Global Trachoma Mapping Project

Training for mapping of trachoma

VERSION 2

ICTC International Coalition for Trachoma Control

An ICTC publication
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Please note

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Above
A pupil demonstrates the use of a leaky tin to wash their hands and face as part of their hygiene campaign that helps to prevent trachoma.
As the 2020 target for trachoma elimination approaches, it is important to find out where interventions against trachoma are required. To do this, we need to complete baseline mapping globally, which means many surveys need to be done. This training system is intended to be used to train, in a standardised way, the staff needed to complete these surveys. It is designed to provide the trainer with a complete programme for training field teams to undertake baseline mapping 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 of survey field staff, but programme managers and supervisory personnel are also strongly encouraged to become familiar with the manual and to attend the training programme.

Most trachoma surveys performed to date have been built around the WHO trachoma survey guidelines. This training system is also based on those guidelines. We have borrowed heavily from previous publications informing trachoma prevalence surveys, which are listed in the bibliography, and added new material and refinements. We are extremely grateful to the people who contributed to those previous publications 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.

The name of this project is the “Global Trachoma Mapping Project”. Individual countries may elect to come up with a local name or “brand” if this would be useful for local advocacy or to make it easier to refer to the project.

Good luck with your training, and with your surveys!
Acknowledgements

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They, and the International Coalition for Trachoma Control acknowledge with sincere thanks all those who helped to plan the system, contributed to the creation of materials used to develop it, commented on drafts, and participated in field testing, including: Agatha Aboe, Liknaw Adamu, Wondu Alemayehu, Menbere Alemu, Neal Alexander, Robin Bailey, Amir Bedri, Berhanu Bero, Simon Brooker, Chris Brown, Simon Bush, Kurt Dreger, Paul Emerson, Allen Foster, Solomon Gadisa, Teshome Gebre, Danny Haddad, Emma Harding-Esch, Erik Harvey, 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, Stephanie Ogden, Joseph Pearce, Saul Rajak, Serge Resnikoff, Virginia Sarah, Alemayehu Sisay, Jennifer Smith, Hugh Taylor and Jo Thomson.

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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. The grader trainer(s) must be very experienced in grading trachoma in the community using the WHO simplified grading system, and have been standardised against acknowledged international trachoma reference graders. They need not be ophthalmologists: experienced ophthalmic nurses or ophthalmic assistants may be ideal. If suitably qualified trainers are not available nationally, the GTMP can provide the names of international experts who might be able to assist. Recorder trainer(s) should be experienced in data collection; if Android smartphones are to be used to collect data (as recommended here), experience with such devices is important.

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

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

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

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

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

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 baseline trachoma surveys, whether that is a “district” (see above) or, if pre-agreed due to particular epidemiological circumstances, larger than a “district”.

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

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

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.

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

Survey coordinator: the individual with responsibility for deploying trained graders and recorders to undertake a trachoma survey 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; choosing and booking the training venue; choosing and preparing sites for field-based training sessions; and making other logistical arrangements necessary for the training sessions to be a success.

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.
Introduction

Trachoma is the leading infectious cause of blindness. It causes blindness by scarring the eyelids, which ultimately turns the eyelashes inwards so that they scratch the eye. Trachoma is controlled through the “SAFE” strategy, which comprises Surgery for in-turned eyelashes, Antibiotics to reduce the prevalence of infection, and Facial cleanliness and Environmental improvement to reduce infection transmission. Using SAFE, the World Health Organization (WHO) and its partners plan to eliminate trachoma as a public health problem by 2020.

“S” is offered to individuals, while “A”, “F” and “E” are community-based interventions applied to whole populations. WHO recommends that the unit population for these interventions be the normal administrative unit for health care management, nominally “districts” of 100,000-250,000 people. “A”, “F” and “E” are indicated for at least three years in districts in which the prevalence of the inflammatory sign “trachomatous inflammation–follicular” (TF) in 1-9 year-old children is 10% or greater. Where the baseline prevalence of TF in 1-9 year-olds is 30% or greater, “A”, “F” and “E” are indicated for at least five years before review. Knowing the baseline 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 baseline prevalence of in-turned eyelashes (trichiasis) is important to allow programmes to plan requirements for surgical services. Baseline 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 these two parameters. Partly to help programmes establish a baseline 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 be incorporated, but detailed training materials for (and consideration of the logistical implications of) such additions would be 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 entry into a database.

Compared to many previous trachoma survey training systems, we recommend considerably more time be devoted to maximising inter-grader agreement (IGA) between grader trainees and grader trainers in grading TF. We recommend that the critical IGA test, which determines whether grader trainees “pass” and therefore enables them to participate in survey work, be 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.

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 can not see five or more follicles in the central part of the upper tarsal conjunctiva, and to guard against future changes in international guidelines. 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.
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 the 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 those 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 field, and who do not need to understand much about clinical trachoma to do their jobs well.

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 required, 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 being intimidating or unkind. Asking your trainees questions requires them to be active in the learning process, and done politely and respectfully, it is a good technique to draw out the shy and to wake up the sleepy. It will also provide you with information as to whether your audience understands the material or not.

**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.** A final evaluation tool to certify that the trainees are qualified to carry out the tasks is essential. It is possible that some trainees simply cannot perform the tasks. Trainers must certify that trainees have met the standard, and thus are eligible to participate in the surveys.
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 that the communities they intend to visit are prepared to welcome them. Similar planning and preparation are required for the field-based component of training. These tasks are the responsibility of the training coordinator. Trainers should ensure that they have been completed, or field-based training sessions may be difficult or impossible.

Classroom-based training sessions also require considerable practical preparation.

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

1. The necessary official clearances have been obtained

Requirements for ethical clearance for 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 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.
Before training starts

- 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 15 (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:

- LCD projector
- Laptop computer (for projecting with LCD, and for taking to the field for the IGA tests) with connecting cables, power adaptor and extension cords
- 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 (slides 1).xls” (requires Excel 2007 or higher)
- Excel “Kappa calculator (slides 2).xls” (requires Excel 2007 or higher)
Before training starts

- Excel “Kappa calculator (field).xls” (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)
- A 15-metre piece of string
- Android smartphones (1 for each recorder plus 1 for the recorder trainer); with appropriate surveys loaded
- 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 (Annexes 6 and 7)
- Referral forms (for subjects incidentally found to have ophthalmic or general medical problems)

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

• 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 gifts for subjects participating in training fieldwork (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. However, due to differences in computer monitors, projectors, and projection surfaces, the images may not always appear the same. The grader trainer(s) must review the slides, and note if they agree with the supplied grades. Trainers must amend the “gold standard” answers in “Kappa calculator (slides 1).xls” and “Kappa calculator (slides 2).xls” if they disagree; if this happens, please inform the GTMP Chief Scientist.

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 trichiasis without having the personnel and supplies available to treat them. Sufficient trained TT surgeons must be readily accessible to the residents of areas in which surveys are planned.

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

The training coordinator should identify local eye care and health care providers, identifying 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 fieldwork to have trichiasis should be generated, and a plan should be in place for providing services to them. Responsibility for generating this list belongs to the 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. The programme manager and training coordinator should register themselves online at https://linkssystem.org/GTMP/registerproject.php. Once registered, use the “Add Recorder” tool to obtain Recorder IDs for new recorders. If there are any problems, email gtmp@sightsavers.org, at least seven days before the start of the training week.
Selection of trainees

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

To ensure high quality standards are maintained, it is usually preferable for a country to train fewer teams and have them move around, rather than train many teams that all work in parallel.

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

1. Generic requirements

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

Both graders and recorders should be able to walk long distances and work long hours in the field. Both graders and recorders may (depending on the method of household selection) need to know how to do (mathematical) division.

2. Requirements for grader trainees

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 individuals with ophthalmic experience to demonstrate proficiency in evert ing 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.

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

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 drivers*
While trainers are not expected to train drivers, drivers are essential team members wherever survey teams require vehicles rather than motorcycles. If practical, it helps motivation to have drivers join the training on day three, in order to understand the purpose of and overall plans for the survey. The driver may also help the team in the community in the following ways:

1. Assist with introductions in the community
2. Assist with ‘crowd control’
3. Assist with holding children if mothers are not available
4. Bring families or children who are not at home but who are in the village, to the grader and recorder during the survey, with the help of local village residents
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. Sessions shaded yellow take place in the classroom; those shaded green take place in the field.

Day 1: Grader qualifying workshop I

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800-0830</td>
<td>Registration and brief introductions</td>
<td></td>
</tr>
<tr>
<td>0830-0900</td>
<td>Introduction to the grader qualifying workshop</td>
<td>A (A)</td>
</tr>
<tr>
<td>0900-1000</td>
<td>WHO simplified trachoma grading system</td>
<td>B (B)</td>
</tr>
<tr>
<td>1000-1015</td>
<td>Tea</td>
<td></td>
</tr>
<tr>
<td>1015-1215</td>
<td>Practice slide sets and IGA test with slides</td>
<td>C (C1, C2, C3, C4)</td>
</tr>
<tr>
<td>1215-1300</td>
<td>Examination techniques 1</td>
<td>D (D)</td>
</tr>
<tr>
<td>1300-1345</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>1345-1445</td>
<td>Grading in the field</td>
<td>E (none)</td>
</tr>
<tr>
<td>1515-1545</td>
<td>Practice IGA test in the field &amp; review of incorrectly graded subjects</td>
<td>F (none)</td>
</tr>
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Day 2: Grader qualifying workshop II

<table>
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<th>Time</th>
<th>Activity</th>
<th>Module</th>
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<tbody>
<tr>
<td>0830-1000</td>
<td>Practice IGA test in the field &amp; review of incorrectly graded subjects</td>
<td>F (repeated)</td>
</tr>
<tr>
<td>1000-1300</td>
<td>IGA test</td>
<td>G</td>
</tr>
<tr>
<td>1300-1400</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>1400-1700</td>
<td>Repeat IGA tests* if needed</td>
<td>G (repeated)</td>
</tr>
</tbody>
</table>

* 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

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Module</th>
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</thead>
<tbody>
<tr>
<td>0830-0900</td>
<td>Registration and brief introductions</td>
<td></td>
</tr>
<tr>
<td>0900-1300</td>
<td>Review of hard copy of data collection forms</td>
<td>M (M)</td>
</tr>
<tr>
<td>1300-1400</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>1400-1700</td>
<td>Using the Androids</td>
<td>O</td>
</tr>
</tbody>
</table>
Day 3: Team training I

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Module (PowerPoint if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0830-0915</td>
<td>Opening of team training</td>
<td>H</td>
</tr>
<tr>
<td>0915-0945</td>
<td>Global overview of mapping project and objectives of training</td>
<td>I (I)</td>
</tr>
<tr>
<td>0945-1045</td>
<td>Trachoma and the SAFE strategy</td>
<td>J (J)</td>
</tr>
<tr>
<td>1045-1115</td>
<td>Surveys and sampling</td>
<td>K (K)</td>
</tr>
<tr>
<td>1115-1145</td>
<td>Tea (then break into two groups)</td>
<td></td>
</tr>
<tr>
<td>1145-1300</td>
<td>Obtaining consent</td>
<td>L (L) [graders]</td>
</tr>
<tr>
<td></td>
<td>Revision of modules M and O</td>
<td>M + O [recorders]</td>
</tr>
<tr>
<td>1300-1345</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>1345-1445</td>
<td>Examination techniques 2</td>
<td>N (N) [graders]</td>
</tr>
<tr>
<td></td>
<td>Revision of modules M and O</td>
<td>M + O [recorders]</td>
</tr>
<tr>
<td>1445-1515</td>
<td>Tea</td>
<td></td>
</tr>
<tr>
<td>1515-1700</td>
<td>Continue module N</td>
<td>N (N) [graders]</td>
</tr>
<tr>
<td></td>
<td>Revision of modules M and O</td>
<td>M + O [recorders]</td>
</tr>
</tbody>
</table>

Day 4: Team training II

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Module</th>
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</thead>
<tbody>
<tr>
<td>0830-1000</td>
<td>Selecting households in the village</td>
<td>P</td>
</tr>
<tr>
<td>1000-1030</td>
<td>Tea</td>
<td></td>
</tr>
<tr>
<td>1030-1200</td>
<td>Practice working together</td>
<td>Q</td>
</tr>
<tr>
<td>1200-1300</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>1300-1700</td>
<td>Field practice for teams</td>
<td>R</td>
</tr>
</tbody>
</table>

Day 5: Team training III: graduation and review of survey plans
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 slide set 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 is presented using 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.

Objective: To demonstrate using slides the WHO grading scheme, emphasising the importance of TT, TF and TI.
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. 

Module summary: This module is the first step in the standardisation process which in the end will allow you to determine which trainees qualify to participate as graders in the survey. This module relies on images, whereas future modules will require actual field work 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 TT, TF and TI. 

Objectives: 
1. To introduce to the trainees the concept of inter-grader agreement. 
2. To train the trainees to identify the clinical signs of trachoma, with a focus on TT, TF and TI in images. 

C. Practice slide sets and IGA test with slides
Trainer’s notes

3. To assist the trainees to differentiate trachoma from other conditions.

4. To begin the process of identifying 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: PowerPoint slides C1, C2, C3, C4, wrist watch with second hand (or stopwatch or mobile phone with timer app), computer with “Kappa calculator (slides 1).xls” and “Kappa calculator (slides 2).xls” loaded

Handouts: Annex 2 (IGA test form for slides, may need 2 per 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 the trachoma grades given and if not, to explain why not.

8. At the end of PowerPoint C2, distribute copies of the IGA sheet, and explain to the trainees that they grade each slide in the next set independently on the sheet. Make sure they understand what is being asked of them.

9. Ask each trainee to write their full name at the top of the form.

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 can not proceed.

11. Stress to trainees that this is independent work, and they are not to look at others’ grading forms. Looking at others’ forms 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. Use PowerPoint C3 to formally test IGA. 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. The trainees should fill in the IGA form as they look at each slide.

13. Following the IGA test, the session is over. Collect the IGA sheets from trainees.

14. Instructions for using “Kappa calculator (slides 1).xls” are below. Scores can be entered quickly if one person reads responses while another enters the data.

i. 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.

ii. Ensure that macros are enabled in Excel.
iii. The first sheet is called “Template”. You should already have checked that you agree with the “TF (gold)” answers recorded there. This is important since slides may look different in your environment due to differences in the computer used to project the image, the projector, or the surface on which the image is projected.

iv. 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)”.

v. Kappa will be calculated automatically.

vi. Click “Create new trainee evaluation” again.

vii. Write the kappa score on the training sheet. If kappa ≥ 0.7, the trainee is ready to go to the field.

viii. If the kappa < 0.7 and you think that the trainee may pass with a little more instruction and a re-test:

   a. repeat PowerPoint C1 and/or PowerPoint C2

   b. do another IGA test using PowerPoint C4 and “Kappa calculator (slides 2).xls”.

   (Don’t use PowerPoint C3 and “Kappa calculator (slides 1).xls” for the same trainee(s) again.)

D. Examination techniques 1

Module summary: This module requires the grader trainees to examine the eyes of their fellow trainees, 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. This module is a combination of a PowerPoint presentation and demonstration, with the trainees then practicing on each other.

Objectives:

1. To ensure the grader trainees know the necessary steps of cleaning hands or changing gloves before examining an eye.

2. To train the graders in the various ways to evert an eyelid.

3. To provide an opportunity for the graders to practice using loupes 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.

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, soap and water or alcohol gel, cotton swabs (to evert lids), PowerPoint D

Training procedure:
1. Show PowerPoint D to the trainees.
2. Demonstrate cleaning your hands with either alcohol gel or soap and water. Emphasise: a) thorough cleaning of hands prior to each examination, and b) the necessity of letting hands dry prior to touching the eyelid.
3. 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 TT before everting it, since eversion of the lid may make later detection of mild TT more difficult.
4. Always examine the right eye first, then the left eye. This helps to avoid confusion in recording results.
5. 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).
6. Demonstrate how to evert the eyelid using either a) a cotton swab, or b) your finger. While examining the everted eyelid, ask the trainees what they should be looking for, based on the slides they saw in previous sessions.
7. Ask the trainees to form pairs.
8. Distribute cotton swabs if available, requesting trainees to practice on their partners with each person examining their partner’s eyelids and then everting each of their partner’s eyelids. Remind the participants to wash hands before examining their partner’s eyes.
9. After each pair has practiced, distribute the magnifying loupes and torch to each pair.
10. Demonstrate on a volunteer how to use the loupes and torch in examining an eye.
11. Invite each pair to once again conduct an eye examination on their partner’s eyes using the loupes and torch.

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.
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

Materials: soap and water or alcohol gel, loupes, torches, cotton swabs, 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 challenges are named, discuss with the trainees how these might be dealt with.
4. Ask the trainees to collect the supplies they will need and check that there are sufficient materials for the module.
5. Upon arrival, meet with the person in charge and again 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 that the 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 trainees for the field IGA test using children. 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 the 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.) A second set of trainees and trainer can grade the other eye of the same 50 children, but 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, the trainees should be able to:

Know how his/her grading compares to the trainer (know the kappa score).

Reflect on grading disagreements, having had a chance to discuss specific children with the trainer.

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

Location: field. A local school may be a convenient location, but may not provide 15-35 TF cases to be included in the set of 50 children to be examined.

Materials: computer with Excel “Kappa calculator (field).xls” loaded, grading sheets, referral forms, loupes, torch, pen, clip board, labels for children, antibiotics, alcohol gel, gifts for children after examination

Handouts: checklist of required materials, grading sheets (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 line of four seated trainees plus the trainer for grading. An assistant can help keep children in the queue. 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 grading forms.

8. Look through the forms and identify children for whom there was disagreement. Call these children back and examine together to discuss disagreements.

9. Give the children their thank-you gifts 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 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 15-35 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 should clean their hands or change gloves 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 failed 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 of 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, grading sheet, referral forms, loupes, torch, pen, clip board, labels for children, antibiotics, alcohol gel, gifts for children after examination

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

Training procedure: See Module F.

**H. Opening of team training**

This is the first team training session. 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 some 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 introductions are started and then interrupted if necessary to accommodate officials when they arrive.

Objectives:
1. To formally open the team training.
2. To introduce trainers, 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.

I. Global overview of mapping project and objectives of training

Module summary: The surveys for which you are training these trainees are part of a much larger initiative to map trachoma globally. These in turn are key to a major 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 I has been prepared to facilitate this.

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

Duration: 30 minutes (day 3, 0915-0945)
Location: classroom

Materials: computer, projector and PowerPoint I

Training procedure:
1. Start PowerPoint I.
2. Slide 2. Ask recorders if they have heard of trachoma. Some will and some will not. Ask the graders to explain briefly to recorders what trachoma is and explain to recorders that they will get more information later in the morning. Go through the materials on the slide.
3. Slide 3. Use this map to point out how many gaps there are in our knowledge of where trachoma exists. Find the country you are in and see what is known about trachoma there.
5. Slide 5. The use of Android smartphones to collect data in the field will probably be new to all trainees. Explain that such methods are very new to public health in general. Ask them to describe some of the advantages of using electronic data capture.
7. Slide 7. This slide shows what will happen over the next three days.
8. Ask if this fits their expectations and encourage questions and discussion.

J. Trachoma and the SAFE strategy

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

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

Learning objectives: By the end of this module, the trainees should be able to:
1. State what trachoma is and understand that it can be transmitted.
2. Name at least three risk factors that predispose communities and individuals to the infection.
3. Name and describe the clinical manifestations of trachoma.
4. Describe the four components of the SAFE strategy and why each is important to controlling and eliminating trachoma.

Duration: one hour (day 3, 0945-1045)
Location: classroom
Materials: computer, projector, PowerPoint, flip chart (or whiteboard), markers

Training procedure:
1. Ask the trainees what trachoma is and how it is transmitted. Write their responses on the flip chart or whiteboard.
2. Ask what risk factors predispose communities to trachoma. Write their responses on the flip chart or whiteboard.
3. Ask what the clinical signs of trachoma are, again recording responses.
4. Ask how trachoma can be controlled and eliminated as a public health problem. If the SAFE strategy is mentioned, ask what each component is, noting the responses.
5. Present PowerPoint referring to the trainees' responses where appropriate, refining the information elicited from the trainees and correcting as necessary.
6. Ask for questions.

K. Surveys and sampling
Module summary: This module provides an overview of conducting a trachoma survey and begins to focus the information from the previous module into the immediate task at hand, i.e. surveys. Emphasis will be put upon selection of households and standardisation of graders.

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 randomness 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 the graders to introduce the team at the household and to obtain consent for the examinations and interview. A grader will be talking to the household head while the recorder is taking the GPS reading (which may take up to five minutes).

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 interview and examine household members.

4. Through discussion with trainees, discuss what is meant by a “household” locally. For example: “a unique doorway for people who sleep in the same house”; “people who have slept in the house in the last month”; “people who usually share their meals together”. Be sure to be as inclusive as possible. For the purpose of the survey, an adult member of the household is usually defined as a person over 15 years of age, though this may be adjusted according to national requirements.

5. Determine if there is anyone over 15 years present at the household in order to obtain consent. If there is no one over 15 present (or no household members are present), consent cannot be obtained. If there is one person over age 15 present, the first step is to obtain consent for the rest of the survey.

6. 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 – a decision will be made at country level regarding treatment type
     - People with trichiasis will be offered referral for surgery
   - You have the right to refuse to participate.
   - You will have access to the same services regardless of whether or not you decide to participate.

You may show PowerPoint $L$ 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 8, 1 for each trainee), laminated sheets with photos of water source and sanitation facility categories (Annexes 6 and 7), 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 $M$. 

Section A: Household questionnaire

The details of the household questions are as follows:

<table>
<thead>
<tr>
<th>Date</th>
<th>Day/month/year that the examination is done (this will be automatically entered by the Android)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recorder</td>
<td>A numeric code unique to you (provided by the supervisor)</td>
</tr>
<tr>
<td>1. Country</td>
<td>This will be automatically entered by the Android.</td>
</tr>
<tr>
<td>2. Evaluation Unit</td>
<td>A five-digit numeric code (provided by the supervisor)</td>
</tr>
<tr>
<td>3. Cluster</td>
<td>A two-digit numeric code (provided by the supervisor)</td>
</tr>
<tr>
<td>4. Household</td>
<td>Write the full name of the head of the household (in order to be able to return if any family members are missing)</td>
</tr>
<tr>
<td>G1-G4. GPS</td>
<td>These fields will be automatically entered by the Android. The Android may take several minutes to do this</td>
</tr>
</tbody>
</table>

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). This may be a connection to the respondent’s own household, or to someone else’s household.

**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.
W1. In the dry season, what is the main source of drinking-water for members of your household? 

(Continued)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>03. Public tap or standpipe</strong> 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.</td>
<td></td>
</tr>
<tr>
<td><strong>04. Tubewell or borehole</strong> is a deep hole that has been driven, bored or drilled, with the purpose of reaching groundwater supplies. Boreholes/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/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.</td>
<td></td>
</tr>
<tr>
<td><strong>05. Protected dug well</strong> 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.</td>
<td></td>
</tr>
<tr>
<td><strong>06. Unprotected dug well.</strong> This is a dug well for which one or both of the following statements is true:</td>
<td></td>
</tr>
<tr>
<td>1) The well is not protected from runoff water; 2) the well is not protected from bird droppings and animals.</td>
<td></td>
</tr>
<tr>
<td><strong>07. Protected spring.</strong> 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.</td>
<td></td>
</tr>
<tr>
<td><strong>08. Unprotected spring.</strong> 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”.</td>
<td></td>
</tr>
<tr>
<td><strong>09. Rainwater collection</strong> 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.</td>
<td></td>
</tr>
<tr>
<td><strong>10. Water vendor</strong> 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.</td>
<td></td>
</tr>
<tr>
<td><strong>11. Surface water</strong> is water located above ground and includes rivers, dams, lakes, ponds, streams, canals, and irrigation channels.</td>
<td></td>
</tr>
<tr>
<td><strong>99. Other:</strong> Any other source of water not included in the above, including bottled water.</td>
<td></td>
</tr>
</tbody>
</table>
### 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. Where do you and other adults in the household usually defecate?

<table>
<thead>
<tr>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. shared or public latrine</td>
</tr>
<tr>
<td>2. private latrine</td>
</tr>
<tr>
<td>3. no structure, outside near the house</td>
</tr>
<tr>
<td>4. no structure, in the bush or field</td>
</tr>
<tr>
<td>9. other</td>
</tr>
</tbody>
</table>

**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 near the house**: This refers to defecation in the yard or plot, the area directly surrounding the home.

4. **No structure, in the bush or field**: This refers to open defecation anywhere outside of the immediate yard/plot.

9. **Other**: This refers to any other site of regular defecation. This may include “chamber pots” or buckets, or in bodies of surface water.

S2. Ask to see the latrine/toilet.

**Observation**: What kind of toilet facility do the adults in the household use?

<table>
<thead>
<tr>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 = Flush/pour flush to piped sewer system</td>
</tr>
<tr>
<td>02 = Flush/pour flush to septic tank</td>
</tr>
<tr>
<td>03 = Flush/pour flush to pit latrine</td>
</tr>
<tr>
<td>04 = Flush/pour flush to open drains</td>
</tr>
<tr>
<td>05 = Flush/pour flush to unknown place</td>
</tr>
<tr>
<td>06 = Ventilated improved pit latrine (VIP)</td>
</tr>
<tr>
<td>07 = Pit latrine with slab</td>
</tr>
<tr>
<td>08 = Pit latrine without slab/open pit</td>
</tr>
<tr>
<td>09 = Composting toilet</td>
</tr>
<tr>
<td>10 = Bucket</td>
</tr>
<tr>
<td>11 = Hanging toilet/hanging latrine</td>
</tr>
<tr>
<td>12 = No facilities or bush or field</td>
</tr>
<tr>
<td>99 = Other (specify)</td>
</tr>
</tbody>
</table>

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.
S2. 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.
S2. 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?  
**Responses**  
0 = No  
1 = Yes  
5 = Not applicable (no latrine/toilet)  

**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?  
**Responses**  
0 = No  
1 = Yes  
5 = Not applicable (no handwashing facility)  

**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, 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 the visit, is soap or ash available at the handwashing facility?  
**Responses**  
0 = No  
1 = Yes  
5 = Not applicable (no handwashing facility)  

**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 ash is present at the handwashing facility at the time of observation. Soap refers to any bar soap, detergent, liquid soap mixture, or ash, that can be used to clean hands and has some antibacterial properties.
**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 will be asked to take part in the survey by being examined, providing informed consent is provided. Children below the age of one year are not 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. The grader will examine the right eye first, then the left eye. The recorder will need to record each of TT, TF, and TI for the right eye as absent (0) or present (1), then each of TT, TF and TI for the left eye as absent (0) or present (1). The other signs of the WHO simplified trachoma grading system (TS and CO) are not recorded. The grader should tell the recorder “absent” or “present” for each sign. Do not leave any questions blank. If the grader does not specify their findings for one or more signs, they must be reminded to do so to ensure that the form is filled in completely.

<table>
<thead>
<tr>
<th>ID number</th>
<th>This will be automatically entered by the Android</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>It is not necessary to include the full name. The goal is to be able identify who has been examined in each household.</td>
</tr>
<tr>
<td>Sex</td>
<td>1 = male; 2 = female</td>
</tr>
<tr>
<td>Age</td>
<td>In years at last birthday (range is 1 to 100)</td>
</tr>
<tr>
<td>Examined</td>
<td>Yes (with consent) will enable further information to be collected. If not examined, record why</td>
</tr>
<tr>
<td>TT (right eye)</td>
<td></td>
</tr>
<tr>
<td>TF (right eye)</td>
<td></td>
</tr>
<tr>
<td>TI (right eye)</td>
<td></td>
</tr>
<tr>
<td>TT (left eye)</td>
<td></td>
</tr>
<tr>
<td>TF (left eye)</td>
<td></td>
</tr>
<tr>
<td>TI (left eye)</td>
<td></td>
</tr>
</tbody>
</table>

Above Genemo Abdela is one of the many surveyors responsible for examining almost 600,000 people in Ethiopia.
N. Examination techniques 2 (graders only)

Module summary: This module continues development of examination techniques for graders, focusing on how to recognise TT, 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. Know how to examine for trichiasis.
2. Know how to hold a child for examination.
3. Know how to treat someone who has been found with TF or TI.
4. Know procedures for referring patients and whether they will have to pay.

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

Location: classroom

Materials: computer, projector, PowerPoint N, referral forms

Training procedure:
1. Ask a participant to describe trichiasis (one or more lashes touching the globe, or evidence of recent removal of in-turned eyelashes). Make sure that trainees have a full understanding of the definition of TT.
2. Discuss examination for TT. Show slide 2. TT is graded as present or absent, separately for each eye.
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 3, 4 and 5 show some examples of TT.
4. Slide 6 shows how to examine for TF and TI, both in an older child or adult, and in a child who needs to be restrained. Practice the techniques of restraining a child.
5. 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 you are very gentle. This is often much less traumatic than deliberately waking them up for examination.
6. Slide 7 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 TT.
7. Finally, (slide 8 is a reminder) decide on what referral from 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. If necessary, discuss the local requirements for putting a stamp on completed referral forms.

O. Using the Androids (recorders only)

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

Learning objectives: By the end of this session the trainees will be able to:
1. Demonstrate how to turn the device on and off.
2. Demonstrate the use of “Home” “Menu” and “Back” buttons.
3. Demonstrate how to enter data on households and individuals.
4. Demonstrate how to upload data.

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

Location: classroom

Materials: one Android for each trainee or pair of trainees, Recorder IDs

Training procedure:
1. Distribute an Android to each trainee.
2. Give each trainee their Recorder ID.
3. Explain that during the surveys, the Android must be checked **every night** to make sure that the data have been sent, then **switched off** and **charged through the surge protector**. Before leaving for the field in the morning, recorders must switch the Android on briefly to make sure that it is fully charged, then switch it off until it is needed.

4. 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.

5. Demonstrate how to turn the Android on and off.

6. Ask trainees to turn on their Android.

7. Ensure all trainees are able to “unlock” the Android, turn it off, and turn it on again.

8. Explain that it is only possible to turn off the Android when it is unlocked.

9. Ask trainees to check whether they are connected to the mobile network.

10. Ask trainees to open the Links system.

11. A menu will appear with the following items:

   - Fill blank form
   - Send finalised form
   - See Form stats
   - Open Project Web Site

12. Explain briefly what each of these items refers to.

13. Ask trainees to select Fill Blank Form by touching that menu item.

14. Point out the keyboard keys: del, numbers, return.

15. Another menu appears with the following four options:

   - `<Project name> CLUSTER (where “<Project name>” is the name of your country, region [in Ethiopia] or state [Nigeria])`
   - `<Project name> HOUSEHOLD`
   - `<Project name> RESIDENT`
   - `<Project name> ABSENT RETURN`

16. Explain to the trainees what each item is.

17. Ask trainees to choose `<Project name> CLUSTER`.

18. 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).

19. Ask the trainees to go forward.

20. The next screen asks the recorder to enter Recorder ID (and the keyboard immediately appears).

21. Demonstrate typing on the keyboard. Ask a trainee to demonstrate how to find numbers on the keyboard.

22. Take the trainees through completion of each of the six forms, in the order CLUSTER, HOUSEHOLD, RESIDENT, ABSENT RETURN, ERROR REPORT and CLUSTER COMPLETE, encouraging questions. During training, the Evaluation Unit code used should be 00000, and the Cluster code used should be 000 or 0000.

23. 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 a few minutes. If the family does not consent, the recorder should click the back arrow, and select “Delete Form and Exit”.

24. 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.

25. 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.

26. Instruct trainees that the ABSENT RETURN survey is only for enrolling individuals who are both previously entered as being “absent” on the Android in use and currently available for examination.

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 the grader so that 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 10. All the recorder trainees can do this at the same time. It should be done outside so that GPS data can be easily collected. Provide feedback. 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 grader and recorder 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 as teams.

Duration: 90 minutes (day 4, 1030-1200)
Location: classroom
Materials: all materials needed for 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. No one over 15 years of age is present.
   b. No one is sure of the age of the grandmother.
   c. Mother wants children between 11-15 years of age to be examined. (If the household is included in the sample, any household resident above one
year of age can be examined, with their data entered into the Android. The database will calculate the TF prevalence in 1-9 year-olds and the TT prevalence in those aged 15 years and older.

d. Mother says there is a latrine but you cannot see one. (Ask her to take you to see it.)

e. The son who is responding 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.)

f. 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.)

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

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

i. The 8 year old is not present in the household, but will be back later. (Come back later.)

j. The 14 year old is not present in the household but will be back later. (No need to return specifically to examine the 14 year old.)

k. The 10 year old is not present in the household but will be back later. (No need to return specifically to examine the 10 year old.)

l. The 11 year old is not present in the household but will be back later. (No need to return specifically to examine the 11 year old.)

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 in a notebook of 1-9 year-olds who are absent from the household at the time of the first visit, with information that will make it easy to find their households again.”

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 view the sanitation and water facilities to see if they agree on how to use the various options on the form.

Learning objective: Demonstrate successful practice of the procedures.

Duration: the whole of the afternoon of day 4

Location: field

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

Handouts: aide memoire for Graders (Annex 4) and aide memoir for Recorders (Annex 5). It may be useful to laminate each copy.

Training procedure:

1. Remind teams that it is critical that they work efficiently, not wasting time at any household. 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.

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 from a list 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. At the end of the session, discuss as a group the problems that were encountered, including how to categorise specific water and sanitation situations.

7. 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.

---

**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. 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

4. Go through the Aide Memoire for Graders (Annex 4) and Aide Memoire for Recorders (Annex 5).”

5. A graduation ceremony may be held if desired.

6. Distribute first round of per diems.

---

*Above* Children stand next to a tree in Oromia, Ethiopia, where teams are completing baseline trachoma surveys in the year 2013.
After training finishes: clearing data from the Androids

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

A. Click the menu button from the main LINKS screen  
B. Select Admin Login and enter 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.

---

Above Recorder, Adaneeh Baca, stands next to a latrine to collect household-level data, Ethiopia.
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 the Global Trachoma Mapping Project, 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.

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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.

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Annex 4

Sample aide memoire for Graders

Golden rules
1. Remember that you’re doing an important job, and you’re doing it extremely well!
2. Community residents are our partners in this work: please treat them with respect.
3. Always clean your hands or change your gloves between subjects.
4. If you’re not sure of something, if something goes wrong, or when you need any kind of help, please contact your field supervisor.

Other things to remember
You must aim to finish the whole cluster in one day.

A “household” is a person living alone, or a group of people who share one or more connected premises and who usually take their food from the same pot. (“Usually” implies a majority of nights per week.) To be considered a “resident” of the household, an individual must have been part of the household for the previous month or more.

In each household, examine every consenting resident aged one year or more.

Individuals aged 15 years and over should give verbal consent for themselves if they are competent to do so. Individuals younger than 15 years need verbal consent given by their parent or guardian.

For consent to be valid, the person giving consent must understand:
• what will happen as part of the survey;
• that they have the right to refuse consent; and
• that access to services will be the same regardless of whether or not the individual participates.

Use ×2.5 magnification loupes, and examine in sunlight or using a torch.

Position the subject appropriately. Ensure young children are held gently but firmly.

For each subject examined, examine the right eye first, then the left eye.

Make sure the recorder can hear your findings clearly.

Any subject with TF and/or TI should be offered two tubes of tetracycline eye ointment with instructions to apply it to both eyes twice daily for six weeks. Any subject with trichiasis should be referred to the nearest facility offering trichiasis surgery, using the referral form in your bag. Any subject with any other medical problem should be referred to the nearest appropriate medical facility.

At the end of the day, try to find any 1-9 year olds who were absent from their household at the time of the first visit. You only have to make one return visit to any household.
Annex 5 Sample aide memoire for Recorders

Golden rules
1. Remember that you’re doing an important job, and you’re doing it extremely well!
2. Community residents are our partners in this work: please treat them with respect.
3. Charge the Android every night.
4. If you’re not sure of something, if something goes wrong, or when you need any kind of help, please contact your field supervisor.

Other things to remember
You must aim to finish the whole cluster in one day.

At any household, start capturing GPS data as soon as you’ve determined that at least one resident aged 15 or more is home. As soon as the accuracy shown is <10m, press the small “Record Location” button below the “Loading Location” box.

A “household” is a person living alone, or a group of people who share one or more connected premises and who usually take their food from the same pot. (“Usually” implies a majority of nights per week.) To be considered a “resident” of the household, an individual must have been part of the household for the previous month or more.

In each household, record the name, sex and age of every resident aged one year or more.

Make sure you can hear the Grader’s findings clearly. If you’re not sure of the findings, ask.

At the end of the day, try to find any 1-9 year-olds who were absent from their household at the time of the first visit. You only have to make one return visit to any household.

The ABSENT RETURN survey is only for enrolling individuals who are both previously entered as being “absent” (on the Android in use) and currently available for examination.

Once you are sure you have finished collecting data for a cluster, fill out a CLUSTER COMPLETE survey for that cluster.

If you make any mistakes entering data that you are unable to correct, don’t worry - just fill out an ERROR REPORT survey. You can also use the ERROR REPORT survey to communicate any other urgent information to GTMP support team.

The most common errors made are (1) Entering the wrong EU or cluster code; (2) Not entering a GPS reading; and (3) Incorrectly entering clinical data. Being careful will save you having to spend time later answering queries from the GTMP Data Manager.
Annex 6 Photos of water source categories

Tubewell/borehole

Protected dug well

Unprotected dug well

Protected spring

Unprotected spring
Rainwater collection

Surface water (e.g. river, dam, lake, canal)
Annex 7 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.

**Hanging toilet/hanging latrine**

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.
## Annex 8 Survey form

**[GTMP] Trachoma baseline prevalence survey**  

### (A) Household questionnaire

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<th>Section 1: Identifying information</th>
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<td>2 Evaluation Unit [put 5-digit code in boxes]</td>
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<td>3 Cluster [put 2-digit, 3-digit, or 4-digit code in boxes]</td>
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<td>4 Household [write name of household head]</td>
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<td>G2 Longitude (E)</td>
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<td>G3 Elevation (metres)</td>
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<td>G4 Accuracy (metres)</td>
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<th>Section 3: Water, sanitation and hygiene questions</th>
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| 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) | 01  |
| 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 | 1 |
| 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 | Where do you and other adults in the household usually defecate? | 1 = Shared or public latrine  
2 = Private latrine  
3 = No structure, outside near the house  
4 = No structure, in the bush or field  
9 = Other |
| S2 | 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  
5 = Not applicable (no latrine/toilet) |
| H2 | Observation: At the time of the visit, is water available at the handwashing facility? | 0 = No  
1 = Yes  
5 = Not applicable (no handwashing facility) |
| H3 | Observation: At the time of the visit, is soap or ash available at the handwashing facility? | 0 = No  
1 = Yes  
5 = Not applicable (no handwashing facility) |
### (B) Census and examination findings

List all household residents. Ask for consent to examine all 1-9 year-olds and all those aged ≥15 years. Mop-up should focus on 1-9 year-olds.

<table>
<thead>
<tr>
<th>ID number</th>
<th>Name</th>
<th>Sex</th>
<th>Age (years)</th>
<th>Examined?</th>
<th>Right Eye</th>
<th>Left Eye</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>TI</td>
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</tr>
</tbody>
</table>

- **Sex**: 1 = M, 2 = F
- **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
Annex 9 Referral form

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 10 Data set for recorder reliability test

For the trainer to view the exam online:
1. Use a computer with internet access
2. Go to the project website: https://linkssystem.org/trachoma/login.php
3. Enter your username and password
4. Assign a recorder ID on the website for each recorder
5. Administer the exam below
6. Go to https://linkssystem.org/trachoma/recordertest to see which of the recorders has passed

Exam

Your Recorder ID is [ ]. Today, you are going to collect data in the EU 00000, cluster 000. You are going to enroll two households. These households have the following resident family members:

Household 1
Name
Main source of drinking water and for washing faces: borehole in the yard of the household
No structure for defecation. People defecate near the house in an open pit and there is nowhere to wash hands

1. Name 1 5 Male They consent TF, TT, TI Not present in either right or left eye
2. Name 2 12 Female They are absent They will be home after 5pm tomorrow
3. Name 3 19 Male They are absent They will be home after 5pm tomorrow
4. Name 4 52 Female They consent TT is present in both eyes, TF, TI is absent in both eyes
5. Name 5 54 Male They refuse to participate

Household 2
Name
Main source of drinking water and for washing: unprotected dug well, less than 30 min walking
FACES are washed with water at the same source
The household has its own latrine: a “pour flush to open drain” construction; there is a bucket (containing water) and soap to wash hands, immediately outside the latrine

1. Name 1 1 Female They consent They have TF in both eyes, no TI, no TT
2. Name 2 3 Male They consent Right eye: TF present, TI present, no TT; left eye: TF present, TI absent, TT absent
3. Name 3 7 Female They are absent They are at school, and will be home after 4pm today
4. Name 4 22 Female They consent TT, TF, TI are absent in both eyes
5. Name 5 31 Male They consent TT is present in left eye only, TF, TI is absent in both eyes
Questions

1. Demonstrate that you can identify the various water sources
2. For household 1, would you return to collect information from the absent girl?
3. What would you do if you finished adding person #5 to household 2 and then find out another person lives in the house?
4. If you return to household 2 to enroll person 3 (who was absent at the time of the first visit) and they are still absent, would you use the ABSENT RETURN survey?
5. How will you keep track of the absent individuals?

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. No, 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.
Bibliography


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King J, Ngondi J, Emerson P. The Carter Center trachoma survey training presentations [unpublished material].


Rajak S. Photographs of trichiasis [unpublished material].


“Blinding trachoma has a devastating personal and economic impact on people living in some of the world’s poorest countries so the UK government’s support is vital. By working with a group of NGOs with trachoma expertise the consortium is bringing together the best available resources for planning, implementation and research to achieve maximum impact with our mapping. The end of trachoma is in sight.”

Dr Danny Haddad, Director of the International Trachoma Initiative (ITI)