Homes of Promise UGANDA

simulated ocular surgery

Glaucoma Surgical Simulation Training

Mbarara, Uganda

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Blindness

- 1% of the population in sub-Saharan Africa are blind
- 10-15% of this is due to glaucoma

- In a population of 1 million:
  - 1,000 are blind in both eyes from glaucoma, and
  - Perhaps 2,000 to 5,000 have advanced glaucoma, and may need surgical treatment

- In many areas of sub-Saharan Africa there is one eye surgeon for a million people, however not all are comfortable performing glaucoma surgery

Need

- There is a need to train eye surgeons in surgical skills
  - Safely
    - Not only relying on patients
  - Efficiently
    - In a short time
    - With a means for trainees to engage in sustained deliberate practice

Training

- Post-graduate ophthalmic training and advanced sub-specialist training fellowships are well established in SSA
- This pilot aimed at using simulation to develop a safe and efficient intense glaucoma surgery training course
- It was not designed to replace current training, but to augment it in a very focused way

The Training Pilot

We wanted to pilot an idea:

- To develop an intense and focused surgical training course:
  - Using simulation
  - Using sound educational principles
  - For a very specific surgical skill (glaucoma surgery)
  - And obtain as much feedback as possible upon which to refine the course to make it as effective, sustainable & affordable as possible

Pilot Training Programme

- Funded by Homes of Promise

- Held in
  Mbarara, Uganda

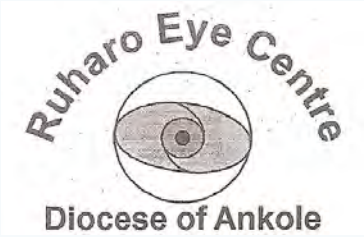
- Trainees from
  - MURHEC
  - REC

Input from

- Dr John Onyango
- Dr Freddy Mbumba
- Dr Jocelyn Cherry

- Mbarara University Referral Hospital & Eye Centre
- Ruharo Eye Centre
- Imperial College London
- Simulated Ocular Surgery

www.simulatedocularsurgery.com



What was needed?

- Equipment
- Consumables
- Educational Materials
- Course Design

Equipment & Supplies

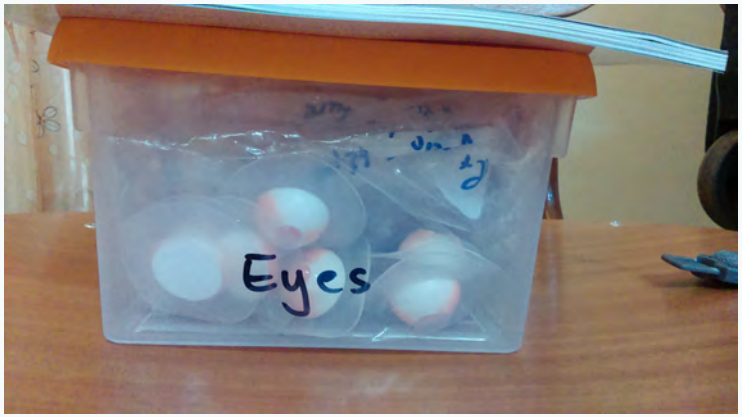
- Surgical instruments
- Artificial eyes
- Books
- Recording equipment

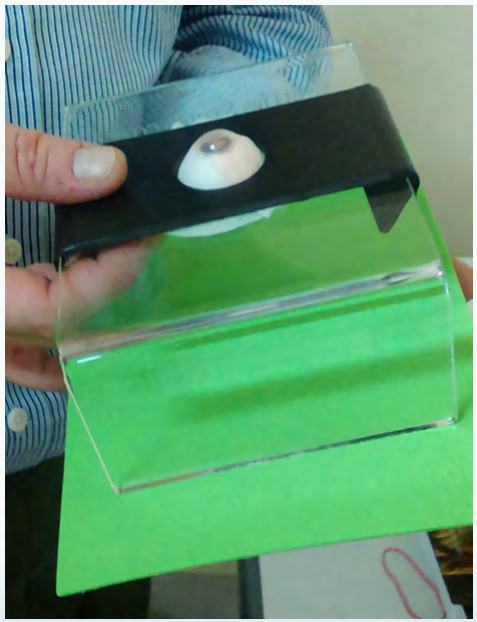
Surgical Instruments

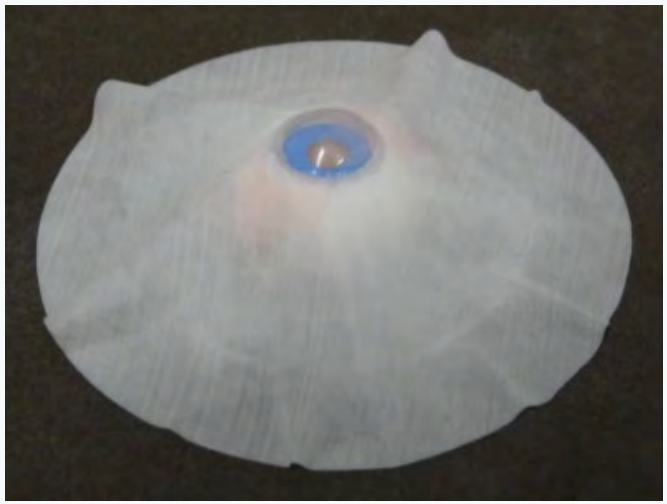
- Each trainee was supplied with a set of surgical instruments:
  - Needle holders
  - Forceps
  - Suture tyers
  - Scissors
  - Kelly punch
  - Crescent blades
  - 30 degree blades
  - Syringes & canulae
  - Sutures

Artificial Eyes

Phillips Studio eye







Recording Equipment

- GoPro Hero video cameras
- Compact digital cameras
- iPhone 4
- Samsung smart phone

Educational Materials

- Books

- PowerPoint presentations
- Specifically developed assessment tools
  - Ophthalmic Simulation Surgical Competency Assessment Rubrics (OSSCARs)

Teaching Methods

- Didactic teaching (minimal)
- Group discussions
- Buzz groups
- Practical instruction
- Sustained deliberate practice
- Recording
- Feedback
- Assessment

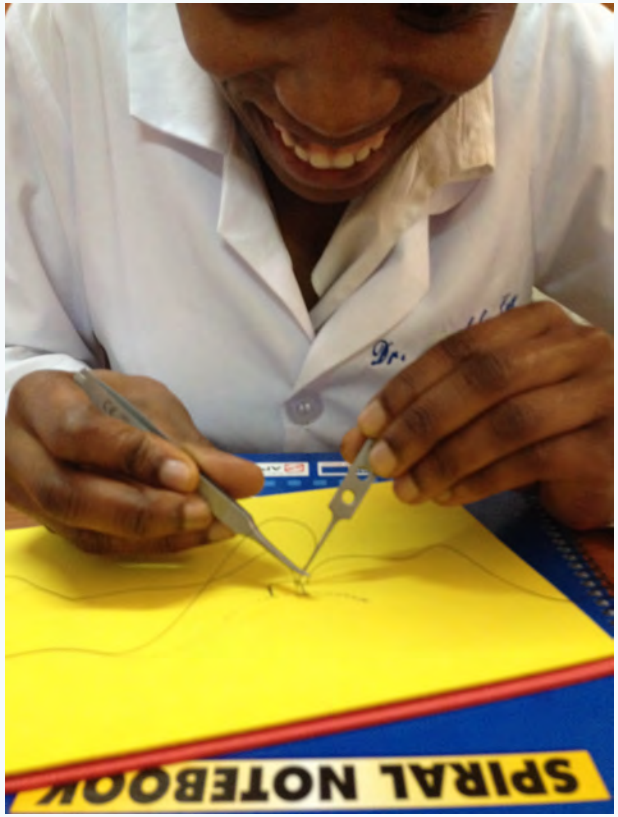
Didactic Teaching (Lectures)

Didactic Teaching (Lectures)

Group Discussions & Buzz Groups

Practical Instruction

- Practicing ‘releasable sutures’ on foam



Practical Instruction

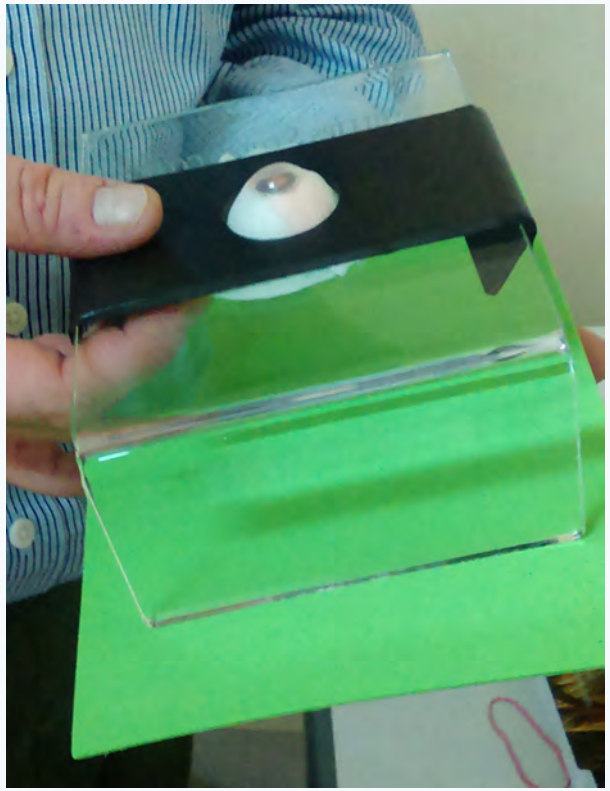
- Learning and practicing suturing on foam and cloth

Sustained Deliberate Practice

Enabling the guided practice of a surgical technique: again, and again, and again…

Practice on artificial eyes

Practice on artificial eyes



What the course aimed to teach

- Background
- Before surgery
- Surgical procedure
- After surgery
- Teaching and learning

What was the feedback from trainees on the course?

- 1 to 5 score on each aspect of the course.

- What was good?
- What could be improved?
- Other comments

Feedback on Specific Components
(score out of 5)

	John	1	2	3	4	Lloyd	Bosco
Burden of disease	5	5	5	4	5	4	4
Introduction to simulation	5	5	5	4	5	5	5
Screening discussion	5	5	5	5	5	4	4
Quiz	5	5		5	5	4	4
Stages	5	5		5	5	4	4
Surgical practical on foam	5	5		5	5	5	5
Complications	5	4		5	5	5	5
Experience of using model eyes	5	5		5	5	5	5

Feedback: ‘What was good?’

- Organisation & the training
- Friendly approach
- Translating theory into practical/surgical training
- The training was good generally, more especially the simulation section: this was very much interesting
- Introductory discussions were very interesting, eye-openers on burden of disease
- Enjoyed mostly the practical sessions about putting releasable sutures and conjunctival suturing
- The facilitation was free and open, no tension and pressure of an actual course
- The practical sessions of suturing
- Video demonstrations
- The simulation in surgical training
- Direct supervision
- Very interactive
- Making instruments available to participants increased the frequency of practice of surgical skills
- Making presentations, video clips and texts available for future reference
- Very interactive among trainees and trainers

Feedback: ‘What could be improved?’

- More time on practical component especially on the simulated trabeculectomy
- The simulated trabeculectomy should be done under the microscope
- Practical part of the simulation (trabeculectomy & conjunctival suturing) should be given enough time, and be done under the microscope
- Next time we can have some sessions under the microscope
- We can have training of other trainers to cascade these courses: e.g. in August when we have 6 new residents
- More time needed to practice other skills like cataract surgery
- Send the learning material in advance (lectures, videos…) to allocate more time on practical session
- Early use of microscopes / loupes to improve coordination skills More time for practice (x2 weeks) & use of microscope/loupes for all participants

Other feedback comments

- This is the way to go with surgical training.
- Next time include more young ophthalmologists who still have a lot of fear in performing trabeculectomy
- Different surgical teaching modules to be considered in other areas e.g. cataract
- Many thanks for this, and looking forward to other simulation training on other aspects such as cataract
- Fruitful training, thank you sharing your knowledge and skills with us
- Training the students and seniors in the same group (team) is interesting as juniors get experience from seniors
- This session was extremely good as it has converted a once feared surgery into an enjoyable one
- Stepwise protocol for management of complications such as over-filtration/leakage or poor filtration has given us more confidence to do this surgery (better position to cope with complications)
- Award of certificate was very good initiative
- Thank you for a work well done, and I hope to be part of many more (if possible)
- Good start/exposure to trab simulation

Certificates

Main Outcomes

- 9 Registrars and two new Consultants trained and practiced in releasable sutures and conjunctival suturing.
- Subsequent confidence and successful performance of glaucoma surgery in theatre (under senior supervision) of 4 senior Registrars.
- Results of this pilot used in detail for Masters Thesis (MEd Surgical Education, Imperial College London: final result MEd with Merit)

Main Outcomes

- Results of this simulation pilot (and a similar one for cataract surgery in Malawi) used to inform a successful grant application for a PhD, and funding for a large-scale three-year training programme in Southern Africa. 64 eye surgeons will be trained intensively, and following this, the results of the PhD will hopefully provide the conclusive data to roll-out this training model for eye surgeons throughout Africa.
  - Thus, following Homes of Promise' support for this first pilot, we have now raised US$613,000 for eye surgery training!
  - Thank you HoP Uganda for being there at the start!

Going forward

- Development of training course / module for glaucoma surgery in sub-Saharan Africa
- Course to be held at newly established Surgical Training Unit in Cape Town for 32 trainees from Malawi, Kenya, Uganda and Tanzania: 2017-2018
- Course invited as symposium:
  - COECSA Congress, 2017 (College of East Central and Southern Africa)
- Invitation to run a symposium at the International Society Geographical & Epidemiological Ophthalmology Congress, South Africa, 2016

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Thank You

Homes of Promise UGANDA

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