**6. Photo Taking Implementation Guidelines**

This document is one component of a larger resource package titled *Photographing Eyelids Before and After Trachomatous Trichiasis (TT) Surgery*.

This document outlines key logistical and operational considerations for national programs and partners who choose to pilot or integrate photo taking as part of their TT surgical program. These considerations are based on key lessons learned during photo taking activities piloted in 2018-2019 under the Morbidity Management and Disability Prevention (MMDP) Project, managed by Helen Keller International and funded by the United States Agency for International Development.

*Planning Who Should Take Photos and When*

* **Selecting who to train to take photos will depend on the context in which surgeries are conducted and the resources available.** Program staff and surgeons will likely prefer that an additional team member be trained in taking photos since their current workload is often already quite heavy. Photographers do not need to be surgeons, as even non-technical staff or supervisors can be trained in the mechanics of how to take a good photo with proper lighting, angle,  
  focus, etc.
* The **ideal moments** to take photos are: pre-op, immediate post-op (Day 0 while the person is still on the table), Day 1 (if an adjustment is made, ideally a photo will be taken both before and after the surgeon adjusts), Day 7-14, and 3-6 months. However, it may not be feasible for programs to take photos at all of these time points given logistical, budget, time, and/or staff constraints. **The “essential” or minimum recommended time points for taking photos of operated eyelids are: pre-op, Day 0 post-op and/or Day 1 post-op, and 3-6 months.**
* If photos can only be taken at either Day 0 **or** Day 1, Day 0 is preferable for the following reasons:
  + In support of the goal of using the photos to identify any adjustments or corrections the surgeon should make, identifying these opportunities at Day 0 is a more opportune moment in that 1) the person is still on the table and already anesthetized and 2) it gives the surgeon an additional perspective on their work in real time.
  + The swelling that often occurs on Day 1 may somewhat distort the eyelid characteristics, making it harder to analyze the photo, particularly when looking at incision characteristics.
    - However, certain characteristics in the operated eyelid not immediately noticeable on Day 0 (such as issues due to suture tension) may appear on Day 1.
  + Staff are already present for taking pre-op pictures that day and have already developed a process for taking photos at the surgery site.
* Taking immediate post-operative photos on Day 0 may cause disruptions to the surgical flow. It is important to arrange the surgical site and organize patient flow in a way that is designed specifically to facilitate photo taking but does not hinder surgeons and other staff in their work. This includes carefully planning how surgeons will be involved in the photo taking process and—if they are not taking the photos themselves—to find ways for them to support and help shape the process in order to increase their buy-in and reduce the potential for frustration at the surgery site. The exact set up of the room will depend on the surgery site location and should be done in consultation with the operating surgeon.
* **Implementers should be aware that photo taking may add time to the surgical process, though it is difficult to estimate how much.** How much time it takes to photograph an eye is highly dependent on multiple factors: staffing (e.g., whether staff are added to the team specifically to take photos or staff are taking photos on top of their existing responsibilities), the environment (e.g., lighting at site), the person (e.g., lateral trichiatic eyelashes can be harder to capture; more severe TT cases often have difficulty keeping their eyes open long enough for a photo), and the operation (e.g., how much blood the surgeon has to clean before the post-operative photo can be taken).
* **The proportion of operated cases that should be photographed will depend on the planned use of the photos and the scale of programming.** If the goal is to use post-operative photos to prioritize cases for follow-up during the critical 3-6 month window, photographing 100% of operated cases would likely be necessary. However, photographing a large proportion of operated cases may be more resource-intensive in programs with high surgical output as compared to the surgical output of programs in the “last mile” of trachoma elimination.

*Planning Training of Photographers*

* **As with any type of cascade training, there is a risk of quality of instruction deteriorating when an initial cadre of staff trained to take photos then train additional photo takers**. Ensuring the initial cadre of staff have demonstrated their ability to take a high proportion of usable photos and/or have met pre-established criteria following the training may help ensure quality, especially since trainees’ comfort and familiarity with smartphones can vary dramatically.
* **It may be necessary to remind photo takers that cameras built into phones are capable of taking high-quality pictures with proper operation** (and are even better than certain point-and-shoot cameras). During initial implementation, staff may suggest that different cameras would result in images of higher quality, particularly if provided feedback that the quality of photos needs to be improved. Having examples on hand of high-quality images taken with the exact equipment provided may support organizers in messaging that taking high-quality photos is feasible with appropriate training and practice.

*Transmitting, Organizing, and Analyzing Photos*

* **A useful first step in analyzing photos is to first classify each photo on a binary scale of *usable* or *not usable*.** Photos classified as *usable* in a programmatic setting are of sufficient image quality that they capture some distinguishable characteristics that reveal information about the quality of surgery provided and, therefore, can be used by technical supervisors and operating surgeons to review surgical quality and discuss potential surgical outcomes.
  + A key part of planning is thinking through who has the technical expertise and availability to identify the characteristics in the photo that reveal information about the quality of surgery, and in turn make the photo *usable*, is. Once suitable individuals are identified, it is beneficial if they are also able to 1) train other program staff to classify photos as *usable* or *not usable* and 2) provide technical feedback in advance of when technical supervisors and surgeons review the photos. This means providing technical feedback that can be shared with technical supervisors after they review surgeons’ photo portfolios to help ensure a high quality of discussion with surgeons.
* **The “back-end” process and timeline for transmitting, storing, organizing, classifying, and tracking photos should be planned before beginning activities.** Decisions should consider the number of photos that will be obtained. Choosing whether to manage the photos manually, integrate photo taking with existing applications, or create a simple application for taking and tracking photos will dramatically influence the speed with which photos can be analyzed and used. Internet/network connectivity should also be considered when planning,
* **Once photos are classified, it is highly recommended to organize and file them in a way that facilitates quick compilation of each surgeon’s usable photos to date.** Having usable photos organized by surgeon will help when organizing surgeons and technical supervisor review of photos, as those managing the photos can quickly share with in-country organizers the photos that are needed for the process outlined in **5a. Facilitator’s Guide for Reviewing Photos with Forms** *and* **5b. Presentation for Reviewing Photos**. We suggest having one folder per surgeon, with subfolders for each operated case below this. Use of mobile data collection tools (such as ODK forms) could facilitate quick and efficient organization and review of photos.

*Reviewing Photos (using* **5a. Facilitator’s Guide for Reviewing Photos with Forms** *and* **5b. Presentation for Reviewing Photos***)*

* **Conducting a full walkthrough of all materials with the facilitators in advance of the meeting (either virtually or in person) helps ensure the facilitators are well versed in the structure and processes** for systematically reviewing the photos, providing feedback to surgeons, and using the feedback to identify plans for capacity strengthening. The walkthrough is also invaluable in orienting facilitators and in-country organizers to the multiple supporting materials that will be used (i.e., the Facilitator’s Guide and accompanying forms, along with a PowerPoint presentation). Discussing who completes each form and when can help ensure equal understanding among all facilitators and organizers. The MMDP Project found it useful to allocate a minimum of two full hours for a walkthrough.
* **Having participants fill out the *Questionnaire on Photo Taking Utility, Feasibility, and Quality* prior to plenary discussion helps ensure that individual feedback – including differing opinions – is captured.** As attendees may be hesitant to share all of their opinions publicly, especially once the group appears to be moving towards consensus, administering anonymized questionnaires can help ensure a more representative reporting of perspectives.
* **Given the busy schedules of most programs, looking for ways to integrate photo review into existing touchpoints/interactions between supervisors and surgeons can save time and costs.** For example, if surgeons and supervisors are already coming together for a regional refresher training, programs could consider adding an additional day (or two) to the training to allow surgeons and technical supervisors to meet one-on-one and review a set of photos taken of the surgeon’s past surgeries. This interaction between supervisors and surgeons could also be organized as a stand-alone activity, such as a separate meeting bringing a large number of surgeons together from geographically disperse locations.
* **When the activity is first implemented, it is important to provide additional time in advance of the photo review that is dedicated specifically for technical supervisors to thoroughly review all photos using the standardized forms.** Building in this time for preparation will help ensure fruitful one-on-one discussion between supervisor and surgeon during the photo review process outlined in **5a. Facilitator’s Guide for Reviewing Photos with Forms** *and* **5b. Presentation for Reviewing Photos**. As supervisors become more familiar with the forms and more experienced reviewing photos, the supervisor may be able to shift from preparing in advance to conducting a real-time review of photos while sitting one-on-one with the surgeon.

*Budget Considerations*

* **The key costs associated with implementing photo taking are those of the camera phones, the training of staff in how to take photos, the organizing of surgeons and technical supervisor photo reviews, and the staff level of effort required to organize and review photos.**
  + The total cost of camera phones will depend on the number of phones needed.
  + The costs of training and photo review sessions is highly dependent on whether they are stand-alone activities or can be integrated into existing trainings or trips.
  + Using mobile data collection tools (such as ODK forms) could minimize the staff level of effort required to organize and review photos.
  + In the early stages of implementation when newly trained photographers are just beginning to take photos, budgeting and planning for close supervision and refresher trainings as needed can help increase the proportion of high-quality photos generated. Having supervisors present to provide real-time guidance and feedback on angle, lighting, and focus can help remind photo takers of the characteristics of a high-quality photo. The presence of a supervisor or colleague also provides photo takers with the opportunity to “check” the quality of photos or brainstorm with another person the best positioning of a patient for the photo.