

## Report on Eye Department – KCMC

This report was prepared by Dr Susan Lewallen for purposes of sustainability planning (International Eye Foundation) during the period from October 2001-Feb 2002. The format used is the one published by Aravind Eye Hospital's Quality Cataract Series. All efforts have been made to ensure accuracy and any errors are unintentional. This report represents the situation as it was in early 2002. Since then, we have developed and started to implement a comprehensive plan to provide cataract services to meet the needs of the people of Kilimanjaro Region; this means that some of the issues and problems described in this report are already being changed.

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## ***Overview***

*Name:* Kilimanjaro Christian Medical College Hospital

*Governing Body:* The Good Samaritan Foundation (GSF)

*Director of GSF:* Prof John Shao

*Head of the Department of Ophthalmology:* Dr Anthony Hall

### **Annual Statistics**

## Appendix A- Baseline assessment

*Total outpatients \*\* (KCMC) - 18,287 (2000); 17,221 (1999); 11,128 (1998)*

*Number of beds - 50*

*\*Total surgical volume - = 2,467 (2000); 2,187 (1999)*

*\*Cataract surgical volume with IOL - 1,451 (2000); 1,382 (1999)*

*\*Cataract surgical volume without IOL – 94 (2000); 74 (1999)*

*\*includes cases at KCMC + outreach. About 55% of surgery is outreach*

*\*\*60-90% of these are returning visits – this may be increasing and explain apparent increased uptake of services over several years.*

### Financial support

- CBM is the major source of support, contributing 80-90% of operating (and capital) costs. Total headquarters budget:
  - 213,813 Euro (\$181,740) in 2001.
  - 316,411 Euro (\$268,000). In 2002.
- SSI donates specifically for some outreach costs - £9,222 (\$14,775) in 2002
- GSF and MoH pay some salaries.

### *Physical Facilities and Equipment*

The eye department is housed in its own 2 story wing close to the main hospital entrance. Ground floor has administrative and OPD rooms while OT and ward are on the top floor.

*Ward-* contains 50 patient beds

*Semiprivate accommodation-* 4 private rooms at the end of the ward

*Operating rooms:* One which is used strictly for eyes operated under L.A. and a second available Tuesday and Thursday (shared with ENT) and used for all cases needing G.A.

*Outpatient department*

The section which all patients go through (after retrieving their charts) includes a waiting area; a cashier's room; one room (#14) used by nurses for checking VA and routing patients for investigations and follow up; and 2 examining rooms. Additional

## Appendix A- Baseline assessment

rooms include 2 for optometry (1 for refraction and 1 for dispensing), and one for laser/A scan. There is a pharmacy that sells drops made on the premises.

### *Admininstration (eastern wing)*

Room 1- eye dept office for sec'y Domina and Dr Savage's office

Room 2-office for trainees and Dr Makupa - with computer

Room 3- Dr Hall's office

Rooms 4&5 – outreach supplies and preparation

Room 6 – instrument stores

Room 7 - Wet lab room. This is for practice surgery and minor ops

Room 8- (unmarked)- corridor

Room 9 -crowded office shared by Mrs. Oforo and nursing coordinator

Outreach stores/car park

Staff tea room

### *Clinical (central hall)*

Rooms 10 and 11- Optometry

Room 12, 13 – OPD examining rooms

Room 14- OPD nurse (check in, VA, counseling, appointments)

Room 15- laser, A/san

### *Other (western wing)*

Room 17 -Cashier room

Room 18- (divided into two smaller rooms, both used for some storage)

Men and women staff toilet

Lecture theatre

Pharmacy

OPD waiting room

KCCO office

Resource Centre

This was straightforward. The Department had a generous amount of space. Adding a floorplan might be helpful

***Major Diagnostic and Surgical Equipment Available***

*Operating microscope*

There are currently 5 microscopes within the dept, but one (Zeiss) is in Nairobi for repair. Of the other 4, two are Scanoptics (one exclusively for outreach and one in theatre when no outreach is occurring), one Topcon and one Zeiss. All work although some surgeons definitely prefer one over the other. During outreach there may be only two scopes available at KCMC.

*Vitreotomy machine* -one which works adequately

*Cryo unit* - works

*YAG* – 1 in reasonable order recently donated

*Autoclave*- 2, both in working order

*Slit lamp* 4 in OPD, 2 on the ward, 1 other available

*Indirect Ophthalmoscope* - 3 in department – all work

*Fundus camera* - none

*Refractometer* - none

*A-scan* -1 in dept. Now used by Dr Hall only but he will be training others to use in future

*Keratometer* – one working

*Schiotz tonometer*- most slit lamps have applanation tonometers

*Other* Diode laser – recently sent for repair, Phaco machine

This was straightforward and contains the important question of whether instruments are working

***Staffing***

*Ophthalmologists:*

- Dr Anthony Hall, Dr Brian Savage, Dr. Irma Makupa, and Dr Kazim Dhalla.
- 2 senior MMed trainees (Drs Shilio, Dembele) do cataract surgery independently and juniors operate on minor cases independently.)

All ophthalmologists are full time and paid a fixed salary. Drs Hall and Savage are CBM employees and Dr Makupa has a KCMC contract which is topped up by CBM regional office.

## Appendix A- Baseline assessment

Dr Dhalla has just finished his 4 year MMed and will stay on in the department to train with Dr Hall for another 12-24 months – He will get fixed amount. His future at KCMC will depend on salary possibilities.

The number of senior MMeds will vary each year from 0-2, thus the number of doctors available to do cataract surgery varies.

### *Optometrists*

- Upendo Mmali (senior), Alex Lissu, , Bbiana John

### *Opticians- none*

### *Ophthalmic assistants*

- Two trained AMO-Os. (ass't medical officer in ophthalmology) (Drs Kiwelu and Kiti'inga) They work in OPD but not in theatre (except on outreach). AMO trainees serve as paramedics

### *Ophthalmic nurses:*

- Sr Chilimo (nurse coordinator)
- Total of 33 nurses (of whom 10 are “nurse attendants”) situated as follows:
  - Clinic: 6 (2 are just attendants)
  - Theatre: 7 (2 are just attendants)
  - Ward: 20 (6 are just attendants)

Sr. Jennifer Mchau (in charge of OPD, outreach, instrument stores), Sr Valerie Matai (assistant charge in OPD, in charge of medical stores) Sr Fidea (theatre in charge), Sr E. Kweka (ward sister in charge)}

### *Social workers/patient counselors*

- Mr. Masau is a hospital social worker (not exclusively for the eye department)

### *Managers/administrators*

- Ms. Domina Margo (sec'y of eye dept, also ENT)
- There is NO administrator now. Currently searching for someone for this newly defined position

### *Accounting/financial control*

- Mrs. Oforo (bookkeeper)

*Public relations/outreach/marketing*

- No position exists

*Trainees*

- 5 MMed (future ophthalmologist) {Dr Bernadetta Shilio, Dr Joel Dembele, Dr Judy Mwendu, Dr Kilima, Dr Chiboga}. Dr Hassan is an MD just finished internship who is working this year in the department with hopes of getting sponsorship for the MMed programme. Dr Kilima presently away at ICEH course.
- 5 AMO (future OA/cataract surgeon) {currently 3 First years (Drs. David Ulanda, Kilumbi, and Jerry; 2 second year (Drs Msigomba and Midaho)– varies according to sponsorship support)

*Other*

- Sr. Sara Mbelwa (resource center coordinator). Currently partially funded for 2 years from July 2001 through UK lottery grant Remainder of her salary will have to be paid from the “sustainability” account.
- *Reception*- none
- *Records* - currently all opened and stored outside eye dept
- *Housekeeping*- responsibility of the nurse attendants
- *Security* - responsibility of the hospital
- *Maintenance*- responsibility of the hospital
- *Food service*- responsibility of the hospital
- *Drivers* – 2 paid by eye dept

***Service Statistics***

Surgery at KCMC base hospital (2001)

Cataract w/IOL	694 (48.9%)	
Cataract w/o IOL	58 (4.1%)	Mostly trauma and paed
glaucoma	145 (10.2%)	
Cataract + trabeculectomy	7 (0.5%)	

## Appendix A- Baseline assessment

Corneal repair	41 (2.9%)	
squint	13 (0.9%)	
retina	44 (3.1%)	
EUA/laser	21 (1.5%)	
Evis/enucleation	63 (4.4%)	
Other intraocular	105 (7.4%)	2°IOL, surg complications, capsulotomy, iridectomy, hyphaema,
Major extraocular	47 (3.3%)	grafts, DCR, orbits, exenteration
Minor extraocular	182 (12.8%)	Tarsor, lid repair, pteryg, conj biopsy, NLD probe, suture removal, dermoid, molluscum
<b>TOTAL</b>	<b>1420</b>	

### Outreach surgery: 2001

Place	# Visits	Total days away	Total surgeon days	Total cataract surgeries	Surgeries/ surgeon day
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<b>Kilimanjaro Region</b>					
Huruma	3	8	8	63	7.9
Karatu	2	7	10	41	4.1
Kilema	3	10	10	43	4.3
Kibongoto	3	8	8	46	5.8
<b>Arusha Region</b>					
Mto	1	3	3	18	6
Magugu/Babati	2	8	16	71	4.4
<b>Tanga Region</b>					
Lushoto	2	7	7	86	12.3
Bombo	1	4	8	35	4.4
<b>Flying Outreach</b>					
Wasso	2	6	6	47	7.8
Nkinga	5	15	21	244	11.6
Haydom	3	9	9	92	10.2
<b>Total</b>	<b>27</b>	<b>85</b>	<b>106</b>	<b>786</b>	<b>7.4</b>

## Appendix A- Baseline assessment

Using several sources including primary (theatre log book or ward admission book) and secondary (donor reports or annual hospital reports) is tedious but, in our case, revealed a number of problems. Collection of statistics was driven only by requirements from outside donors or the central hospital administration. Personnel who collected statistics did not understand how this information could be used; numbers were not discussed or analyzed and no reports were fed back. There were many inaccuracies (e.g., number of cataract done in theatre often did not agree with what was admitted to the ward or in donor reports, some statistics were missing or estimated. Some of the statistics required a vast amount of labor to collect and were not useful. For example the hospital requested a "condition on discharge" for each patient but it was not clear if this meant condition of the eye or the patient in general and since there were no standards, responses included "survived, good, died, improved, 6/18." To gain a better understanding of the Department we recommend collecting some key service statistics (e.g., how many cataracts operated) for 3 or more previous years rather than just one.

Many hospitals (including KCMC) provide outreach surgical services. We suggest that the cataracts (or other surgeries) done on these be considered separately and efficiency statistics for outreach be calculated separately.

## Appendix A- Baseline assessment

### *Efficiency Statistics*

*Average number of cases per day* – base hospital data in Table below. Outreach in Table above

KCMC base hospital 2001

Day*	Total number of operations in year	Average number ops/day	Average Number of cataracts/day
Monday	9 (2 cats)		
Tuesday (45)	561 (285 cats)	12.4	6.3
Wednesday	105 (50 cats)		
Thursday (50)	580 (360 cats))	11.6	7.2
Friday	137 (50 cats)		
weekend	26 (4cats)		

This is valuable but requires some assumptions. Might be useful to consider cataracts per day rather than "cases," need to decide if trainees (or at least senior trainees) are counted as surgeons. Look at differences in individual surgeons may be useful.

Surgery is scheduled on Tuesday and Thursday with overflow and extras (usually retinal cases) on Wednesday and Friday

*Operating tables per surgeon-* During theatre shifts this varies from 1.5:1 to 0.5:1 if trainee is counted.

*Ratio of operating room staff to surgeon* In theory it is 2-4:1 (3 runner, 3 scrub and 2 AMO trainees for 2-3 surgeons) In practice it is variable since nurses are often called away by the nursing administration or gone on outreach visits. and use of the third table is variable.

*Average yearly cataract surgical volume per surgeon ( total cataracts,with and without IOL)* using 6 surgeons and including outreach:  $1545/6=257$ . This is quite variable by surgeon.

*Busy months for surgery* reasonably uniform, some slight decrease in Dec-Feb

*Average cataract surgical volume per month:* including outreach:  $1451/12=121$  (with IOL);  $1545/12=128$  (total cataracts)

### ***Surgical Process***

#### *Scheduling*

## Appendix A- Baseline assessment

The routine is to schedule elective cases on Tuesday and Thursday, with overflow to Wednesday and Friday as needed and emergencies worked in. On Tuesday and Thursday there are three tables available with general anesthesia available in one room. (The other days the third table is for ENT)

### *Staffing*

- *Ophthalmologists*

There are usually two senior level in theatre although this is variable as outreach, holidays, and other commitments may interrupt this.

- *Nurses:*

There are supposed to be 6 assigned each day but this is interrupted by outreach activities and by other nursing staff obligations

- *Other*

AMO trainees serve as assistants, orderlies (move patients) and give the blocks in the theatre room.

### *Sterilisation*

2 autoclaves used plus boilers for microscope handles. There are 6 cataract sets. Surgeons scrub between cases at KCMC, but not on outreach

## ***Financial Information***

Operating costs (fixed, variable, depreciation) are very difficult to figure since there is no comprehensive accounting system. Much of the CBM donation is in kind and once these donations are received they are not tracked. Available information on support from 2002 is listed.

All support (US\$) 2002

	From CBM HQ	CBM regional	From GSF	From Gov't	From SSI	Lions	
Salaries*	41,328	Top up- for some Doctors- unknown \$	26,186	18,562			Grand Total
Instruments/equipment	70,863						
consumables	53,965						
vehicle	36,428						

## Appendix A- Baseline assessment

“outreach costs”					14,755	Pays some per diems	
other	66,361						
Total	268,945	?	26,186	18,562	14,755	?	328,448 + ?

\*CBM supports salaries to all the upper level staff (expatriate and local), some at 100% and others as a supplement, in addition to a few other personnel (e.g. driver) CBM also pays 2 expatriate ophthalmologists whose salaries are not included above. Some of the CBM salary support is turned over to GSF to be paid out so it may be included in the total paid by GSF. The amount listed for GSF and gov't are based on actual amounts paid to non physician staff (nurses, optoms, bookkeeper, driver accountant).

There are expenses I cannot account for; e.g., the eye department pays something (about \$425?) per month in rent to the hospital. This supposedly comes from CBM but it is not listed in the HQ budget. There are probably other items like this. No way to figure costs of maintenance, water, electricity, costs of keeping patient on the ward; department bookkeeper has not been able to give us this information.

SSI recently gave a new vehicle to the department, not listed above.

All outpatients and in patients are charged fees. This money is collected in the Eye dept and deposited in the “sustainability fund” (but there is no planned budget for using this money). A portion of this is given to the central hospital.

### Revenue from patient fees (2001)

Activity	Amount taken in (Tsh)	Amount kept by eye dept (Tsh)
Base (KCMC) cataracts	21,732,300	10,866,150 (50%)
Outreach cataract*	2,190,500	2,190,500 (100%)
Minor ops	2,190,500	2,190,500 (100%)
“Investigations“ (inpatients)	6,417,200	6,417,200 (100%)
Laser	177,800	177,800 (100%)
Ret/vit & phaco**	3,373,000	3,373,000 (100%)
Eye drops –( base/ - outreach	4,724,990 (4,279,190/445,800)	3,394,403 (71%)
glasses	24,212,900	16,266,884 (67%)
<b>Total</b>	<b>66,509,490 (\$73,899)</b>	<b>46,366,737 (70%) (\$51,518)</b>

\*on outreach, patients pay a variable amount (depending on the local host) for a cataract and the eye department keeps 3,000 for each case

\*\* phaco recently started. This is considered a “special procedure” which allows the eye department to keep 100%.

### *Cost per cataract*

Using the prices from the CBM budget for the consumable routinely used in ECCE/IOL, the consumables should cost about 10 US\$ per case. Because there is no accurate stores control we do not know what is actually used. If salaries are included, the cost is probably around 44-75\$/ case (depends on whether OPD and ward staff are counted). This does not include capital equipment, instruments, nor fixed costs (besides salary). See appendix 2.

Financial information was particularly difficult to obtain. Although the Eye department had a dedicated “accountant” there was no comprehensive accounting system in place. Her job was to report to various donors, shepherd requests for supplies (often less than \$10 in value) through a laborious process, make bank deposits (several hours each week). It proved impossible to do more than make a gross estimate of the costs of running the department since donations of money came from several sources, there was no way to figure the financial inputs from the central hospital to the Eye Department (e.g. food and linen service), the value of donations was loosely recorded. “Accounting” revolved around the reporting requirements of one main donor, who required an annual request for money and materials to be submitted; the money was carefully accounted for but not the materials. No planning or budgeting (meaning comparison of budgeted to actual expenses) was practiced.

A substantial amount of money, collected from patient fees over past few years, was in a checking account; there were no plans for how to use this money.

Again, to gain a better understanding of the Department we recommend examining financial statistics for several years previous years rather than just one as this will reveal something about the predictability of donations

## *Training Programmes*

### *Ophthalmology residency*

Doctors working for their MMed degree (equivalent of residency in North America) work in the Department. This is a 4-year program with a variable number of trainees, depending on who applies, is qualified, and can get financial support. Trainees pay a fee to KCMC. An organization or sponsor usually supplies this fee. (CBM sponsors all current MMeds)

### *Sub-specialty fellowship*

There is none formalized, but Dr Dhalla does retina cases with Dr Hall as a sort of fellow

### *Ophthalmic assistants*

There is a 2 year course for assistant medical officers in ophthalmology (AMOs) AMOs are health assistants who are supposed to have several years of field experience before specializing in eyes. In the 2 years they train with the eye department they are expected to become familiar with all aspects of medical ophthalmology as well as become cataract surgeons. AMOs pay a fee (to KCMC) to train. After training, AMOs are sent to remote hospitals to run eye departments (usually back to the sponsoring organization). Of the current 5 AMO trainees, 2 are sponsored by CBM and 3 by the government.

In practice the AMOs are trained alongside the MMed trainees.

### *Optometrists*

Trained at school of optometry but not in the KCMC clinic.

## ***Hospital Operations/Procedures***

Personnel arrive around 8 am and tend to work in OPD and theatre with a minor tea break until work is finished. The OPD is generally locked up by 2:30, often by 1:30. Admin block closed by 3:30 pm, although surgery sometimes extends past this time.

### ***Outpatient registration process***

Historically, all patients coming to KCMC have to show a referral slip to be let in the front gate. Eye patients are the only exception to this; they must enter through the gate but need not have a referral slip. Still, the majority of patients do have a referral slip (It may be that the public perception is that one is needed, or it may be that people only consider coming to KCMC after failing to get treatment elsewhere.) (Note below the procedure if a patient has no referral slip\*) New patients with a referral slip or patients without an appointment first go to a centralized medical records to get a file. For new patients, this costs 1500 Tsh if coming from a government facility, 3000 if from a private doctor, or 2000 if self referred. Returning patients with an appointment card pay 500 to retrieve their files. The patient is not allowed to carry his own file but must wait until a nurse's assistant comes from the eye dept to escort him to OPD. This process may take several hours. Returning patients with an appointment can bypass this, go directly to the eye clinic where the file will have been retrieved the day before (by the nurses, who request these from central records based on the appointment book). The patient still pays 500 to get it in this circumstance, but may pay it to the eye clinic cashier, in which case it is turned over to the hospital at the end of the day.

\* Patients with NO referral slip are directed by the gate guard to the eye clinic room 14, where they have to get a paper from a nurse (signed by a doctor/AMO), which allows

them to go to central medical records to open a new file. In practice, the nurses keep a small store of pre-signed (daily, by the AMOs) forms for this use

### ***Outpatient examination/procedures***

#### *Patient flow in OPD*

Once escorted to the eye OPD, outpatients queue until they are called by a nurse into Room 14 for registration and VA check, then sent to queue for examination in one of two examining rooms (12 & 13). (Not clear if there some number system for this)

Following examination the patient is sent back to a nurse (room 14) for follow up appointment, explanations, admission, or to the pharmacy. Patients needing drugs from the pharmacy must go to the pharmacy to check drug availability and price, then go to cashier to pay for drug, then go back to pharmacy with a receipt to pick up the drug. If patient is to be admitted he must pay the cashier, then be escorted to the ward..

Patients who pay for the “private file” may be taken ahead of the queue- the nurses try to “work in” these patients throughout the clinic without being too obvious.

The AMO or doctor who examines a “private” patient gets a small supplement, as do the OPD nurses. (No money changes hands in the clinic but they can keep track of this and get paid later)

#### *Nursing roles in OPD*

6 nurse staff (4 trained nurses and 2 nurse assistants) are assigned to OPD under Sr Mchau. Their duties include:

1. check VA and record in file
2. fill in the OPD log book, which includes: name, hospital number, sex , DOB, whether new or return patient, VA and diagnosis (separately for each eye). In practice, this book is filled out at the end of each day by a nurse, using the patient files to get the information from (before files are returned to central records, as they must be every night) (Note: sometimes a final diagnosis is used and sometimes a reason for presentation is used, thus many patients have “FU” (follow up) recorded.)
3. Complete a patient census form (large pink sheet), which is required by medical records at the end of every day. On this is recorded the hospital numbers, whether patient is new or return, and a diagnosis
4. Arrange follow up appointments after doctor has seen patient. These are kept in an appointment book and patient is given a follow up slip
5. Arrange ward admissions and log these into the OPD book. The nurse explains to patient the admission procedure (i.e. pay cashier and go to ward) and sends him off on this (is he escorted to ward?).
6. Arrange medical consultations
7. Fetch lab results, prepare tea, clean rooms (nurse assistants usually take these duties)

8. Counseling: variable depending on how much the doctor has explained and how much the patient asks. An attempt is made to keep a nurse in the examining rooms to counsel patients there but this is not often possible due to other duties

***Paramedical Roles***

AMO (fully trained) work only in outpatient and go on some outreach. AMO trainees also staff OPD and they are used in theatre, where they do blocks and learn cataract surgery

<b>Role</b>	<b>AMO-O</b>	<b>nurse</b>
Visual acuity	x	X
Patient exam	x	
Refraction		
Tonometry	x	
Surgery assist		x
Sterilisation		X
Biometry		
Contact lens fitting		
Patient counseling	x	X
Blocking for surgery	x	
Laboratory		

***Surgical admission process***

Patients found in OPD who need surgery are either admitted for the next surgery day, or if the list is full, asked to return on a given day. Patients who come from a long distance (including those referred from the CBR program) are always admitted. Patients must pay before admission. Patients deemed too poor (by a hospital social worker) may have their fees paid by a “poor fund” supplied by CBM (not sure how large this is nor how many patients apply. In 1999 there were 7 free cataracts done and in 2000 about 22 (This is according to the bookkeeper – Dr Hall reports that he signs many more forms than this for reduced rates.)

***New ward admission protocol***

(This information is from the ward sister in charge, not observation of actual practice)

- check blood pressure and vital signs
- counsel patient about surgery and cleanliness
- assist patient to bathe (or instruct guardian in this)
- get consent form signed, label eye for surgery
- start GPM drops (gentamycin, prednisolone, methylcellulose) and diclofenac qds

## Appendix A- Baseline assessment

- known diabetics get fasting blood sugar on morning of operation, no other routine lab tests done

### *Preoperative procedures (patient preparation, blocking)*

- Patient bathes per nursing instruction (electric kettle is only source of hot water for this)
- Dress in theater gown (often inadequate supply)
- Operative eye gets GPM and dilation with cyclopentolate and phenylephrine
- Attendant is responsible for liaison between theatre and ward to move patients back and forth. Nurse is responsible for making sure eye is dilated.
- Blocks are done in theatre by 1<sup>st</sup> year AMO trainees

### *Organisation of operating room*

Two tables. Lots of extra equipment stored in room.

The difficulty in completing this (and the important information learned) was that the number of staff in theatre, OPD and ward, was highly variable. Theoretically, a certain number were supposed to be present but this was rarely met because staff were taken away on an irregular and often unpredictable basis for various "outreach" activities and "trainings." The latter was particularly likely to occur at the last minute.

### *Sterilisation procedures*

Cataract sets are autoclaved between cases. Rubber microscope handles are boiled

### *Postoperative procedures -*

After surgery, patients are helped off the table and escorted back to the ward by a nurse attendant or an AMO trainee. All patients are examined at a slit lamp on the day following surgery by a member of the operating team usually. Routine is to use GPM (gentamycin, prednisone, methylcellulose) drops qds, increased to q2hours if inflammation or hazy cornea on day 1.

### *Discharge procedure*

Patients are discharged on a doctor's order 1-3 days post operatively. They are given an appointment, usually to return at 2 weeks, although this can vary

***Inpatient care / Counseling*** -There is no formal system to try to improve uptake. Patient education is almost all at the discretion of the nurses

### ***Optical dispensing:***

In general the relationship between the optical dispensary and the rest of the eye clinic has been problematic with a history of bad feelings. Not clear of all the issues involved but the optical dispensary would like to be “independent” while the eye dept would like to share in revenues from the dispensary and be assured that there exists a reliable refractive service for patients. At present CBM is paying some of the costs in salary supplements and in-kind donations and technically the dispensary exists as part of the eye dept; the optometrists have recently formed a steering committee (to determine the future of the dispensary) which includes representation from ophthalmology and the School of Optometry.

A new plan has been recently launched. The optical dispensary was given “seed money” from GSF which they used to renovate the dispensary and buy some stocks. The plan is to try to recovery costs through sales. If there are profits left after paying expenses the plan is to disperse some percentage of these to eye department and another percentage to GSF and another to the optometrists. Accounting will be done through the eye department accounting system. No formal business plan has been written and it is not clear why percentages dispersed have been selected.

Patients are refracted when referred from clinic. Post op cats are refracted before discharge and asked to return at 2 months for final refraction. It is not clear how many actually do return (appears to be 80-90% according to a small prospective study done by an MMed last year), nor how many get glasses, although it is presumed that few get glasses and an MMed thesis study showed that about 50% would benefit (need more than 1 diopter) by glasses.

*Eye glasses dispensed*- 2,055 (year 2000)

*Produced on premises* – 2,413 pairs (year 2000)

Lenses (ground already – sph or cyl?) are purchased in Moshi and edged in the clinic. Not clear who runs the business aspect of this.

*Approximate revenue* - 24,212,900 Tsh (2001) – see revenue-from-patient-fee table above

### ***Pharmacy***

Eye drops are manufactured and there is a dispensary in the clinic. This is run by a pharmacy assistant (Mrs. Mzava). She makes drops and gives them to any patient who has a prescription and has paid the cashier. No money is collected in pharmacy. She keeps track of how many bottles she makes and gives a report to Domina. For outreach, she is informed a week ahead of time by the team doctor how many bottles

## Appendix A- Baseline assessment

to prepare. A few drugs (zovirax, ciprofloxacin drops, hydrocortisone ointment and dexamethasone with chloramphenicol) are purchased in town and dispensed through the pharmacy as well.

In year 2000 there were 25,715 bottles of drops made. All supplies are part of CBM in-kind donations

**Medical records** – All are in a central hospital system. Outpatient files must be returned to central records every night.

**Laboratory-** Basic hematology and chemistry, histopath service, x-ray, CT scan (expensive). Patients must pay extra (beyond cost of admission) for all services except a few simple ones which are included with in patient stay (basic hematology, x-ray?).

**Stores/inventory/purchasing** – Annual needs are estimated in the CBM budget process (by Dr Savage and Dr Hall). But do not arrive until thenext year. In kind donations arrive in the department and are stored by Sr Matei (medicines) and Sr Mchau (instruments). Sr Matei uses a bin card and notebook system to record what is used (not clear that this actually happens – stock control seems to be virtually absent) and she lets Dr Savage know if supplies are needed. Not clear what sort of system Sr Mchau has for giving out instruments

**Support facilities (housekeeping, security, maintenance, dietary, etc.)** Housekeeping is the responsibility of the nurse attendants. Security and maintenance are responsibility of the hospital.

**Administration** Most of these duties have been assumed by Dr Savage. Lack of a professional administrator is a serious problem which is being addressed. (funds available but no one identified yet)

**Finances/Accounting.** Mrs. Oforo is the bookkeeper (salaried by CBM). In essence the only accounting done is related to the CBM headquarters budget and other CBM or SSI funded projects (such as the Resource Centre) She manages any outside accounts (e.g. the resource centre) although several signatures are required to take money out. Money from CBM goes into a dollar account maintained by the eye dept. Mrs. Oforo then writes a cheque to KCMC for the salaries paid by CBM and the hospital disburses this. (Apparently for tax and pension reasons, salaries must be paid by KCMC hospital, who withhold tax and pension.) Money collected by the department in patient fees is handed over from the cashier to Mrs. Oforo and she deposits this in the “sustainability account” (see below for more details of this important account) which requires two signatures to access.

Nursing staff, AMOs, some MMeds are paid through the hospital

### **Management Process**

## Appendix A- Baseline assessment

*By whom and how are the decisions taken on policies and procedures?  
(regarding salary scales, recruitment, major purchases)*

Dr Hall, as department head, requests major equipment as well as other supplies from CBM and CBM headquarters decides what will be allowed. There is some leeway for Dr Hall to make decisions on policy and procedures but the eye dept is also subject to KCMC hospital policies. Specifically, nurses are hired and fired (apparently very rare if not impossible in this system) by KCMC although several are fully paid or topped up by CBM. The matron's office decides how to allocate the nurses within the department (whether by default or design is not clear). Matron's office also seems to schedule nursing holiday leave. The Eye department has hired the resource centre director directly, but her salary is sent to KCMC and then disbursed from there.

Notable exceptions to hospital policy are: (1) eye patients can be admitted without a referral slips, and (2) eye department is allowed to have a cashier to collect patient fees within the department

*By whom and how are the routine decisions taken regarding*

- *Personnel activities (sanction of leave, posting, etc.)* For nurses the KCMC matron's office controls posting and may at any time take eye nurses on short or long term from the department (even after they have received eye training). Drs Hall and Savage direct the activities and surgery schedule of the MMed/AMO trainees for the most part, however, MMed candidates must fulfill general Tumaini University MMed requirements (e.g. Year 1 MMed trainees are required to attend afternoon teaching sessions outside the dept in general medicine and dissertations must be completed in year 3). Dr Savage sets the outreach schedule.
- *Money handling (food concessions for the patients and staff, depositing, etc.)* Fees in the eye dept are collected by the cashier who turns them over to Mrs. Oforo. All this money goes into the "sustainability account", except the outpatient file fee of 500 Tsh for returning patients, which goes to KCMC directly. A proportion of the sustainability account is then turned over to KCMC (see table above)
- *Routine purchases (who authorizes and signs on the indent? who decides routine purchases? what is the procedure?)*

There is no petty cash system.

Accessing money in the eye dept "sustainability account" (which pays for many minor purchases) is a very cumbersome process. A proforma with a specific amount is made for an item. This proforma must be signed by Dr. Hall or Savage, then sent to Mrs. Oforo who sends it to the main hospital. At the main hospital it must be signed by either Prof Shao or Mrs. Marealle (CFO of hospital). After that Mrs. Oforo may write a check and the check must also be signed by Hall or Savage and Shao or Marealle. Then the item may be purchased. It usually takes several weeks-months to get an item by this method and can take longer if Prof Shao or Mrs. Marealle is out of the office.

## Appendix A- Baseline assessment

The same process is required to access money in the Resource Centre account. This is apparently standard hospital policy.

There has been no planned budget for the sustainability account based on expected revenue and expenses, although records are kept of what goes in and come out of the account.

**Comments on management** The lack of a professional administrator is a serious problem (described well in the report by Mr. Clive Ashton)

Nursing personnel appear to report primarily to hospital matron, with accountability to the head of the eye department quite hazy.

The few simple questions in the assessment form (under “management process”) were a useful place to start. In our department, trying to answer these questions led to several important realizations:

- Nurses reported outside the Eye Department, to the central hospital Matron’s office. They could be moved from the department temporarily or permanently without consultation with the HoD. Holiday leave was not coordinated with Department needs.
- Staff performance reviews were done by a committee, without any participation from the employee, and everyone expected to receive the same high marks.
- Job descriptions for most positions existed but were out of date and not used for supervision or evaluation.
- There was no structure for HoD to meet with key personnel regularly, nor to supervise them.

An attempt to draw an organogram revealed some “holes” and confusing lines of reporting within the ED. In theory the HoD was in charge of everything

### **Information System**

In general, the value of reports and statistics is not clear to the personnel who must collect and produce them. There is little or no feedback from these and no goals defined against which to measure progress, other than generally to try to increase cataract surgery. Some of the data collected laboriously (e.g. outpatient diagnoses) is useless due to lack of standardization in recording.

- *Medical records* This is the hospital system. In and out patient files are stored in central records and must be retrieved from there. Quality of information recorded is variable and patient visits are often not in chronological order, making it difficult to follow the course of an illness.
- The outpatient department (nurses) is required to fill in a cumbersome report every day for the hospital, listing information on all the patients seen. According to Sr Mchau, these statistics are required to generate hospital reports for the MoH
- *Camp (outreach) reports* These are generated on outreach (often handwritten), listing names of patients seen and procedures. They are stored in files in Domina’s office. A

## Appendix A- Baseline assessment

summary sheet of each visit is kept, detailing how many staff went, for how long, and how many cases were operated. There are some missing forms.

- *Performance reports*- Not sure if these are compiled.
- *Management reports* In late October 2001 monthly management meetings were instituted for the first time (at least in several years) by Dr. Hall. Minutes are kept from these.
- CBM required statistical reports (number cataracts, outpatients etc)

### *Comments on the information system*

The storage of patient records in central hospital rather than in the eye clinic is very inefficient, adding hours to a patient visits (while staff sit unoccupied) and possibly putting off many patients. Records of the number and type of operations, inpatient admissions and outpatient visits are all logged by hand without standardization of information collection (e.g. addresses may be recorded in various fashion, making it impossible to find out where patients actually come from). There is no computerization.

### *Outreach (safari) surgical programme*

This program is an important part of the service provided by KCMC and needs to be considered separately from the base hospital. In fact, more cataract surgery is done on these outreach trips than at the base hospital. Very little surgery of other types is done on these visits.

Outreach trips are made an average of 3 times per month. One senior surgeon, one nurse or AMO, and one junior surgeon usually go, and several others may go as well (optometrist, additional AMO, or trainee) The trips take anywhere from 1-4 days. 12 or 13 different sites (small hospitals) are served, but these have evolved, rather than been chosen purposefully. Three sites are reached by air and the others by car. All supplies are taken along. Recruitment is left up to the host site and the effectiveness of this is highly variable. The amount of help in theatre, and pre screening is also variable. Table shows the sites served and some operating statistics. The cost of outreach is difficult to calculate. In addition to transportation, lodging, staff per diems the trips require personnel to be taken from the base hospital on a somewhat irregular basis (although the outreach schedule is set a year ahead of time).

SSI provides a vehicle for outreach and money for some expenses (approximately \$14,000 in 2001)

### *Baseline Data on Beneficiaries*

*What are the major eye problems diagnosed and treated in the hospital?*

**Outpatient**

Due to the manner in which the OPD logbook is kept, it is not possible to ascertain the diagnosis of most patients. Diagnosis is often recorded as “follow up” (which account for 60-90% of those seen in OPD) This is probably done for several reasons including the fact that it is cheaper for a patient to be a return patient (500 Tsh for the file) than a “new incident of illness” patient. The lack of a standardized outpatient record also makes it very difficult for a nurse to search the file for a diagnosis (which might not be there anyway)

**Ward**

There were 1,755 patients admitted to the ward in 2001.

Diagnose ward patients 2001 (estimated from incomplete data)

cataract	41-42%
glaucoma	8-10%
Corneal ulcer	6-7%
injury	6-7%
Uveitis, tumors, ret detach, infections	35-39%

**Theatre**

Diagnosis of the operated cases are as follows

Senile cataract	633	44.6%
Juvenile cataract	68	4.8%
Traumatic cataract	57	4%
glaucoma	171	12.1%
trauma	83	5.9%
Retinal disease	41	2.9%
Corneal disease	71	5%
Lid/conj mass	82	5.8%
Orbital mass	23	1.6%
other	189	13.3%

***How patients know about KCMC services***

Word of mouth is most common. There are no marketing programs. There is a CBR programme in the region which actively recruits cataract patients and brings them to KCMC and also to the outreach surgery sessions. In 2001 they brought in 228 people (241 eyes with cataract) to KCMC and 99 people (117 eyes with cataract) to outreach. On outreach visits, patient recruitment is the responsibility of the host site and is of variable effectiveness.

***Epidemiological and Market Perceptions***

The population of the catchment area of KCMC (northern region) may be estimated at about 10 million. Within this area there is essentially no other cataract surgical service. There may be some AMOs who do cataract surgery but this is relatively new (Mwanza). There are no private practitioners.

If we use the standard assumption that 3 cataracts/1000 pop need to be done to prevent incident cataract blindness, KCMC needs to do 30,000/year. If we consider only the Kilimanjaro Region, in which there are between 1.5 and 2 million population, KCMC should be doing 4.5-6,000 cataracts each year.

*Total number of blind; presumed 1%, with 0.5% due to cataract*

***Socioeconomic Demographics***

***Average yearly income levels of the population***

We have not been able to find any information on income distribution in Tanzania, nor on mean income specifically for Kilimanjaro Region. World Bank says that the per capita income in Tanzania is around \$280/year, however they also report that Tanzania has one of the highest standard deviations with this, indicating that there are many well below the average..

***Distance patients travel to get to KCMC***

We don't know where patients are coming from, nor how they get to KCMC, except for those brought by CBR. This information cannot be ascertained from the ward log book due to inconsistent/non standardized recording of addresses.

- About 80% of OPD patients were returns. Further investigation demonstrated that junior doctors, alone in clinic and unsure of management, were responsible for many returns.
- some inpatients were staying too long on the ward (sometimes due to problems with the discharge process)
- doctors all had different practices regarding discharge of cataract patients; there were no protocols or standardization
- The same information was collected in different ways for different reports (e.g. number of cataracts done)
- Nurses spent much time collecting information (e.g. writing out a list of the names of patients seen in OPD daily along with their diagnoses. However, there was no standardization or coding used and the same disease might be called by a number of different names, rendering the information useless.

## Appendix A- Baseline assessment

### Patient fee schedule

Minor op in OPD (chalazion irrigation, etc)	5,000
Minor surgery on in patient (pterygium, conj mass, enuc/evis lid rotation)	10,000
Major plastic	50,000
Retinal detachment	50,000
W/ vitrectomy	100,000
cataract	30,000 *
Secondary IOL, capsulotomy	30,000
glaucoma	10,000
squint	30,000
Laser- focal	2,500
Laser- panretinal	5,000
In patient (with 4 days of lab)	10,000
Emergency (corneal repair, hyphaema)	15,000

\* patients identified by the CBR programme pay only 15,000. Patient brought by Lions are free

## Appendix A- Baseline assessment

### Calculating the cost of cataract surgery (in baseline assessment)

The costs for consumables/cataract are reasonably accurate. Any attempt to calculate the staff cost/cataract surgery depends on the assumptions one makes and there are many ways to do this. Surgery done on outreach is necessarily more expensive due to transportation and per diem costs, and these are not figured into the calculations at all. Capital costs are not included and the only fixed costs considered are salary.

#### Consumables/ cataract

	Euros	US \$
GPM pre op	*	
Dicofenac pre op	*	
2% lido w? epi	.07	
Povidone iodine scrub	*	
# 15 or 11 blade	.21	
Needles (retrobulb, capsulotomy, subconj)	.20	
10 cc syringe -disposable	(from hospital or local purch)	.06
Ringer's lactate (100cc)	(infusion project)	
Suture (Aurolab)	1.6-2.0	
IOL (Aurolab)	7.26	
Gent/dex subconj	.05-.24 (depends on nurse practice)	
methylcellulose	1.43	
gloves	.21	
Infusion tubing (reused)	*	
Bandages/tape	*	
TOTAL	11.62	9.87

\* All these items together estimated to cost around .25 per case.

Capital Equipment not considered

#### Salaries

(with all eye dept staff)

worker	Annual salary (US\$)	Number in eye dept	
Ophthalmologist	10,000*	6**	60,000
All other eye dept staff			45,772
TOTAL			105,772

\* based on estimated gov't salary; the actual salaries of the doctors differ widely and the 2 expatriate doctors are paid completely outside the system

\*\*This is the number doing cataract surgery independently

## Appendix A- Baseline assessment

Thus, one estimate of the cost is  $105,772 / 1450$  cataracts = 73 US\$/ case

Alternatively, if we consider that about half the department activity is devoted to cataract (half the surgery and half the ward admissions) we can divide \$73 by 2 for a total of \$36.50/ case in staff costs.

Adding the cost of consumables (US\$10), the cost per cataract is (at a minimum) somewhere between \$46.50 and \$83.

## **Appendix B- proposal to implement a computerized registration system**

### **Proposal for Implementation of a Computer Registration System in the Eye Department at KCMC**

#### **Background:**

The Kilimanjaro Christian Medical College (KCMC) Hospital is the largest and only tertiary care facility serving the northern part of Tanzania, serving approximately 10 million population. The Eye department, with 50 beds, examines about 18,000 outpatients and performs about 1200 surgeries (roughly half are cataract) each year at the hospital. Unfortunately, these numbers are far below what is necessary to meet the needs of the population. In line with the goals of the Vision 2020 initiative, the Eye Department is planning a major campaign to increase the numbers of cataract operations provided at KCMC. The goal is to increase to at least 3,000 cataracts per year within 2 years and increase further in future to reach the estimated 6,000 per year who become blind from cataract in the Kilimanjaro region alone. In order to do this it will be necessary to revise the systems within the Department to handle more patients in an efficient manner.

#### **Problem statement:**

The current system for recording information on patients who use the eye department (OPD, Theatre, ward, pharmacy, optical) is all manual. Obtaining the statistics needed in the central hospital as well as the statistics needed within the department for rational decision-making is a laborious process, carried out primarily by nursing personnel (who are then not available for the clinical work they are trained to do). The system requires hours of work and is also subject to error due to variable handwriting, lack of standardization in recording information, lost log books, and human error in calculation. Ultimately it limits the number of patients who can be served and the quality of information that can be generated.

The centralized record system at KCMC means that all eye department records (files) are kept outside the department. Eye patients arriving at KCMC undergo lengthy waits (sometimes several hours) for their files. This causes frustration for the patient and the staff, who cannot start examining patients each day until the records are obtained. Informal interviews in the community reveal that the inconvenience of obtaining the record at KCMC is a serious deterrent to the cataract blind in using the eye department services.

The Eye department is planning to implement new community based programs in order to increase the numbers of cataract patients served. In other locations, both in Africa and elsewhere, such programs have been quite successful but have demonstrated that uptake of services is much higher if patients are transported to the hospital for surgery on the day they are screened and diagnosed. This means that a number of patients (low at first but

## **Appendix B- proposal to implement a computerized registration system**

increasing with time) will be arriving in the afternoon or evening, when the medical records department staff is lower than usual and waits for files are extended even further. In fact, it will not be possible to admit the number of patients we need to serve with the current system.

Fortunately, computerized systems are available which can greatly simplify patient registration, admission, and information management. Such systems have been little utilized in subSaharan Africa yet. Successful implementation of this system at KCMC will necessarily include local capacity building that can be disseminated to other parts of eastern Africa.

### **Proposal:**

We propose to pilot test a new computerized management information system (MIS) in the eye department, which could serve as a model for the rest of KCMC. Key features will include:

- Ability to generate all information needed by the central hospital in a timely and accurate fashion
- Simplicity, so that it is user friendly and easily maintained
- Capable of being expanded for future needs
- Capable of being replicated in other departments
- Ability to streamline patient flow throughout the OPD and increase efficiency in the theatre and ward

The eye department is a good place to pilot this because:

- The department head and staff support the adoption of a new MIS system.
- Resources exist within the department to obtain the necessary inputs in terms of funding and training
- The department is relatively small and self-contained.
- Most eye patients are otherwise healthy and keeping clinical eye records separate from other hospital records can be done without compromising patient care.
- The department already has a system for collecting fees directly from patients

The Aravind Eye Hospitals, in Madurai India, with over 200,000 surgical cases and 1,300,000 outpatient visits each year, has developed a computerized MIS, the IHMS (Integrated Hospital Management System) for their hospitals. This modular system can be used for registration in OPD, record generation, admission, record tracking, collecting patient information in theatre and ward, as well as for keeping track of patient fees. Aravind has designed this system for their own hospitals, with the view of making it flexible enough to be adapted in other eye hospitals and general hospitals.

The Lions Aravind Institute for Community Ophthalmology (LAICO) has expressed a willingness to collaborate with the eye department in sharing experiences, software, and

## **Appendix B- proposal to implement a computerized registration system**

expertise. LAICO already has experience implementing the system in other hospitals in Asia. Their help will be very valuable in achieving success.

We propose to implement the MIS in the Eye Department in phases, each of which requires several steps as outlined.

### **Phase I: Planning**

Step 1: commitment from management at KCMC

Step 2:

Detailed interdepartmental planning will occur to determine exactly what information must be collected at what points. This includes consideration of what are the most efficient procedures for patient flow through OPD, admissions, ward and theatre.

Step 3:

The person in-charge of the computers at KCMC, along with an appropriate Eye department staff member visits Aravind for a week. With LAICO specialists they carry out all the necessary customization based on the inputs determined in step 2.

### **Phase 2: Implementation**

Step 4: The necessary hardware, software and the network operating system are obtained and installed. NT and SQL servers are tested.

Step 5: Staff training with “pilot software”

Step 6: LAICO specialist (Mr. Ganesh Babu) comes to KCMC for a week for full implementation, creating the database and starting its use.

### **Phase 3: Maintenance**

Step 7: Ongoing support (via email) from LAICO is provided with the package. The computer specialist at KCMC will be responsible for periodic checks of the system and for fixing problems. It is anticipated that new hardware may be needed after a few years and this will be part of the regular departmental budget. With increased numbers of patients using the department it is anticipated that revenues will increase and this will be available for sustaining the system too.

### **Time Line**

Step 1 secured by August 2002

Step 2 completed by October 31

Step 3 November

Step 4 completed in January

Step 5 February-March

## **Appendix B- proposal to implement a computerized registration system**

Step 6 April

### **Budget Justification**

Someone with knowledge of the clinical information requirements will have to accompany the computer consultant to Aravind for customization of forms. Aravind provides accomodation and board, so no perdiem is included there. Local company charges for installation of networking hardware are estimated based on experience. It is possible that 1 network laser printer could be used instead of the two dot matrix. NT and antivirus software will be available through hospital sources.

## Appendix C- Cost of implementing computer registration system

Approximate budget for implementing computer registration system

	US\$
3 computers, printer & peripheral hardware	\$6,500
labour and hardware wiring for network	\$900
software programme	\$1,000
LAICO consultant to Moshi for implementation (airfare/ accomodation)	\$1,500
3 to Aravind for initial planning (airfare/accomodation)	\$4,500
office supplies	\$1,000
KCMC computer unit head to Aravind for supplementary training	\$2,500
	\$17,900

No salaries are included in this. Eye Department now pays monthly fee to KCMC computer unit for maintenance

**Appendix D- proposal for outside accounting consultant**

**ASHTON, NSHANGE & Co.,**  
**P.O.BOX 6977,**  
**MOSHI**  
Telephone/fax: 027-275 3565

Dr Anthony Hall,  
KCMC – Eye Department,  
Moshi

28<sup>th</sup> January 2003

Dear Dr Hall,

**UP-DATE OF ACCOUNTING SYSTEM TO INTEGRATE WITH NEW  
MANAGEMENT INFORMATION SYSTEMS.**

This is the proposal requested by you and Dr Lewallen for my assistance in up-dating the present accounting system and integrating it with the new Management Information System which is being installed as a major step towards achieving the goals of Karibuni Macho.

**BACKGROUND**

In Years 2001-2, I studied the Administrative Organisation in the Eye Department and assisted with the appointment of a full-time Administrator. Following this, I introduced a computerised accounting system, TAS Books, and started to teach the current Accountant, Mrs Oforo how to operate it.

This was only partially successful for the following reasons;

1. There were numerous delays because of extended leave, where Mrs Oforo was standing in for the Department Secretary or was on her own study and annual leave. Also, at the time she was performing several administrative duties which did not enable her to be available for training.
2. Since mid 2002, the whole direction of the Eye Department changed with the introduction of Karibuni Macho. This required a re-assessment of the needs of the Department in terms of Management Information, especially with the introduction of the new Patient Registration and Monitoring System.
3. The Central Accounts Department needed to give us certain cost data from their records on a regular basis. This never happened.

**RATIONALE**

If the Eye Department is to achieve the aims of Karibuni Macho, it must have an accounting system that can provide accurate financial data on income and costs. It must produce useful and timely financial reports which can assist the Department Management in assessing progress towards its set goals. By integrating the new computerised Management Information System (MIS) with the TAS Accounting System

## Appendix D- proposal for outside accounting consultant

(TAS), there is an excellent opportunity to take full advantage of TAS and its ability, not only to provide information on accounting, but to use its stock management system for monitoring and re-ordering medical supplies.

### PROCESS

The following steps are required to achieve this:

task	Days needed
1. Orientation for Mr Ashton, Mrs Isheke, and Mrs Oforo to the new MIS	1/2
2. Introduction of new codes and procedures to link with MIS	5
3. Discussions with KCMC Central Accounting to obtain data for system	2*
4. Further training for Mrs Oforo and Mrs Isheke in producing appropriate reports with TAS for Department Management	2
5. Introduction of Stock Control on TAS and training Mrs Oforo and Mrs Isheke to handle it. This will need new procedures and forms in the Department	4
6. Other reports needed by Department Management – discussions	1

\* requires full co-operation from Central Accounts at KCMC

### SUMMARY

Expected Outcome: fully functional accounting system in Eye Department, integrated with the new MIS system, which will provide reports needed to monitor cost recovery of Karibuni Macho and other important information re budgets etc.

Costs: US\$ 2,175

Yours sincerely,

Clive Ashton FCA

## Appendix E- Cost recovery management report

### SUMMARY OF INCOME AND EXPENDITURE - NOVEMBER 2004

#### INCOME:

##### OPD

Registration	1,220,000.00	
Minor Operations	85,000.00	
Laser Operations	<u>57,500.00</u>	<b>1,362,500.00</b>

##### WARD:

Investigations	379,000.00	
Extra days	<u>488,000.00</u>	<b>867,000.00</b>

##### THEATRE:

Phaco surgeries	2,200,000.00	
Cataract surgeries	1,971,000.00	
Retina surgeries	<u>190,000.00</u>	<b>4,361,000.00</b>

##### PHARMACY:

Eye drops		<b>444,720.00</b>
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##### SURGICAL OUTREACH:

Sale of Eye Drops	24,000.00	
Cataract surgeries	<u>280,000.00</u>	<b>304,000.00</b>

##### TOTAL INCOME

**7,339,220.00**

#### EXPENSES

##### OPD:

Consumables	31,610.00	
Cleaning materials	52,300.00	
Scarcity allowance	45,000.00	
Salaries	<u>1,310,934.00</u>	<b>1,439,844.00</b>

##### WARD:

Consumables	330,210.00	
Salaries	3,362,330.00	
Cleaning materials	178,200.00	
Scarcity allowance	222,500.00	
Food	588,000.00	
Linen	<u>147,000.00</u>	<b>4,828,240.00</b>

##### THEATRE:

Cataract consumables	1,712,777.00	
Other surgeries	219,500.00	
Cleaning materials	46,450.00	

## Appendix E- Cost recovery management report

	Scarcity allowance	297,500.00	
	Lunch for OT staff	235,000.00	
	Salaries: Doctors	1,968,491.00	
	Salaries: Nurses	<u>1,789,850.00</u>	<b>6,269,568.00</b>
	<b>DRS:</b>		
	Fuel	915,100.00	
	Allowances	563,000.00	
	Patient's food	65,200.00	
	Patient's transport	1,666,650.00	
	Eye drops for patients	719,400.00	
	Communication	20,800.00	
	DRS Consumables	38,800.00	
	Follow up	<u>43,800.00</u>	<b>4,032,750.00</b>
	<b>SURGICAL OUTREACH:</b>		
	Allowances		<b>388,000.00</b>
	<b>ADMINISTRATION:</b>		
	Stationary	147,700.00	
	Bank charges	26,300.00	
	Salaries for admin staff	2,087,093.00	
	Phone bills	244,110.00	
	Cleaning charges	436,590.00	
	Renovations	248,000.00	
	Sugar and tea leaves	40,500.00	
	Fax film	<u>36,000.00</u>	<b>3,266,293.00</b>
	<b>TOTAL EXPENSES</b>		<u><b>20,224,695.00</b></u>
			<u><b>(12,885,475.00)</b></u>
<b>GRANTS:</b>	KCMC	8,490,000.00	
	CBM	<u>6,639,000.00</u>	
	<b>TOTAL</b>		<b>15,129,000.00</b>
	Revenue	7,339,220.00	
	Revenue less DRS	7,035,220.00	
	Expenses	20,224,695.00	
	Expenses less DRS	16,191,945.00	
	Cost recovery ratio total	36%	
	Cost recovery less DRS	43%	

## **Proposal to develop an “appointment clinic” service in the Eye Department**

### **Rationale :**

The current system for patients wanting to be seen “privately” in the Eye Department is unsatisfactory and haphazard. There are 2 categories of “private patients:” those who insist on seeing the department head and those who pay a little extra to avoid the queue. The former come during a busy clinic, have to wait a long time, and because they are part of the general clinic do not pay any extra – this is a lost source of revenue. The latter do not have access to a private consultation, often do not see senior specialist or have any benefit other than a shorter wait for the extra they pay. It is likely that this category would increase if a proper private clinic was available.

A subgroup of patients has come for phacoemulsification cataract extraction (phaco). These patients are well to do and prepared to pay considerably above standard charges to have this special procedure. We could attract even more of these patients by providing an efficient service and attractive environment.

### **Proposal**

To address these issues we propose to develop an appointment clinic service within the Eye Department. Characteristics of this appointment clinic would include:

- High standard of care: All patients would be attended by a senior doctor who would be properly supported by a well trained appointment clinical coordinator (with paramedic skills) so that his/her time would be used effectively.
- Convenient for patient.
  - Appointments would allow patients to be seen in an orderly, time efficient manner, rather than spend hours waiting to be seen
  - Patients would be spared the often lengthy wait for opening or activating a file –.
- Attractive environment: a clean and well appointed examination and waiting area including toilets will be expected and will also attract patients
- The clinic will attain a measure of financial sustainability with a transparent accounting system and a simple fee schedule
- The clinic will generate income to pay for running costs and to pay for the renovations necessary to establish it; additional revenue will be used to subsidize care for Eye Department patients too poor to pay for care

We believe such an appointment clinic would be a significant income generator for KCMC and the Eye Department, enhancing the reputation of the Eye Department and benefiting both fee paying and poor patients. It could act as a pilot for similar appointment clinics in the rest of the hospital.

## Appendix F- Proposal to open “appointment clinic”

### Physical renovations

- We will refurbish room 15 (currently housing the laser and A-scan) to be used as the appointment clinic room.
- The laser and A scan will be moved into the current cashier’s office (Room 17).
- The cashier will move for the time-being into a cubicle which can be created behind the pharmacy window. (This change is one that is needed anyway to streamline patient flow though the OPD. The current location of the cashier creates unacceptable bottleneck every day as patients attempt to pay OPD, admission, and discharge fees. We plan to make more minor modifications to the OPD to further streamline flow with the planned computerized management information system)
- The current staff toilets, which are dark and dingy and used as staff changing room, will be renovated for future use by appointment patients and eye department staff.
- Room 18 will be renovated into a nurses changing room.

### Staffing

- A full time appointment clinic coordinator (ACC) position will be created. (job description in appendix A)
- Senior doctors will have scheduled days to attend the clinic.

### Procedures

- To begin with the clinic will be opened two or three days per week 2-4 pm, so that the morning rush of patients is over
- Patients will be seen by appointment, made by the ACC with a cell phone number for this purpose (so as not to increase the burden from telephone calls now directed to nursing staff)
- The clinic coordinator will be responsible for opening new files and obtaining old files from central records, as long as this is the system used by the rest of the eye department. (When the planned computerized management information system is implemented in the eye department, this will serve the appointment clinic as well)

### **Management**

The ACC will be directly responsible to the (soon to be hired) Eye Department manager under Dr Hall. During clinic hours the ACC will be responsible to the senior doctor staffing the clinic.

Until such time as a computerized MIS is in place the ACC will keep a logbook of patients seen (for accounting and monitoring).

Accounting will be through the eye department system. Fees could be collected by the cashier if the department can get a cashier who will be available during hours; otherwise the fees will be collected by the ACC and deposited with Department accountant the morning after clinic, reconciling this with the log book. All revenue will go into the Eye

## Appendix F- Proposal to open “appointment clinic”

Department sustainability account. Salary of the ACC will be turned over from the Eye Department sustainability account to KCMC central administration for disbursement.

### **Financial plan**

Fee for appointment clinic would be 10,000 per visit

If a minimum of 10 patients per week use the service we expect to generate 400,000/month

The primary recurrent cost will be the salary of the ACC; this will start at 100,000 Tsh/month. Other recurrent costs (sundry office supplies, telephone charges) are expected to be about 40,000/month, leaving 360,000/month.

Initial renovation costs are estimated at 5,000,000 TSh. These funds will be taken from the Eye Department sustainability account.

We need to budget for a new slit lamp at 6,000,000. We propose to use the revenue of 360,000/month to apply toward a slit lamp, which we will have funds for after about 16 months. This will be shorter if the clinic experiences increased usage as we anticipate.

After purchase of the new slit lamp we will use revenue for several other plans under development : (1) to pay salary for several new cadre of staff which will be necessary for the eye department to operate a high volume cataract service (including but not necessarily limited to counselors and theatre attendants) (2) to fund community outreach programs designed to bring cataract patients to KCMC and provide affordable cataract surgery.

## Appendix F- Proposal to open “appointment clinic”

### DUTIES FOR APPOINTMENT CLINIC CO-ORDINATOR (ACC).

The ACC would need a background in eye work eg. Ophthalmic nurse or Optometrist, have good communication skills and be able to use a computer in order to manage appointments and collection of information.

1. The ACC will be responsible to the Department manager under the Head of Department
2. The ACC will Co-ordinate appointments with Dr. Hall and other Drs. designed to other Appointment Clinic days. He/she will therefore need to keep abreast of which Drs. are on leave or on safari. He/she will reconfirm appointments by telephone the day before clinic
3. The ACC will be responsible for making sure files are ready for patients
4. The ACC will welcome patients to the clinic and perform preliminary VA, and take a brief history. (Focimetry of current glasses to be performed).
5. ACC should be available during consultation to keep informed of the diagnosis and therefore be in a position to counsel the patient.
6. Counselling. ACC will save the Dr. time in counselling on most common outpatient conditions. ACC will explain to patients the risks and benefits of surgery as well as details of the procedure.
7. ACC will be responsible for making sure all equipment is available for clinics and room is cleaned and ready before clinic starts
8. Biometry. The ACC will be trained in Biometry techniques to select the correct implant for patients having cataract surgery
9. Refraction. The ACC will be responsible for ensuring appointment patients are refracted at the appropriate time. He/she will keep a record of all refractions performed for Audit / outcome purposes.
10. Audit/ outcomes. The ACC will be responsible for monitoring the outcomes of appointment cataract surgery. This will enable audit of biometry to be allow for development of local A constants for surgeries and IOLs . Other audit responsibilities will include:
  - Data collection (completing outcome sheets for Dr)
  - Data entry (transfer of data from sheets to computer)
  - Limited data analysis
11. Other duties.  
If the appointment clinic is not full the ACC is expected to help in the general outpatients in accordance with their general training.

## **Appendix G- Proposal for outside eye nurse consultant**

### **Extension Of Skills For Eye Department Nurses**

A proposal from KCMC Hospital ( Dr. Anthony Hall) and KCCO (Dr Susan Lewallen)

#### Rationale

KCMC has been providing eye services and cataract surgery since 1971. Since this time, cataract surgery methods, indications for operating, and ideas about proper pre and post operative care have undergone a revolution. We have also recognized that we are very far from meeting the needs of the cataract blind in Kilimanjaro Region and we must provide more surgery. Meanwhile, health sector reform is requiring more accountability. Support from private donors and from Ministries of Health will be tied to productivity in the future. The only way to meet all these demands is to increase efficiency and provide more services using currently available resources.

Fortunately, there are many models available to show us that it is possible to increase the numbers of surgeries using the resources we have now. Many eye departments with a lower staff/patient ratio than we have at KCMC Eye Department provide significantly more cataract surgery (see Appendix A). A key component of all the models is a well trained, flexible nursing staff working in an efficiently organized system. The Eye Department has developed a comprehensive plan (Karibuni Macho) to develop such a system.

We propose an extension of skills in-service training for all Eye Department nursing staff in order to bring them up to date on modern techniques and make them competent in all units (OPD, theatre, ward). This is essential because many of the nursing staff in the Department are currently not familiar with the latest techniques in surgery and not comfortable working in the different units.

#### Proposed Activities

##### Assessment phase:

The Eye Department has already planned the necessary positions in each unit to handle increased numbers of patients in ward, theatre and OPD. During the assessment week an external expert will observe the nursing procedures and positions currently used, advise on the new plans, and assess skills of current nursing personnel to fill the new positions.

Following this, the external advisor will suggest changes as necessary to the planned positions and design an appropriate training plan for these. Guidelines, and objective will

## Appendix G- Proposal for outside eye nurse consultant

given for each training section so the learning process can be monitored and nurses will know specifically what they are supposed to learn in each section

Training phase:

The exact length and content of the plan will depend on what is learned during the assessment. We anticipate that the training will have the following features:

- It will be highly practical, hands on training with minimal formal didactic component
- It will be “on the job training,” designed to fit within current department activities so that there will be no disruption to patient services.
- It will include all trained nurses as well as nurse attendants in the Eye Department
- It may be broken into 2 or 3 short ( 1 week) sessions to allow practice of new skills with follow up support
- It will include training in necessary management skills (scheduling and supervision) as well as technical training (see appendix B)

Implementation phase:

With the initiation of the computerized registration system the Eye Department will be in a position to start the new positions and procedures to allow efficient flow of patients through all units. Implementation of the new procedures and positions will occur on specific dates (set during the assessment phase) on a unit by unit basis. The external expert will be available for consultation during this phase.

Anticipated outcomes:

Following the training and implementation we expect to have a core group of nurses with the skills listed in appendix B. They will have the flexibility necessary for efficient running of the eye Department and will fill the positions which have been defined.

Personnel

Sr Ingrid Cox is a CBM co worker with 18 years of experience in East Africa, training nurses, assessing nursing programmes, and organizing training of nurse trainers. She established a nurse and ophthalmic assistant training course employed by Kikuyu Hospital and recognized by the Kenyan Ministry of Health. She has published a training manual for ophthalmic theatre workers and given presentations on training at Royal College of Nurses conference and the Ophthalmic Society of East Africa.

Budget

This project can be realized without special funding. Sr Cox has a travel budget now and her time is covered by CBM. Sr Cox will be hosted locally by KCCO; KCCO will assist with local administration of the project, supported by IEF.

## Appendix G- Proposal for outside eye nurse consultant

### Productivity at some Eye Hospitals

<b><u>Name</u></b>	No. surgeons	Nurses + cleaners	No. Cataract (other surgeries)	Cataracts/ nurses+cleaners	Cataracts/ surgeon
Theni (India)	2	13+10	5,500 (1,398)	239	2,750
Kikuyu Kenya	6	31 + 9	2,600 + at least 2400 (4,000)	125	833
<b><u>Tenwick</u></b> Kenya	1	8+1	800 (300)	89	800
Ruharo Uganda	2	10 + 4	1086 (841)	78	543
<b><u>CCBRT</u></b> Dar	4? +	36 + 5	2610 (1,151)	64	
<b><u>KCMC</u></b>	5	32 + 0	1774	55	355

### Skills all Eye nurses should have

#### Theatre:

Competently scrub for ophthalmic surgeries  
 Prepare trays for cataract surgery, act as runner, or sterilizer nurse in theatre  
 Know how to clean and care for eye surgery instruments  
 Care for the patient in theatre.

#### OPD:

To triage and assessment of patients before being seen by the Dr.  
 To be able to give advice and health care talks to the patients.  
 VA taking, biometry, minor procedures  
 Know how to take care of diagnostic equipment in OPD and ward

#### Ward:

Know procedures for admission and discharge of patients  
 Know procedure for assisting with ward round  
 Recognize patient problems which must be reported to doctor  
 Preparation of patients coming to theatre, emergency, day care or routine.  
 Care of patients after local and general anesthesia.  
 Be able to give correct information before discharge

In- charge nurses, in addition, should be able to competently manage their units and supervise the staff under them. This includes making the rostars, staff training, appraisal, stocking and inventory keeping, discipline, and knowledge of responsibilities and accountabilities.

## Appendix H- Market projections for cost recovery

Hypothetical calculations of cost recovery

Assumptions:

3000 cataracts per year paying as per the table

total fixed expenses (salaries, rent, maintenance) for a year are 125,000,000

consumables for ECCE are 12,000/ case

consumables for a phaco are 40,000/ case

grade of service	number /year	price (Tsh)	revenue
phaco	250	300,000	75,000,000
ECCE IOL class A	100	65,000	6,500,000
ECCE IOL class B	100	40,000	4,000,000
ECCE IOL class C	2600	15,000	39,000,000
			124,500,000

cost of consumables for ECCE = 12,000 x 2800=33,600,000

cost of consuables for phaco = 40,000 x 250 = 10,000,000

fixed costs = 125,000,000

total expenses are = 138,600,000

revenues/expenses = 124,500/ 138,600 = 90%

## Karibuni Macho

### Workplan for Eye Department activities

Developed based on LAICO workshop (Nov/Dec 2002) by Prof Shao, Dr Hall, Dr Lewallen, Sr Fidea, Sr Kweka, Mr Banzi, Mrs Isheke

Goal/strategy	Activity	Inputs		By when or starting from
		Responsible personnel	monetary	
Reorganize OPD unit	Develop business plans including multi-tiered pricing service options	Lewallen, Seva volunteer?		Ongoing, complete by June 03
	Develop procedures for patient flow (registration, exam, admissions); assess staff needs	Hall, Lewallen, Isheke , OPD staff		Ongoing, complete by Mar 03
	develop appropriate job descriptions	Isheke, Lewallen, OPD staff		Start in Jan 03 (w/ new mngr)
	Physical renovations <ul style="list-style-type: none"> <li>• Room 15 for appointment clinic</li> <li>• open OPD space for registration, cashier, VA</li> <li>• Toilets renovated for patients and staff</li> <li>• Provide counseling unit</li> <li>• New tea room</li> <li>• New MMed room</li> </ul>	Isheke to follow up with central admin	eye dept acct	immediately
	Hire Appointment clinic coordinator	Hall	Salary from eye dept acct	complete

## Appendix I- workplan

	Hire or re-train staff (including counselors)	Geneau, staff	New salary from eye dept acct	Start when job descriptions developed – Jan/Feb 2003
	Delegate (train too) the task of A scan for all patients	Hall		June
	Develop protocol or policy for treatment of common OPD problems to increase efficiency	Hall, dept staff		complete by Dec 03
Reorganize ward unit	Develop business plans for multi-tiered pricing service options (accommodation, food, services)	Lewallen, Seva volunteer, Isheke, mngr, dept staff	Seva volunteer	Late Feb/Mar
	Evaluate current ward procedures (admission, treatment, rounds, and discharge) and streamline	Hall, Kweka, ward staff		Jan 2003
	Evaluate staffing needs and develop job descriptions to fit new procedures	Isheke, Kweka, ward staff, Lewallen		Complete by mid 2003
	Assign, hire, or re-train staff	Hall, Isheke		Begin mid 2003
	Make physical renovations to create or improve semi-private and private rooms		Eye dept acct	Complete by June 2003
	Develop patient feed back form and test (OPD and ward)	Isheke to develop, Tejal/Ida to test		Early Feb
Reorganize theatre unit	Plan best use of space and evaluate need for new equipment (should be minor) and renovations (pass through window?)	Fidea, Hall		Jan 2003
	Develop standard procedures for cataract and for sterilization, other surgery, post-op	Fidea, Hall		Jan 03
	Assess staff needs (1 scrub nurse per table, 1 circulator per theatre, etc)	Fidea, Hall		Jan 03
	Hire, assign, re-train staff	Hall, OT staff		By Mar 03
	Assess need to transfer more minor operations to current wet lab; reorganize wet lab room as needed	Fidea		Start mid 2003

## Appendix I- workplan

Develop programme to recruit cataract patients	Discuss collaborative opportunities with current CBR program, & Lions. Identify “sponsors”	Courtright, Lewallen, Hall, Banzi		ongoing
	Conduct basic research to determine important barriers to current usage	Kilima, Geneau, Courtright		Some complete, other ongoing
	Hire community co-ordinator (CC); train at Aravind	Courtright, Lewallen	Training \$ from Aravind grant; salary from Seva Canada	In place; screening sites being conducted as of November 2002
	Develop plan and budget	Banzi and Courtright		complete by Feb 2003
	Develop programme to use nursing students to do vision checks on all hospital patients	Lewallen and nursing school admin		Mar
	Train additional staff nurses for clinical screening. a. Follow up Dr Schwab’s registration	Dr Larry Schwab (Seva Volunteer)  a. Mrs Isheke	Seva	Complete by Mar 2003  a. urgently
	Develop other (non community- based) programs to increase uptake, e.g. media, advertising	To be decided near time	Eye dept acct	late 2003 (hospital systems should be running well)
	Produce patient educations materials for counselor to use	Tejal, Ida		Complete by end Jan
Re organize outreach surgical safaris to increase efficiency	Work with hosts to improve their capability to bring in patients	Lewallen to follow up with Lushoto. ?? to work with other hosts		
	Develop plan for pricing outreach services	??		
	Discuss new policy with host sites and reach written agreement	Hall		
Implementation of	Get commitment from management at KCMC	Hall, Lewallen		complete

## Appendix I- workplan

a computerized management information system	Detailed interdepartmental planning to determine data collection needs	Lewallen, eye dept staff		Complete
	KCMC computer specialist and Eye department staff member visits Aravind for customization	KCMC computer specialist	IEF	complete
	Advertise for and Hire registrar/cashier	Mrs Isheke	Eye dept acct	Early Jan
	Obtain, install, and test necessary hardware, software and the network operating system	KCMC computer specialist	IEF	Jan-Feb 2003
	Staff training with “pilot software	KCMC computer specialist	IEF	Feb/Mar 2003
	LAICO specialist comes to KCMC for implementation, creating the database	Ganesh	IEF	April 2003
	Maintenance and ongoing support (via email) from LAICO	Aravind, KCMC computer specialist		
Develop a department management structure, financial plan, accounting, and stores system	Establish management team and provide orientation and management training to core group by exchange visit to Aravind		Supported by LAICO, KCCO	
	Develop staff feedback system to increase satisfaction of workers	Isheke		mid/end Feb
	Develop employee performance review forms and implement	Isheke		Nov 2003
	Develop clear organizational structure with detailed lines of authority, responsibility, and accountability	Isheke, Lewallen Seva volunteer		April 2003

## Appendix I- workplan

	develop clear and detailed job descriptions for all positions in department, based on new patient processing procedures a. admin (include housekeeping) b. ward c. OPD d. theatre	a. Isheke, Chilemo b. Kweka, Isheke c. Hall, Lewallen, Mchau d. Fidea, Isheke		a. Jan b. Jan c. Jan d. Jan
	Determine the best way to include counselor cadre (nurses? New hires? )	Staff discussions		
	Develop Personnel policy Manual (working hours, leave, etc)	Isheke, Lewallen staff		Draft ready for staff discussion by end Mar
	Evaluate maintenance and house cleaning services	Isheke, dept staff		
	Establish a monitoring and evaluation plan	Isheke, Lewallen, dept staff		
	<b>Develop financial plan for cost recovery (refine cost estimates, project revenues, develop budget)</b>	Lewallen, Isheke, Oforo, Seva volunteer, central admin		April
	Develop and implement Department wide accounting system to give meaningful reports on regular basis	Ashton? Oforo, Seva volunteer? Isheke, Lewallen		March
	Develop a functioning system for medical and instrument stores	Isheke (with Matei, Mchau, Oforo )		Start in March, have system functioning by end of 2003
	Develop a maintenance schedule for department equipment. Send Eye Dept personnel to LAICO for training?	Isheke will discuss with Hall and Savage		

**Appendix I- workplan**

Develop plan with Optometry to increase efficiency and revenues				
Assess pharmacy service and develop plan to improve				
Review ophthalmic nursing curriculum				