services to them. Responsibility for generating this list belongs to the graders. Arrangements should be made to treat TT 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 wants to undertake fieldwork for the set per diem rate, the rate may be too low.

12. *Sufficient trainees are invited*

Because not all grader trainees will pass the grader qualifying workshop, you will need to invite ~30% more grader trainees than you anticipate needing for the actual survey work. See Section 4 for advice on selecting trainees. Grader trainees should bring their normal health service ID cards, if they have them, to wear during fieldwork.

13. Recorder trainees have been assigned Recorder IDs

These are four-digit numbers, one of which will be assigned to each recorder trainee. To obtain recorder IDs, please email a list of the recorder trainees' names to **support@tropicaldata.org,** at least five business days before the start of the training week. should be generated, and a plan made for

4 Selection of trainees

Each survey team will include at a minimum one grader, one recorder, and a community guide. It is possible that other people (such as a driver) may also assist 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. However, the more teams you have, the faster the work can be completed.

A decision on the optimal number of teams must be made at country level.

Kate Holt/Sightsavers

Above A woman and her child receive azithromycin for trachoma control, Kenya.

1. Generic requirements

Conducting trachoma surveys requires people with a number of generic skills. All team members 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 our partners in this work: survey teams must treat them with respect. Both graders and recorders should be able to walk long distances and work long hours in the field.

2. Requirements for grader trainees

Ideally, grader trainees will have already been trained and certified through the GTMP; for such individuals, a short refresher training should be undertaken. If GTMP-certified graders are not available, individuals who have some previous experience grading trachoma may be easier to train than those without experience, but grader trainers must be prepared to “un-train” bad grading habits if necessary. General nurses or medical assistants, or other health care workers, can be trained as graders, but they may take longer than

Anthony Solomon/WHO

Above Trachoma prevalence survey, Viet Nam.

individuals with ophthalmic experience to demonstrate proficiency in everting an eyelid without touching the cornea. Grader trainees should have good near vision, using presbyopic spectacles if needed. Grader trainees need to be informed in advance that the first two days of training are a grader qualifying workshop, and that not all will score well enough to qualify as trachoma graders for the survey.

3. Requirements for recorder trainees

Recorders must be able to read and write, and have excellent attention to detail. Prior experience with smartphones is helpful. People selected for training as recorders need not be health care personnel. Hiring young people who are familiar with the use of smartphones may be a good option.

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

If, as part the rental agreement, drivers are provided by the organizations that provide vehicles, there may no possibility of choosing drivers who are willing to assist the survey teams with the survey work in the community. If drivers can be involved, it is likely to be helpful to have them join part of the training, in order to understand the purpose of and overall plans for the survey. Where possible, the driver may help the team in the community in the following ways:

1. Assist with introductions in the community
2. Assist with crowd control
3. Assist with holding children if mothers are not available
4. Encourage families or children from selected households who are not at home but who are in the village at the time of the team's visit, to find the grader and recorder before the end of the day, with the help of local village residents

5 Training schedule

The first two days for graders are a grader qualifying workshop. Grader trainees who pass the field based IGA test on day 2 will go on to the team training on days 3, 4 and 5. Recorder trainees begin training in the classroom on day 2, and continue on to the team training on days 3, 4 and 5. Modules shaded yellow take place in the classroom; those shaded green take place in the field.

Day 1: Grader qualifying workshop I

Time	Activity	Module (*PowerPoint if applicable*)
0800-0830	Registration and brief introductions	
0830-0900	Introduction to the grader qualifying workshop	A (*A*)
0900-1000	WHO simplified trachoma grading system	B (*B*)
1000-1015	Tea	
1015-1215	Practice slide sets and IGA test with slides	C (*C1, C2, C3, C4*)
1215-1300	Examination techniques 1	D (*D*)
1300-1345	Lunch	
1345-1445	Grading in the field	E (*none*)
1515-1545	Practice IGA test in the field & review of incorrectly graded subjects	F (*none*)

Day 2: Grader qualifying workshop II

Time	Activity	Module
0830-1000	Practice IGA test in the field & review of incorrectly graded subjects	F (repeated)
1000-1300	IGA test	G
1300-1400	Lunch	
1400-1700	Repeat IGA tests* if needed	G (repeated)

* If you believe that some of the trainee graders would pass on a repeat attempt, the IGA test may be repeated. No more than two total attempts to pass should be allowed.

Day 2: Introduction of recorder trainees

Time	Activity	Module (*PowerPoint if applicable*)
0830-0900	Registration and brief introductions	
0900-1300	Review of hard copy of data collection forms	M (*M*)
1300-1400	Lunch	
1400-1700	Using the Androids	O

Day 3: Team training I

Time	Activity		Module (*PowerPoint if applicable*)
0830-0915	Opening of team training		H
0915-1045	Overview of trachoma and trachoma prevalence surveys		J (J)
1045-1115	Surveys and sampling		K (*K*)
1115-1145	Tea (then break into two groups)		
	Graders	Recorders	
1145-1300	Obtaining consent	Revision of modules M and O	L (*L*) [graders] M + O [recorders]
1300-1345	Lunch		
1345-1445	Examination techniques 2	Revision of modules M and O	N (*N*) [graders] M + O [recorders]
1445-1515	Tea		
1515-1700	Continue module N	Revision of modules M and O	N (*N*) [graders] M (*M*) + O (*O*) [recorders]

Day 4: Team training II

Time	Activity	Module
0830-0930	Selecting households in the village	P
0930-1000	Practice working together	Q
1000-1030	Tea	
1030-1200	Practice working together (continued)	Q continued
1200-1300	Lunch	
1300-1700	Field practice for teams	R

Day 5: Team training III: graduation and review of survey plans

6 Trainer's notes for each module

For each module the following have been included where relevant:

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

A. Introduction to the grader qualifying workshop

Module summary: Trainees attend workshops with a variety of expectations about the nature of the workshop and what they will gain from participating. These expectations may be different from the intentions of the organisers, and if not discussed at the beginning of the workshop may cause confusion or dissatisfaction, and hinder the learning process. This is particularly true for the grader qualifying workshop, where grader trainees will find out whether they can pass a test to continue on to further training as part of a survey team. It is critical that participants understand that not all will qualify to continue.

Objectives:

1. To determine the expectations trainees have in attending the workshop and their communication needs.
2. To present the agenda for the grader qualifying workshop.

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

Location: classroom

Materials: pens, flip chart, computer, projector and PowerPoint *A*

Training procedures:

1. Brainstorm expectations with the participants, recording responses on the flip chart paper. "Expectations" are what the trainee hopes to learn or achieve by attending the workshop.
2. When there are no more expectations, review each of the listed ones and discuss which will be met, which can be partially met and which will unfortunately not be addressed.
3. Show PowerPoint A, reinforcing the above by indicating where participants' expectations will be met, where adjustments can be made to try to meet other expectations and how some expectations will not be met.

B. WHO simplified trachoma grading system

Module summary: This module presents the signs of the WHO simplified system for community assessment of trachoma. The module uses a PowerPoint presentation that will introduce grader trainees to the system, describing its five signs and indicating the role of each sign in the survey work.

Objectives:

1. To introduce trainees to the WHO simplified trachoma grading system,

Dominic Nahr/Magnum/Sightsavers

Above Women line up to be examined for signs of trachoma, Ethiopia.

and its relevance to the survey

2. To familiarise trainees with the clinical signs: trichiasis, TS, TF and TI, using slides.

Duration: 1 hour (day 1, 0900-1000)

Location: classroom

Materials: computer, projector and PowerPoint *B*

Training procedure:

1. This training will rely on PowerPoint B, which describes the WHO simplified trachoma grading system. Start the PowerPoint presentation.
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.

C. Practice slide sets and IGA test with slides

Module summary: This module is the first step in the standardisation process, which in the end will allow you to determine which grader trainees qualify to participate as graders in the survey. This module relies on images, whereas future modules will require actual fieldwork examining real eyes. Grading images is much easier than grading in the field, and if a trainee cannot achieve good agreement with the trainer at this point, further training on people may not be indicated. Although all the signs from the WHO simplified trachoma grading system will be discussed, the emphasis in the training package will be on identifying trichiasis, TS, TF

and TI. At the end of this module trainees will complete an IGA test for TF using the Trachoma IGA test app, to both test their knowledge and to familiarise trainees with the IGA testing process.

Objectives:

1. To introduce to grader trainees the concept of inter-grader agreement.
2. To train grader trainees to identify the clinical signs of trachoma, with a focus on trichiasis, TS, TF and TI in images.
3. To assist grader trainees to differentiate trachoma from other conditions.
4. To begin the process of identifying grader trainees who will be unable to participate as graders in the survey.

Learning objective: By the end of this module, the trainees should be able to achieve a kappa of ≥0.7 for diagnosis of TF on slides.

Duration: 2 hours (day 1, 1015-1215)

Location: classroom

Materials: computer, projector, PowerPoint slides C1 and C2, 1 Android with the Trachoma IGA test app loaded for each grader trainee.

Training procedure:

1. Discuss with participants the meaning of IGA and the importance of standardisation within a survey.
2. Explain that the outcome of the IGA test will determine who continues and who does not.
3. Explain in detail how the IGA test will be conducted.
4. Explain that this module will involve grading slides, and that further practice and IGA testing will be done examining real people.
5. Explain to the trainees that in the first set of slides (PowerPoint C1), they will discuss the clinical signs together.
6. After taking the trainees through the first few slides of PowerPoint C1, begin to ask individual trainees to suggest what condition they think is being presented, and why.
7. At the end of PowerPoint C1, begin PowerPoint C2. Ask individual trainees to describe what they see and to justify their findings. Ask other trainees whether they agree with those opinions and if not, to explain why not.
8. At the end of PowerPoint C2, give each trainee an Android, and explain to the trainees that they will independently determine whether TF is present or absent in each slide shown in the Trachoma IGA test app . Make sure they understand what is being asked of them, and how to operate the Android.
9. Ask each trainee to enter their full name in the field provided in the Trachoma IGA test app.
10. Explain to the trainees that a score will be used to determine if IGA is acceptable or not. They will need a score of 0.7 or better to continue the training. At the discretion of the trainer, those who achieve <0.7 may receive additional training and take the IGA test again. Those who do not pass the IGA test cannot proceed.
11. Stress to trainees that this is independent work, and they are not to look at others' Androids. Looking at others' Androids will result in dismissal from training. Remind them that in the field, no one will help them grade, and in any case, other trainees may not have the correct answers!
12. Allow 20 minutes for the IGA test to be completed.
13. At the conclusion of the IGA test period, collect the Androids from trainees and record the score shown on each.
14. If projected slides are used instead of Androids, use PowerPoint C3 to administer the IGA test. As each slide is presented, read out the number of the

slide so that the trainees can be certain that they are recording their grades against the correct slide number. Allow 20 seconds per slide; give a 5-second warning before changing slides. Each trainee should fill in an IGA test form (Annex 2) as they look at each slide. At the conclusion of the IGA test period, enter each trainee's answered into the spreadsheet "Kappa calculator (slides 1).xls", to calculate each trainee's score. Full details of how to use the spreadsheet are given in Annex 4.

D. Examination techniques 1

Module summary: This module requires grader trainees to examine the eyes of their fellow trainees using a loupe, in preparation for examining subjects in the field. Trainees will learn to first look for trichiasis, before everting the eyelid to examine the tarsal conjunctiva. Trainees will use a loupe for all eye examinations, in order to become familiar with grading using a loupe from the earliest possible point. Trainees will learn and maintain proper hand-cleaning technique after each examination. This module is a combination of a PowerPoint presentation and demonstration, with the trainees then practising on each other.

Objectives:

1. To ensure the grader trainees know the necessary steps of cleaning hands before examining an eye.
2. To train the graders in the method for everting an eyelid.
3. To provide an opportunity for the graders to practice using loupe and a torch.

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

1. Demonstrate proper hand-cleaning techniques.
2. Demonstrate the steps of examining the eyes (starting with right eye, assessing the eyelid, everting the eyelid; repeat with left eye).
3. Quickly and painlessly evert the right and left eyelid of a subject.

Kate Holt/Sightsavers

Above 50-year-old Seleiya Makoi has her eyesight tested before undergoing trachoma surgery, Kenya.

4. Demonstrate the use of loupes and torch while examining the eyelid.

Duration: 30-45 minutes or more depending on the baseline skills of participants (day 1, 1215-1300).

Location: classroom

Materials: loupes (at least one per pair of trainees), torches, alcohol gel, PowerPoint D

Training procedure:

1. Distribute a loupe and torch to each trainee.Trainees should put on their loupe, and keep it on for the rest of the module.
2. Show PowerPoint D to the trainees.
3. Demonstrate cleaning your hands with alcohol gel. 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 being examined, and is therefore grounds for dismissal.

4. Ask for a volunteer. Once a volunteer has come to the front of the room, clean your own hands. 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.
5. Always examine the right eye first, then the left eye. This helps to avoid confusion in recording results.
6. 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).
7. Demonstrate how to evert the eyelid using your fingers. (Use of a cotton swab, stick, or any other foreign implement as a fulcrum for eversion should be strongly discouraged. In subjects whose eyelids are very difficult to evert, a cotton swab can be used; it should be discarded after use, and never used on more than one subject.) To evert a subject's right eyelid, place the 4th and 5th fingers of your left hand on the subject's right temple, in order to align your hand with any movement of the subject's head. Ask the subject to look down. Use your 3rd finger to push the subject's right eyebrow slightly upwards, so that the eyelashes are lifted. Grasp the eyelashes between your thumb and index finger, and gently pull them out and down so that a small space forms between the eyelid and the eye. Using the tip of the index finger of your right hand placed in the middle of the eyelid as a fulcrum, pull upwards gently on the grasped eyelashes so that the eyelid everts.
8. To evert a subject's left eyelid, the fingers of your right hand should align, push, grasp, pull and lift, while the tip of the index finger of your left hand should be used as a fulcrum.
9. While examining the everted eyelid, ask the trainees what they should be looking for, based on the slides seen previously.
10. Ensure that the eyelid is returned to the normal position after examination.
11. Ask the trainees to form pairs.
12. Invite trainees to practise on their partners, with each person examining their partner's eyelids and then everting each of their partner's eyelids. Remind trainees to clean hands before examining their partner's eyes.
13. Demonstrate on a volunteer how to use the loupes and torch in examining an eye.
14. Invite each pair to once again conduct an eye examination on their partner's eyes using loupes and torch.
15. Strongly recommend that trainees ensure that their fingernails are cut short: long fingernails are more likely to pinch the eyelid skin.

E. Grading in the field

Module summary: This module takes the trainees out into a village or school setting to examine children for trachoma. Intense one-on-one instruction should be offered. Prior to this module, the training coordinator should have identified a site, discussed a training visit with school officials or village leaders, and arranged for transport. Decisions will also need to be made as to how participants for examination will be grouped and how the examinations will be managed. This should not be viewed as an IGA exercise.

Objective: To provide the trainees with an opportunity to examine children for trachoma in a village or school setting.

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

1. Demonstrate proper trachoma examination techniques of children, including use of loupes and proper hand cleaning.
2. Demonstrate the ability to recognise a healthy eyelid.
3. Demonstrate the ability to recognise TF.

Duration: 1-2 hours (depending on distance to field site; afternoon of day 1)

Location: field – a local village or school

Materials: alcohol gel, loupes, torches, antibiotics.

Training procedure:

1. Before leaving for the field, explain to the trainees what they will be doing and how it will be organised.
2. Ask the trainees what they expect from this practice and what challenges they may face.
3. If possible challenges are identified, discuss with the trainees how these might be dealt with.
4. Ask the trainees to collect the supplies they will need and check that they have sufficient materials for the module.
5. Upon arrival, meet with the person in charge of the village or school, explain the work and ensure things are organised as needed.
6. Examine the eyes of the first 5-10 children yourself, with the trainees looking on. Discuss each of the cases with the trainees. If none of the first 5-10 children has trachoma, continue to examine children with the trainees looking on until you can demonstrate some signs.
7. Invite trainees to examine children's eyes with other trainees looking on and have the examining trainee relate what s/he sees. **Please note that no child should be examined more than five times** (including by the trainer).
8. The grader trainees should then begin examining children on their own. Supervise the trainees, and verify any cases of TF or TI that trainees identify.
9. If possible, when using a school setting, arrange for younger children to also participate so that graders get experience with young children.

F. Practice IGA test in the field and review of incorrectly graded subjects

Module summary: This module is to help prepare grader trainees for the field IGA test using children.

Above Protected dug well, Pakistan.

Kappa scores achieved during Module F will not count. Whereas Module E included open discussion of what was being observed, Module F calls for independent work, but review (with you) of incorrectly graded subjects will continue grader trainees' development as graders. The logistics of this module (and Module G) demand that each grader trainee examines 50 children, grading just one eye and recording the grades; the grader trainer will also grade the same eye of each child to generate the "gold standard" against which to score individual trainees. (Suggestions for ways to organise the children are given below.) No child should have any eye examined more than five times. Check that each trainee follows the correct procedure of conducting an eye examination.

Objectives:

1. To provide the trainees with further opportunity to examine children for signs of trachoma.
2. To prepare the trainees for the field IGA module to follow.

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

1. Know how his/her grading compares to the grader trainer .
2. Reflect on grading disagreements, having had a chance to discuss specific children with the grader trainer.

Duration: 1-2 hours (afternoon of day 1)

Location: field. Identify a location that can provide 5-35 cases of TF among 50 children to be examined. A local school may be a convenient location, but may not provide enough TF cases to be included in the set of 50 children to be examined.

Materials: computer with Excel "Kappa calculator (field).xls" loaded, IGA test forms for the field (Annex 3), referral forms, loupes, torch, pen, clip board, labels for children, antibiotics, alcohol gel, gifts for children after examination

Handouts: checklist of required materials, IGA test form for the field (Annex 3), referral forms

Training procedures:

1. Emphasise that this is only practice and the scores will not count.
2. Explain that each trainee will need to examine one eye (either the right, or the left, as instructed) of 50 children.
3. Explain to trainees that they need to work independently, not sharing any results with their fellow trainees; as before, looking at others' grades could result in dismissal from training.
4. Ask the trainees to gather all required materials using the checklist.
5. Organise the children, ensuring that each child has received a label with an identification number.
6. 50 children should line up and pass down a row of four seated trainees plus the trainer for grading. An assistant can help keep children in line. Make sure there is no sharing of results among the trainees and that the children are treated with respect.
7. After each trainee has examined 50 children, collect the IGA test forms.
8. Look through the forms and identify children for whom there was disagreement. Call these children back, examine them together with the trainees, and discuss disagreements.
9. Give each child a thank-you gift as a reward for their time and patience.
10. Use "Kappa calculator (field.xls" to calculate kappa for each trainee. (This does not contain any pre-entered gold standard grades, so you will need to enter these. The data entry for your grades and those of the trainees takes time, so you may wish to enlist help from someone to read out the results.)
11. Share the kappa scores with each trainee. You will now have an idea of how much more practice may be necessary.

Notes on organising the field practice

Ideally, you will have 50 children for each set of four grader trainees, with 5-35 of those children having TF. If you have too few children for the number of grader trainees to be tested, four grader trainees can examine the right eyes (only) of 50 children, while another four grader trainees examine the left eyes (only) of the same 50 children. No grader trainee should examine both eyes of any child. A grader trainer should examine both eyes of every child.

Children should be numbered 1-50 on stickers fixed to their clothing or on cards hung around their neck. Children often get out of order while waiting; grader trainers and trainees should check the number of each child before examining them. Graders must clean their hands between examinations.

G. IGA test

Module summary: This module determines which grader trainees qualify to be graders and which do not. Those achieving kappas of ≥0.7 for TF will qualify. Those who achieve kappas <0.7 will not. The module follows the same procedure as the practice IGA test in the field (Module F). If insufficient numbers of graders pass, you will need to decide, in discussions with the programme manager, whether fewer survey teams can be used or new graders will need to be trained in further grader qualifying workshops. If some of those that fail seem to have promise, additional training and testing is encouraged.

However, no more than one additional attempt to pass should be allowed.

Objective: To determine which grader trainees qualify to participate in trachoma surveys.

Duration: 2 hours (day 2), may be repeated

Location: field

Materials: computer with Excel "Kappa calculator (field).xls" loaded, IGA test forms for the field (Annex 3), referral forms, loupes, torch, pen, clip board, labels for children, antibiotics, alcohol

gel, gift for children after examination

Handouts: checklist of required materials, IGA test form for the field (Annex 3), referral forms

Training procedure: See Module F.

Trainees who do not pass should be thanked for their participation and sent home, as their ongoing presence may be a distraction to the continuing trainees.

H. Opening of team training

This is the first team training module. Only qualified grader trainees will be participating; they will be joined by recorder trainees. From this point on, at least one grader trainer and one recorder trainer will be needed.

At the beginning of the day it may be important to have officials formally open the training. This can be scheduled to occur in the first 45 minutes, along with brief introductions. Rather than delay the start for officials (who may arrive late) it is suggested that the module starts on time, and then is interrupted if necessary to accommodate officials when they arrive.

Objectives:

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

Duration: 45 minutes (day 3, 0830-0915)

Location: classroom

Training procedure:

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

J. Overview of trachoma and trachoma prevalence surveys

Module summary: This module provides the trainees with the overall context for the survey work. The basics of trachoma and the WHO-endorsed SAFE strategy for eliminating trachoma will be presented and discussed. It is important that the trainees understand the different components of the SAFE strategy. Though the module relies on a PowerPoint presentation, it is important that you recognise the trainees' previous knowledge and experience by asking them questions prior to presenting information. This also helps you understand their baseline knowledge level, enabling you to tailor the presentation. The surveys for which you are training these trainees are part of a much larger initiative to maintain up-to-date epidemiological information on trachoma globally, and are key to the drive to eliminate trachoma as a public health problem by the year 2020. It is important to inspire the teams with this vision so that they will realise the importance of their work. PowerPoint J has been prepared to facilitate this.

Objectives:

3. To present an overview of trachoma, the SAFE strategy, and the indications for undertaking baseline surveys, impact surveys and surveillance surveys for trachoma.
4. To ensure that survey teams understand the global importance of the work for which they are being trained.
5. To present the agenda for training.

Duration: 90 minutes (day 3, 0915-1045)

Location: classroom

Materials: computer, projector, PowerPoint J

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

1. State what trachoma is and describe at least three risk factors that predispose communities and individuals to the disease.
2. Name and describe the clinical manifestations of trachoma.
3. Describe the four components of the SAFE strategy and why each is important to the elimination of trachoma.
4. Understand the indications for undertaking baseline surveys, impact surveys and surveillance surveys for trachoma.

Training procedure:

1. Start PowerPoint J.
2. Ask recorders if they have heard of trachoma. Some will and some will not. Ask the participants who are familiar with trachoma to explain briefly to the others what trachoma is and explain that more information will be provided in this module. Go through the materials on theslides J-2 to J-9.

3. Ask what the clinical signs of trachoma are, again recording responses.
4. Ask how trachoma can be eliminated as a public health problem. Show slides J-10 to J-16. If the SAFE strategy is mentioned, ask what each component is, noting the responses. Discuss slides J-17 to J-21.
5. Use slide J-22 to point out districts in which trachoma elimination activites are required In all of these districts, impact surveys and surveillance surveys will be needed. Find the country you are in and see what is known about trachoma elimination, baseline surveys, impact surveys, and surveillance surveys there.
6. Discuss the WHO criteria for elimination of trachoma as a public health problem, as shown on slide J-23. Discuss when baseline surveys, impact surveys and surveillance surveys are required.
7. Describe Tropical Data, using using slide J-24 and J-25
8. The use of Androids to collect data in the field may be new to some trainees. Ask those who have experience using Androids for data collection to describe their experiences. In particular, ask them to describe some of the advantages of using electronic data capture.
9. Go through each objective of the training slide J-26. Ask for questions.
10. Discuss what will happen over the next three days slide J-27.
11. Ask if this fits their expectations and encourage questions and discussion.

K. Surveys and sampling

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., surveys.

Objectives:

1. To introduce the trainees to 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.

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. Explain the importance of standardisation in grading and collecting data.
4. Describe the roles and responsibilities of the various members of a trachoma survey team.

Duration: 30 minutes (day 3, 1045-1115)

Location: classroom

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

Training procedures:

1. Ask the trainees if they have ever been a part of a survey team.
2. If any of the trainees respond that they have, elicit from them what they feel are the basics of surveys.
3. Ask for any other input trainees have to offer even if they have not actually conducted any surveys.
4. Present PowerPoint *K*, referring to any of the trainees' responses where appropriate.

L. Obtaining consent (graders only)

Module summary: This module prepares grader trainees to introduce the team at the household and to obtain consent for the examinations and interview. During surveys, a grader will be talking to the household head while the recorder is taking a GPS reading (which may take up to 60 seconds).

Learning objective: 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: 75 minutes (day 3, 1145-1300)

Location: classroom

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

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 enroll the household.
4. Discuss with trainees 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.
5. Verbal consent for examination must also be obtained for each individual that is examined. Only adults can give valid consent. For the purposes of trachoma surveys, an adult is usually defined as a person aged 15 years or above, though this may be adjusted according to national requirements.
6. Determine if there is anyone aged 15 years or above present at the household in order to obtain consent. If there is no one aged 15 years or above present, consent cannot be obtained. If there is one person aged 15 years or above present, the first step is to obtain consent for the rest of the survey.
7. 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
     - You will be asked to answer some questions
     - The eyes of household members will be examined for trachoma
     - Antibiotic treatment will be offered to anyone found with active trachoma
     - 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 *L* 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 practice (using role play) what he or she will say at the household. Others can critique.

M. Review of hard copy of data collection form (recorders only)

Module summary: This module prepares recorders for the interviews they will conduct at the household. In this module they learn exactly what information is supposed to be captured and what each of the questions actually means.

Learning objective: 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: 4 hours (day 2, 0900-1300)

Location: classroom

Materials: survey form (Annex 7, 1 for each trainee), laminated sheets with photos of water source and sanitation facility categories (Annexes 5 and 6), PowerPoint M

Training procedures:

1. Introduce the household data form. Give everyone a paper copy of this to look at so that they get an idea what will be asked.
2. Explain that the grader will be asking for consent so that the recorder has time to get a GPS reading with the Android.
3. Go through PowerPoint *M*.
4. As you go through the slides relating to the water, sanitation and hygiene questions, encourage discussion, and ensure that all trainees develop a common understanding of the differences between the various responses to each question.

Section A: 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)
Recorder	A numeric code unique to you (provided by the supervisor)
1. Country	This will be automatically entered by the Android.
2. Evaluation Unit	A five-digit numeric code (provided by the supervisor)
3. Cluster	A three-digit numeric code (provided by the supervisor)
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".
G1-G4. GPS	These fields will be automatically entered by the Android. The Android may take up to 60 seconds to do this. You should stay outside the house while the Android does so.
W1. In the dry season, what is the main source of drinking-water for members of your household?	**Responses** 01 = Piped water into dwelling 02 = Piped water to yard/plot 03 = Public tap/standpipe 04 = Tubewell/borehole 05 = Protected dug well 06 = Unprotected dug well 07 = Protected spring 08 = Unprotected spring 09 = Rainwater collection 10 = Water vendor 11 = Surface water (e.g. river, dam, lake, canal) 99 = Other (specify) **Response descriptions** **01. Piped water into dwelling**, also called a household connection, is defined as a water service pipe connected with in-house plumbing to one or more taps (e.g. in the kitchen and bathroom).

W1. In the dry season, what is the main source of drinking-water for members of your household? *(Continued)*	**02. Piped water to yard/plot**, also called a yard connection, is defined as a piped water connection to a tap placed in the yard or plot outside the house. **03. Public tap or standpipe** is a public water point from which people can collect water. A standpipe is also known as a public fountain or public tap. Public standpipes can have one or more taps and are typically made of brickwork, masonry or concrete. **04. Tubewell or borehole** is a deep hole that has been driven, bored or drilled, with the purpose of reaching groundwater supplies. Boreholes and tubewells are constructed with casing, or pipes, which prevent the small diameter hole from caving in and protect the water source from infiltration by run-off water. Water is delivered from a tubewell or borehole through a pump, which may be powered by human, animal, wind, electric, diesel or solar means. Boreholes and tubewells are usually protected by a platform around the well, which leads spilled water away from the borehole and prevents infiltration of run-off water at the well head. **05. Protected dug well** is a dug well that is protected from runoff water by a well lining or casing that is raised above ground level and a platform that diverts spilled water away from the well. A protected dug well is also covered, so that bird droppings and animals cannot fall into the well. **06. Unprotected dug well**. This is a dug well for which one or both of the following statements is true: 1) The well is not protected from runoff water; 2) the well is not protected from bird droppings and animals. **07. Protected spring**.The spring is typically protected from runoff, bird droppings and animals by a "spring box", which is constructed of brick, masonry, or concrete and is built around the spring so that water flows directly out of the box into a pipe or cistern, without being exposed to outside pollution. **08. Unprotected spring**. This is a spring that is subject to runoff, bird droppings, or the entry of animals. Unprotected springs typically do not have a "spring box". **09. Rainwater collection** refers to rain that is collected or harvested from surfaces (by roof or ground catchment) and stored in a container, tank or cistern until used. **10. Water vendor** This refers to water sold by a provider who transports water into a community, either in a small tank/drum or in a tanker-truck. The types of transportation used to transport small tanks or drums include donkey carts, motorised vehicles and other means. **If the household buys water (other than bottled water) from someone else, this should be the response, even if the respondent knows the original source of the water.** **11. Surface water** is water located above ground and includes rivers, dams, lakes, ponds, streams, canals, and irrigation channels. **99. Other:** Any other source of water not included in the above, including bottled water.

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W2. How long does it take to go there, get water, and come back?	This question refers to the time taken by the person or persons who usually fetch the water. Responses relate to the number of minutes required: 1 = Water source in the yard 2 = Less than 30 minutes 3 = Between 30 minutes and 1 hour 4 = More than 1 hour *Note that the question refers only to a single water-hauling trip and does not consider multiple trips in a single day. **Definitions** **Number of minutes** refers to the amount of time needed to get to the water source, obtain water, and return to the household. Socialising time should not be included in the minute value given, unless it is done while queuing for water without extending the queuing time. The minute value is the time for one round trip, not the total time spent per day hauling water. If this amount of time is variable, the respondent's estimated average time is recorded here. Because rural residents may not own watches, it may be useful to compare different time intervals with the time taken for household activities that are local customs, such as boiling rice or completing a coffee ceremony. **1. Water source in the yard:** refers to a water source that is located in the household (house, apartment building), or in the yard/plot. **2. Less than 30 minutes**: number of minutes is between 1 and 29 minutes. **3. Between 30 minutes and 1 hour**: number of minutes is between 30 and 60 minutes. **4. More than 1 hour**: number of minutes is more than 60.
W3. In the dry season, what is the main source of water used by your household for washing faces?	Use the response descriptions for drinking water above.
W4. If you collected water there to bring back to the house, how long would it take to go there, get water, and come back?	If all washing of faces is done at the water source, record the answer as **All face washing done at water source**. For other responses, this question refers to the time taken by the person or persons who usually fetch the water. Record the number of minutes required, as described above at W2.

S1. If you have one or more children under 3 years of age resident in the household, the last time the youngest child passed feces, what was done to dispose of the feces?	**Responses** 0 = There is no child under 3 years of age resident in the household 1 = Child used toilet/latrine 2 = Put into toilet/latrine 3 = Put into drain or ditch 4 = Thrown into garbage 5 = Buried 6 = Left in the open 7 = Don't know 9 = Other
S2. Where do you and other adults in the household usually defecate?	**Responses** 1. shared or public latrine 2. private latrine 3. no structure, outside somewhere 9. other **Response descriptions** **1. Shared or public latrine**: a shared latrine is any latrine shared between households of non-family units. A shared sanitation facility is a facility used by a restricted number of households. In urban areas and apartment buildings, in particular, several families often share a facility. Research is required to determine if shared facilities should be considered generally as unimproved, or if there is a reasonable cut- off point within which sharing can be seen as hygienically acceptable. **2. Private latrine**: A private latrine is any facility, improved or unimproved, used predominantly by a single family or household. **3. No structure, outside somewhere:** This refers to defecation in the yard or plot, or in the bush or field. **9. Other**: This refers to any other site of regular defecation. This may include "chamber pots" or buckets, or in bodies of surface water.

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S3. Ask to see the latrine/toilet. *Observation*: What kind of toilet facility do the adults in the household use?	Note that if the household has more than one latrine/toilet, ask which one the adults normally use, and provide responses for that latrine/toilet. **Responses** 01 = Flush/pour flush to piped sewer system 02 = Flush/pour flush to septic tank 03 = Flush/pour flush to pit latrine 04 = Flush/pour flush to open drains 05 = Flush/pour flush to unknown place 06 = Ventilated improved pit latrine (VIP) 07 = Pit latrine with slab 08 = Pit latrine without slab/open pit 09 = Composting toilet 10 = Bucket 11 = Hanging toilet/hanging latrine 12 = No facilities or bush or field 99 = Other (specify)

S3. Ask to see the latrine/toilet. *Observation*: What kind of toilet facility do the adults in the household use? *(Continued)*	**Definitions** **A flush toilet** uses a cistern or holding tank for flushing water, and a water seal (which is a U-shaped pipe below the seat or squatting pan) that prevents the passage of flies and odors. **A pour flush toilet** uses a water seal, but unlike a flush toilet, a pour flush toilet uses water poured by hand for flushing (no cistern is used). **01. To a piped sewer system**: A piped sewer system is a system of sewer pipes, also called sewerage, that is designed to collect human excreta (faeces and urine) and wastewater and remove them from the household environment. Sewerage systems consist of facilities for collection, pumping, treating and disposing of human excreta and wastewater. **02. To a septic tank**: A septic tank is an excreta collection device consisting of a water-tight settling tank, which is normally located underground, away from the house or toilet. The treated effluent of a septic tank usually seeps into the ground through a leaching pit. It can also be periodically discharged into a sewerage system. **03. To a pit latrine**: A flush/pour flush to pit latrine refers to a system that flushes excreta to a hole in the ground or leaching pit (protected, covered). **04. To open drains or elsewhere**: flush/pour flush to elsewhere refers to excreta being deposited in or nearby the household environment (not into a pit, septic tank, or sewer). Excreta may be flushed to the street, yard/plot, open sewer, a ditch, a drainage way or other location. **05. To unknown place**: Household has a flush or pour flush toilet, but respondent is unsure where the water is taken. A response of "flush/pour flush to unknown place" is taken to indicate that the household sanitation facility is improved, as respondents might not know if their toilet is connected to a sewer or septic tank. **06. Ventilated improved pit latrine (VIP)**: is a dry pit latrine ventilated by a pipe that extends above the latrine roof. The open end of the vent pipe is covered with gauze mesh or fly-proof netting and the inside of the superstructure is kept dark. **07. Pit latrine with slab**: is a dry pit latrine that uses a hole in the ground to collect the excreta and a squatting slab or platform that is firmly supported on all sides, easy to clean and raised above the surrounding ground level. The platform has a squatting hole, or is fitted with a seat. **08. Pit latrine without slab/open pit**: uses a hole in the ground for excreta collection and does not have a squatting slab, platform or seat. An open pit is a rudimentary hole in the ground where excreta is collected. **09. Composting toilet**: is a dry toilet into which carbon-rich material (vegetable wastes, straw, grass, sawdust, ash) are added to the excreta and special conditions maintained to produce inoffensive compost. A composting latrine may or may not have a urine separation device. **10. Bucket** refers to the use of a bucket or other container for the retention of faeces (and sometimes urine and anal cleaning material), which are periodically removed for treatment, disposal, or use as fertiliser.

S3. Ask to see the latrine/toilet. *(Continued)*	11. **A hanging toilet or hanging latrine** is a toilet built over the sea, a river, or other body of water, into which excreta drops directly. 12. **No facilities or bush or field** includes defecation in the bush or field or ditch; excreta deposited on the ground and covered with a layer of earth (cat method); excreta wrapped and thrown into garbage; and defecation into surface water (drainage channel, beach, river, stream or sea).
H1. *Observation*: Is there a handwashing facility within 15 metres of the latrine/toilet? (If there is no latrine, this question will be skipped by the app.)	**Responses** 0 = No 1 = Yes **Definitions** **A handwashing facility** refers to any facility, formal or informal, that holds water that is used for handwashing. Formal facilities are permanent facilities that may include a sink or reservoir with a tap or bucket, or mobile reservoirs. Informal facilities may include bottles, buckets, or other temporary reservoirs filled with water and arranged for handwashing (tippy tap), or other water sources and reservoirs that are used for multiple uses, including handwashing. **0. No**: There is no formal or informal handwashing facility within 15 metres of the latrine/toilet facility. A handwashing facility may be present in the household at a distance further than 15 metres from the toilet, or there may be no handwashing facility at all. (Lay the 15-metre piece of string out along the floor and have each recorder count how many of their own steps are required to cover that distance.) **1. Yes**: a formal or informal handwashing facility is present within 15 metres of the latrine/toilet facility.

H2. *Observation*: At the time of the visit, is water available at the handwashing facility? (If there is no latrine or no handwashing facility, this question will be skipped by the app.)	**Responses** 0 = No 1 = Yes **Definitions** **0. No**: Though there is a formal or informal handwashing facility present, there is no water available at the facility at the time of observation. This may mean that taps are not working, or sinks, buckets, mobile reservoirs, or tippy taps are present but do not have water in them. **1. Yes**: water is available at the formal or informal handwashing facility at the time of observation.
H3. *Observation*: At the time of visit, is soap, detergent, or other cleaning agent available at the handwashing facility? (If there is no latrine or no handwashing facility, this question will be skipped by the app.)	**Responses** 0 = No 1 = Yes: soap or detergent (in bar, liquid, or paste form) 2 = Yes: ash, mud or sand **Definitions** **0. No:** Though there is a formal or informal handwashing facility present, there is no soap present at the time of observation **1. Yes, soap or detergent (in bar, liquid or paste form):** Soap or detergent is present at the handwashing facility at the time of observation. Soap or detergent can be any bar soap, liquid detergent, liquid soap mixture, soap flakes or detergent paste that can be used to clean hands. **2. Yes, ash, mud or sand:** Ash, mud or sand to assist with handwashing is present at the handwashing facility at the time of observation.

Section B: Census and examination findings

Every resident of the household aged one year and above should be listed in the census. Every resident of the household aged one year and above should be asked to take part in the survey by being examined, providing informed consent is given. Children below the age of one year will not be included.

During the survey, the grader will describe clinical findings on each consenting household resident to the recorder, usually starting with the head of the household. The recorder should enter this information into the Android while the grader is examining each subject. For each person examined, the grader will examine the right eye first, then the left eye. The recorder will need to record the presence or absence of trichiasis, TF and TI for the right eye, then the presence or absence of trichiasis, TF and TI for the left eye. In eyes that have trichiasis, the answers to two questions about previous management and the presence or absence of TS also needs to be recorded. (The presence or absence of CO is not recorded.) The grader should tell the recorder "absent" or "present" for each sign, in each eye. If the grader does not specify their findings for a sign, he or she must be reminded to do so to ensure that all necessary information is collected.

Yeneneh Mulugeta/Orbis

Above A certified grader examining a child for trachoma, Egypt

Name	It is not necessary to include the full name of the person being examined: the first name or initials may be all that is necessary. 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 1 to 100).
Examined	Yes (with consent) will enable further information to be collected. If not examined, record why.
Trichiasis (right eye)	If trichiasis is present, questions will need to be asked about whether surgery for trichiasis or advice to epilate have been offered, and the grader will need to assess for the presence or absence of TS in that eye (right eye)
TF (right eye)	
TI (right eye)	
Trichiasis (left eye)	If trichiasis is present, questions will need to be asked about whether surgery for trichiasis or advice to epilate have been offered, and the grader will need to assess for the presence or absence of TS in that eye (left eye)
TF (left eye)	
TI (left eye)	

N. Examination techniques 2 (graders only)

Module summary: This module continues development of examination techniques for grader trainees, focusing on how to recognise trichiasis and TS, how to hold a child for examination, and how to treat and refer cases of active trachoma and trichiasis identified during the survey.

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

1. Examine a subject for trichiasis and collect information about previous surgery for trichaisis or advice to epilate.
2. Explain the significance of TS in differentiating between TT (trichiasis with TS) and trichiasis of other causes (trichiasis without TS).
3. Explain to an assistant how to hold a child for examination.
4. Explain how to treat someone who has been found to have TF or TI.
5. Explain how to refer patients.

Duration: the remainder of day 3 until 1700 hours is available for this module

Location: classroom

Materials: computer, projector, PowerPoint N, referral forms, flip chart and markers.

Training procedure:

1. Ask a participant to describe trichiasis (one or more eyelashes touching the globe, or evidence of recent removal of in-turned eyelashes). Make sure that trainees have a full understanding of the definition of trichiasis.
2. Discuss examination for trichiasis. Show slide N-2. For each eye, trichiasis is graded as present or absent.
3. Ask a trainee to demonstrate how to examine for trichiasis using loupes and a

torch. Trainees should then take turns to demonstrate on each other how to hold the torch and examine for trichiasis. Slides Slides N-3, N-4 and N-5show some examples.

4. Ask the trainees about the possible histories of a person with trichiasis. 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 trichiasis", "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 eyelashes", "I have been pulling out eyelashes for years", "I had surgery in the past", etc. The trainees may think of many other possible histories.
5. Explain that we need to record the history by answering specific questions. Show slide N-6, which lists the specific questions they must ask and the response options. 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 the patient is sure that surgery has never been offered for the trichiasis in that eye, including the many instances in which the patient was not aware that he or she had trichiasis.

   – Q1. Have you ever been offered surgery by a health worker to correct the trichiasis (in-turned eyelashes) in this eye?

   Responses:

   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

6. Explain that we also need to ask specifically about epilation. Show slide N-7. Explain again that both question 1 and question 2 must be asked and answers recorded, regardless of the response to question 1.

   – Q2. Has a health worker ever recommended that you pull out the eyelashes?

   Responses:

   a. Yes

   b. No

   c. Don't know

7. Slide N-10 shows how to examine the conjunctivae of a child, and in a child who needs to be restrained. Practice the techniques of safely restraining a child for an examination.
8. What if a young child is asleep? If their mother gives consent to examination, sometimes it's possible to examine the child without waking them if the grader is very gentle. This is often much less traumatic than deliberately waking them up for examination.
9. N-11 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.
10. Finally, (N-12 is a reminder) 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. Distribute copies of the forms for trainees to study.

O. Using the Androids (recorders only)

Module summary: This module provides recorder trainees with an introduction to the Androids 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.

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

1. Demonstrate how to turn the Android on and off.
2. Demonstrate the use of "Home" "Menu" and "Back" buttons.
3. Demonstrate how to collect GPS data, and how to troubleshoot basic problems (e.g., check that GPS has been switched on; check that the Android is not indoors or completely concealed from the sky by trees).
4. Demonstrate how to enter data on households and individuals.
5. Demonstrate how to upload data.
6. Explain the recorder's responsibility for maintaining and charging the phone between survey days.

Duration: 3 hours (day 2, 1400-1700).

Location: classroom

Materials: 1 Android for each trainee or pair of trainees, recorder IDs, laptop, projector, PowerPoint O.

Training procedure:

1. Distribute the Androids.
2. Give the trainees 5 minutes to familiarize themselves with their Android.
3. Give each trainee their recorder ID.
4. Explain that during the surveys, the Android must be checked **every night** to makesure that the data have been sent, then **switched off** and **charged through the surge protector.** Before leaving for the field in the morning, recorders must switch the Android on briefly to make sure that it is fully charged, then switch it off until it is needed.
5. Explain that recorders should not download other apps to the Android, use it for email or Facebook, or otherwise employ it for anything other than collecting trachoma survey data.
6. Explain that recorders should not put a password on the phone.
7. Demonstrate how to turn the Android on and off.
8. Demonstrate how to put the Android in "Airplane Mode": in "Settings", press "More...", then press "Airplane Mode". (Airplane Mode saves battery in the field. When the Android is in Airplane Mode, the GPS function will still work.)
9. Ask trainees to turn on their Android.
10. Ensure all trainees are able to "unlock" the Android, turn it off, and turn it on again.
11. Ensure all trainees are able to turn "Airplane mode" on and off.
12. Explain that it is only possible to turn off the Android when it is unlocked.
13. Ask trainees to check whether they are connected to the mobile network.
14. Ask trainees to open the Tropical Data app.
15. A menu will appear with the following items
    - Fill blank form
    - Send finalised form
    - See Form stats
16. Explain briefly what each of these items refers to.
17. Ask trainees to select Fill Blank Form by touching that menu item.
18. Point out the keyboard keys: del, numbers, return.
19. Another menu appears with the following four options:
    - ‹Project name› CLUSTER (where "‹Project name›" may be the name of your country, region [in Ethiopia], or state [Nigeria])
    - ‹Project name› HOUSEHOLD
    - ‹Project name› RESIDENT
    - ‹Project name› ABSENT RETURN
20. Explain to the trainees what each item is.

21. Ask trainees to choose ‹Project name› CLUSTER.
22. 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).
23. Ask the trainees to go forward.
24. The next screen asks the recorder to enter recorder ID (and the keyboard immediately appears).
25. Demonstrate typing on the keyboard. Ask a trainee to demonstrate how to find numbers on the keyboard.
26. 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.
27. 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 while the grader is obtaining consent to proceed from the head of the household, because GPS data capture can take up to 60 seconds. If the family does not consent, the recorder should click the back arrow, and select "Delete Form and Exit".
28. Note: If the trainee experiences difficulty in capturing the GPS data, instruct them to check the "Location" access in the "Settings" folder on the phone, to be sure that these settings are active.
29. 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.
30. 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.
31. Instruct trainees that the ABSENT RETURN survey is only for enrolling individuals who are both: a) previously entered as being "absent" or "refused" on the Android in use, and b) now available for examination.
32. Ask the trainees to think about possible ways to arrange to later examine those who are currently absent but will be available later in the day. Answers are likely to include: a) revisit the households later in the day, b) visit children at school, and c) have people come to a central site. It may be easiest to use a notepad to keep track of people absent but expected to return.
33. 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".

Practice 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, sometimes taking the role of a grader so that recorder trainees can practice entering clinical data.

When trainees seem comfortable with the system, ask them to undertake the recorder reliability test, by reading aloud to them the data in Annex 9, in combination with PowerPoint O. All the recorder trainees can do this at the same time. Please allow trainees to briefly go outdoors when it is time to collect the GPS coordinates for the test. Require all of the trainees to show you the summary of each individual form before they save it in order to check

their responses. In cases where they have entered the wrong information, tell them how many questions are incorrect and ask them to return after addressing the errors. A score of 100% on initial or repeat testing is needed to pass.

P. Selecting households in the village

Learning objectives: At the end of the module the trainees should be able to:

1. Demonstrate good etiquette with both village leaders and villagers.
2. Explain exactly how to select households in the village.

Duration: 90 minutes (day 4, 0830-1000)

Location: classroom

Materials: flip chart (or whiteboard), markers

Training procedure:

1. Discuss with the trainees what "good etiquette" means when interacting with village leaders and villagers.
2. Explain that selection of the households is "step two" of the multistage sampling technique. Ask trainees to tell you what step one was, and who was responsible for it.
3. Review what is meant by a "household" in your setting. (This was discussed with graders earlier in Module L, but recorders have not yet been included in that discussion.)
4. Go through the chosen method for selecting households, using the flip chart and markers, asking frequent questions of the trainees at each stage.

Q. Practice working together

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

Objective: To provide an opportunity for the teams to work together and develop an effective working relationship.

Learning objective: By the end of this module, graders and recorders should be able to demonstrate that they know their roles, know how to deal with difficult situations and are able to work together within a team.

Duration: 2.5 hours, including a tea break

Location: classroom

Materials: all materials needed for the survey

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. When you first arrive in the village, the village leaders say that they are not interested in being included in the survey.

   b. At the household, there is no one over 15 years of age present.

   c. The head of the household completely refuses to allow any member of the household to participate.

   d. No one is sure of the age of the grandmother.

   e. The head of household wants to include someone who does not live in the household; they are just visiting for a few days. (You can examine them, but don't enter the data in the Android, because they are not a resident of the selected household.)

   f. Based on your protocol a resident is defined as a person living there for the last month. At the household you find a child who is not from the household but has been living with the family for the last 2 months in

order to go to school in that village.

g. Mother says there is a latrine but you cannot see one. (Ask her to take you to see it.) The son, who is providing most of the responses, says he can reach the water source in 30 minutes but the daughter, who usually fetches water, says she needs 60 minutes. (Clarify that the round trip, including collection time, is being discussed. If there is still disagreement, use the response from the person who fetches the water.)

h. At the household, the village guide is answering the questions for the household instead of the household head or other adult member.

i. During the rainy season, it takes 10 minutes to get the water but now, during the dry season, it takes 30 minutes. (We are interested in the information from the dry season.)

j. The family has no idea how long it takes to fetch water.

k. The grader fails to give the grade for TI for the right eye. (Ask!)

l. The grader fails to clean her hands after examining a child. (Remind the grader)

m. An 8 year-old child is not present in the household, but will be back later. (Come back later.)

n. The 10 year old is not present in the household but will be back later. (Return to examine if time allows)

3. Break teams into groups and have one take the role of household head, while the other team practices making introductions, requesting consent, and filling in the sections of the form. Try to come up with more "problem situations" and discuss what to do in each.

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

Explain to recorders that they should keep a list of 1-9 year-olds who are absent from the household at the time of the survey team's visit.

Dominic Nahr/Magnum/Sightsavers

Above Children stand next to a tree in Oromia, Ethiopia, where teams completied baseline trachoma surveys in the year 2013.

R. Field practice for teams

Module summary: The module will take place in a village to allow practice in household selection, completion of the questionnaire and examination of the children and adults in the household. The recorders will also have a chance to use all the various forms to make sure that they understand how to fill them in. Note: This module does not need to take place in a trachoma-endemic village, as the goal is to practice working together in the field.

Learning objective: By the end of this module, graders and recorders should be able to demonstrate correct use of survey protocols.

Duration: the whole of the afternoon of day 4

Location: field

Materials: all materials needed for survey, including a list of households

Training procedure:

1. Remind teams that it is critical that they work efficiently, not wasting time at any household. For example, if 1-9 year-olds 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. Also remind teams that they should examine all consenting household residents aged 1 year and above.
2. At the village, one team should greet the village head and discuss the survey.
3. Have the teams discuss how to select the households and be sure everyone understands the procedure. Discuss any disagreements.
4. For this practice, two or three teams 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 teams should visit as many households as possible in order to get practice and uncover any problems.
6. Teams should each complete at least one ABSENT RETURN form, to allow the recorder to practice using it.
7. At the end of the session, discuss as a group the problems that were encountered, including how to categorise specific water and sanitation situations.
8. Depending on how many households are selected, it is possible that not all will be visited during this practice but every team should have as much practice as possible.
9. It might be useful for teams to time how long they spend at each household to show them how long they would need to finish all sampled households in a cluster.

S. Graduation and review of survey plans

1. Review the previous day and discuss any difficulties.
2. Discuss who should be (or appoint) the team leader for each team.
3. The team leader is responsible for making sure that their team has all of the materials needed before going to the field each day. In addition to the materials that have become familiar to you during training, team members may need to take bottles of water, food, sleeping bags, mosquito nets, car chargers or solar chargers for the Androids, a spare battery for the Android, and so on.
4. Discuss survey logistics which include:
   a) Timing of deployment of teams
   b) Supervisors assigned to teams
   c) Drivers assigned to teams
   d) Materials given to teams
5. A graduation ceremony may be held if desired.
6. Remind teams not to enter any more practice data into the Androids.
7. Distribute first round of per diems.

7 After training finishes: clearing data from the Androids

Before the Androids used for training are taken to the field to collect data in real surveys, it is important to delete any data entered during training. To avoid accidental deletion of real survey data, the screen to remove the data requires 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.

A. Click the menu button from the main screen.

B. Select Admin Login and enter the password.

C. Click "Delete saved form" button.

D. Under the Saved Form tab (white 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.

Don't enter any training data after the real surveys have begun!

Annex 1 First and second stage sampling

This manual assumes that a considerable amount of preparatory work for baseline trachoma surveys has already been undertaken. This includes identifying the populations that need to be surveyed, determining the level (e.g., “district”, “province”, “region”, or some intermediate grouping of these) of the evaluation unit, determining the required sample size for each evaluation unit, and determining how first- and second-stage clusters within the evaluation unit will be defined.

For Tropical Data, this work will be done by the programme manager with the help of experienced epidemiologists.

Annex 2 IGA test form for slides

Your name:	Date:

There are 50 slides to examine, each with a unique number. Record your findings by writing "0" if the sign is absent and "1" if the sign is present. There are no slides of TT, but a TT column is included here to remind you that you need to look for TT in each subject you examine in a real survey.

Do not leave any blanks. If you need to change your answer, strike it out completely and write the new answer above or to the right of the old answer.

Number	TT	TF	TI	Number	TT	TF	TI
1	–			26	–		
2	–			27	–		
3	–			28	–		
4	–			29	–		
5	–			30	–		
6	–			31	–		
7	–			32	–		
8	–			33	–		
9	–			34	–		
10	–			35	–		
11	–			36	–		
12	–			37	–		
13	–			38	–		
14	–			39	–		
15	–			40	–		
16	–			41	–		
17	–			42	–		
18	–			43	–		
19	–			44	–		
20	–			45	–		
21	–			46	–		
22	–			47	–		
23	–			48	–		
24	–			49	–		
25	–			50	–		

Annex 3 IGA test form for the field

Your name:	Date:	Eye:

There are 50 children to examine, each with a unique number. Examine the right eye or left eye (as instructed) of each child, for TF and TI. Record your findings by writing "0" if the sign is absent and "1" if the sign is present. Do not worry about looking for TT today.

Do not leave any blanks. If you need to change your answer, strike it out completely and write the new answer above or to the right of the old answer.

Number	TT	TF	TI	Number	TT	TF	TI
1	–			26	–		
2	–			27	–		
3	–			28	–		
4	–			29	–		
5	–			30	–		
6	–			31	–		
7	–			32	–		
8	–			33	–		
9	–			34	–		
10	–			35	–		
11	–			36	–		
12	–			37	–		
13	–			38	–		
14	–			39	–		
15	–			40	–		
16	–			41	–		
17	–			42	–		
18	–			43	–		
19	–			44	–		
20	–			45	–		
21	–			46	–		
22	–			47	–		
23	–			48	–		
24	–			49	–		
25	–			50	–		

Annex 4 Using the kappa calculator

Instructions for using “Kappa calculator (slides 1).xls” are below if the slide based IGA test is used.

Scores can be entered quickly if one person reads responses while another enters the data.

1. Open “Kappa calculator (slides 1).xls” and save it with a new name. One Excel file will be used for each set of slides, or set of real subjects. Within that file, one sheet will be used for each trainee grader. Ensure that macros are enabled in Excel.
2. The first sheet is called “Template”. Click on “Create new trainee evaluation” and a new sheet will open, with the TF (gold) answers already filled in. You will be asked to enter the trainee’s name. Enter the trainee’s answers in the column headed “TF (trainee)”.
3. The kappa will be calculated automatically.
4. Click “Create new trainee evaluation” again.
5. Write the kappa score on the training sheet. If kappa ≥0.7, the trainee is ready to go to the field.
6. If the kappa <0.7 and you think that the trainee may pass with a little more instruction and a re-test:
7. Repeat PowerPoint C1 and/or PowerPoint C2
8. Do another IGA test using PowerPoint C4 and “Kappa calculator (slides 2).xls”.

Annex 5 Photos of water source categories

Tubewell/borehole

The Carter Center

The Carter Center

Protected dug well

Unprotected dug well

The Carter Center

Protected spring

The Carter Center

Unprotected spring

Water for People

Water for People

Rainwater collection

Surface water (e.g. river, dam, lake, canal)

Annex 6 Photos of sanitation facility categories

Flush toilet

Cement slab/ floor with seat; superstructure with roof and some type of door; toilet uses a cistern or holding tank for flushing urine/faeces

Pour flush toilet

Cement slab/floor with squatting slab, platform or seat; superstructure with roof and some type of door; water not directly connected to toilet, but added manually to flush down urine/faeces

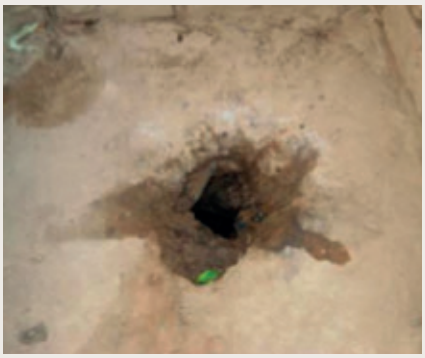
Ventilated improved pit latrine (VIP)

Cement slab/floor; ventilation tube that accesses the pit and comes out of the superstructure; superstructure with roof and some type of door

Pit latrine with slab (improved pit latrine)

Cement slab/floor; superstructure with roof and some type of door

Pit latrine without slab/open pit (unimproved pit latrine)



Packed mud/dirt floor; mostly unlined pits; limited superstructure – no roof, no door, etc.

Composting toilet


Two toilets with separated areas for urine and faeces

Doors at back of toilet with faeces composts

Cement slab/floor with squatting slab, platform or seat; often elevated above ground; urine diversion (separate hole for faeces and urine); doors at the back or side used to access the compost superstructure, with roof and some type of door; ash and dirt generally present to help compost faeces; either one pit, or two alternating pits.

A household dual-pit composting toilet: Above-ground chamber for faeces, stairs to entrance, cement floor, and doors in the rear to access the chamber and remove faeces.

Hanging toilet/hanging latrine

Annex 7 Survey form

Tropical Data trachoma prevalence survey

Date ☐☐☐☐☐☐

(A) Household questionnaire

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 [write household number]	☐☐
5	Household [write name of household head]	
Section 2: Household GPS		
G1	Latitude (N)	☐☐ . ☐☐☐☐☐
G2	Longitude (E)	☐☐☐ . ☐☐☐☐☐
G3	Elevation (metres)	☐☐☐☐☐
G4	Accuracy (metres)	☐☐
Section 3: Water, sanitation and hygiene questions		
W1	In the dry season, what is the main source of drinking-water for members of your household?	01= Piped water into dwelling 02 = Piped water to yard/plot 03 = Public tap/standpipe 04 = Tubewell/borehole 05 = Protected dug well 06 = Unprotected dug well 07 = Protected spring 08 = Unprotected spring 09 = Rainwater collection 10 = Water vendor 11 = Surface water (e.g. river, dam, lake, canal) 99 = Other (specify) ☐☐
W2	How long does it take to go there, get water, and come back?	1 = Water source in the yard 2 = Less than 30 minutes 3 = Between 30 minutes and 1 hour 4 = More than 1 hour ☐

W3	In the dry season, what is the main source of water used by your household for washing faces?	01 = Piped water into dwelling 02 = Piped water to yard/plot 03 = Public tap/standpipe 04 = Tubewell/borehole 05 = Protected dug well 06 = Unprotected dug well 07 = Protected spring 08 = Unprotected spring 09 = Rainwater collection 10 = Water vendor 11 = Surface water (e.g. river, dam, lake, canal) 99 = Other (specify)
W4	If you collected water there to bring back to the house, how long would it take to go there, get water, and come back?	0 = All face washing done at water source 1 = Water source in the yard 2 = Less than 30 minutes 3 = Between 30 minutes and 1 hour 4 = More than 1 hour
S1	If you have one or more children under 3 years of age resident in the household, the last time the youngest child passed feces, what was done to dispose of the feces?	0 = There is no child under 3 years of age resident in the household 1 = Child used toilet/latrine 2 = Put into toilet/latrine 3 = Put into drain or ditch 4 = Thrown into garbage 5 = Buried 6 = Left in the open 7 = Don't know 9 = Other
S2	Where do you and other adults in the household usually defecate?	1 = Shared or public latrine 2 = Private latrine 3 = No structure, outside somewhere 9 = other
S3	Ask to see the latrine/toilet. *Observation*: What kind of toilet facility do the adults in the household use?	01 = Flush/pour flush to piped sewer system 02 = Flush/pour flush to septic tank 03 = Flush/pour flush to pit latrine 04 = Flush/pour flush to open drains 05 = Flush/pour flush to unknown place 06 = Ventilated improved pit latrine (VIP) 07 = Pit latrine with slab 08 = Pit latrine without slab/open pit 09 = Composting toilet 10 = Bucket 11 = Hanging toilet/hanging latrine 12 = No facilities or bush or field 99 = Other (specify)

H1	*Observation*: Is there a handwashing facility within 15 metres of the latrine/toilet?	0 = No 1 = Yes	☐
H2	*Observation*: At the time of the visit, is water available at the handwashing facility?	0 = No 1 = Yes	☐
H3	*Observation*: At the time of visit, is soap, detergent, or other cleaning agent available at the handwashing facility	0 = No 1 = Yes: soap or detergent (in bar, liquid, or paste form) 2 = Yes: ash, mud or sand	☐

(B) Census and examination findings

EU | | | | | | Cluster | | | | | Household | | | Recorder | | | | |

List all household residents. Ask for consent to examine everyone aged 1 year or more. Mop-up should focus on 1-9 year-olds.

ID number		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				Left Eye 0 = Sign absent 1 = Sign present				Notes
						TT	TS	TF	TI	TT	TS	TF	TI	

Annex 8 Referral form

TROPICAL DATA

Feel free to modify this or to substitute 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 9 Recorder Test

Today, you are going to collect data for EU ooooo, cluster ooo.

Start PowerPoint O. Read the following to the trainees

You are going to enroll three households.

Household 1: Pedro García

The main source of water for both drinking and washing faces is shown in slide O-2, which is in the yard of the household. Pedro and his wife Paula say they defecate near the house in a ditch because they have no latrine. There is a station with water and soap to wash hands outside the house, 10 meters from the ditch.

1. Juan	5	Male	He consents	Trichiasis, TF, TI not present in right or left eye
2. María	12	Female	She is absent	She will be home after 5pm tomorrow
3. José	19	Male	He is absent	He will be home after 5pm tomorrow
4. Paula	52	Female	She consents	Trichiasis present in both eyes; TF and TI are absent
5. Pedro	54	Male	He refuses	

Household 2: Mauricio Cardona

The main source of water for drinking is just outside the yard of the household (slide O-3). Mauricio's children's faces are washed with water from that source, next to that source, daily. The household has its own latrine (slide O-4). Mauricio's daughter Martha has just used the latrine, and is outside it now, as pictured in slide O-5.

1. Marcela	1	Female	She consents	She has TF in both eyes, no TI, no trichiasis
2. Edwin	3	Male	He consents	Right eye: TF present, TI present, no trichiasis; left eye: TF present, TI absent, trichiasis absent
3. Martha	7	Female	She is absent	She is at school, and will be home after 4pm today
4. Clara	22	Female	She consents	Trichiasis, TF, TI are absent in both eyes
5. Mauricio	31	Male	He consents	Trichiasis is present in left eye and he has been offered surgery but not epilation; he did not, however, receive surgery. TF, TI is absent in both eyes

Household 3. Fernando Bolívar

The source of water for both drinking and washing faces, in both the wet and dry seasons, is the structure shown in slide O-6, which is found by the side of the house. Adults in the household defaecate in a facility that is only used by members of the household. It is shown in slide O-7. You ask Fernando where he washes his hands after defaecating, and he takes you to see what is shown in slide O-8.

	Name	Age	Sex	Consent	Finding
1	Lina	4	Female	She consents	Has TF and TI in both eyes; there is no trichiasis
2	Felipe	5	Male	He consents	Right eye: TF present; there is no TI or trichiasis Left eye: there is TF and TI, but not trichiasis
3	Gloria	9	Female	She is absent	She is at the river and will return home this afternoon after 4 pm
4	Claudia	29	Female	She consents	There is no trichiasis, TF, or TI in either eye
5	Fernando	57	Male	Gave consent	There is trichiasis in the right eye; he was offered surgery, which was performed; he was not offered epilation; TF and TI are absent in both eyes
6	Hugo	95	Male	Gave consent	Bilateral trichiasis; the eyelids cannot be everted. He has never seen a health worker about his eyes

Questions

1. Demonstrate that you can identify the various water sources.
2. For Household 1, would you return to collect information on María?
3. What would you do if you finished adding Mauricio's examination information to the Household 2 record, you find out that another person lives in the house?
4. If you return to Household 2 to examine Martha (who was absent at the time of the first visit) and she is still absent, would you use the ABSENT RETURN survey?
5. How will you keep track of the absent individuals?
6. How would you answer questions H1, H2 and H3 for each household?
7. For household 3, would you return to collect information on Gloria?

Answers

1. Go around the room and find out how knowledgeable the recorder trainees are in identifying the different kinds of water sources by showing pictures.
2. It would not be a priority, because she is outside the 1-9 year-old age range. You would enroll the girl but not prioritise returning to examine her. You could return to examine her if you have lots of time at the end of the day.
3. You would open the RESIDENT survey and add the new person to the correct household.
4. No, you would only enroll someone in the absent survey if they are present AND consent.
5. Write the names of the heads of households to which you need to return (as well as the names and ages of the missing residents) on paper.
6. For Household 1, although there is a hand wash station within 15 meters of the place that people defecate, questions H1, H2 and H3 will all be skipped because there is no latrine structure. For Household 2, questions H1, H2 and H3 should all be answered "Yes". For Household 3, H1 should be answered "Yes", H2 should be answered "No", and H3 should be answered "Yes".
7. Yes.

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Notes

Right
A woman has her eye checked for signs of trachoma, Ethiopia.

For further enquiries about Tropical Data or this manual, please contact training@tropicaldata.org

V1.2