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SUPPORTING VISION 2020: THE RIGHT TO SIGHT

IMPORTANCE OF MONITORING CATARACT SURGICAL OUTCOMES

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Introduction

Visual loss from cataract represents an estimated 50% or more of the global burden of blindness. Time tested, safe and effective technologies are available that could restore near normal vision to a large majority of those affected. Despite this, the magnitude of the global burden of blindness from unoperated cataract continues to increase. The fact that nearly 20 million persons are currently blind from cataract is a reflection of the lack of access to surgical services for a majority of these persons, even though the knowledge and skills required for apply-

ing the technology exist. For this reason intervention against cataract blindness has received priority attention in Vision 2020: The Right to Sight. In this context, the monitoring of the outcome of cataract services in general, and cataract surgery in particular, has become imperative.

Settings for Monitoring Outcomes

By its sheer magnitude, unoperated cataract has public health dimensions. As such, efforts at intervention need to be planned and applied in a public health mode. However, the intervention is clinical – surgical extraction of the cataractous lens and the correction of the resulting aphakia through various means. Monitoring the outcome of cataract surgery must, necessarily, apply to both of these interventions.

For too long, emphasis has been placed



Professor Baasanhuu reading the Journal of Community Eye Health, while travelling between Ulaanbaatar and Darhan, Mongolia

Photo: Gordon J Johnson

on the quantity of surgical operations performed, rather than the outcome of such surgery, as an indicator of the performance of cataract surgical services. Fortunately, this is changing, with greater emphasis being placed on using the outcome of surgery as an indicator, in addition to the numbers of surgeries performed.

It needs to be stressed that the objective of performing cataract surgery is not merely to restore visual function at the 'organ level'. More importantly, it is intended to restore functioning and independence at the 'person level'. In other words, the goal is to achieve restoration of visual function, as measured by visual acuity, contrast sensitivity and other parameters, on the one hand and, functional vision, as judged by such measures as activities of daily living (ADL), on the other. Monitoring outcomes could, therefore, be applied in a clinical setting, where the visual outcome of cataract surgery (post-operative visual acuity) is primarily measured. In addition, studies based on ADL, patient well being, quality of life and patient satisfaction may be instituted as a

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Monitoring Cataract Surgical Outcomes . . .

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routine or, more commonly, on randomly selected post-operative patient groups.

Clinical Audit

The clinical monitoring of post-operative visual outcome falls within the realm of clinical audit. It should be considered mandatory (an absolute requirement), in any setting where cataract surgery is performed, that records are kept, among other clinical details, of the pre-operative and post-operative visual acuity of both eyes of the patient. Such recordings, carried out at appropriate post-operative timings, including a record of presenting and best corrected visual acuity, would provide invaluable information.

In the first instance, it would indicate the number of patients who have had their vision restored to a level that takes them out of the blindness category (using the WHO ICD categorisations or other nationally agreed standard). This could be designated as the **Blindness Reduction Rate** – an important indicator for monitoring Vision 2020 implementation, in the context of presently set targets. Such a measure would help in indicating the contribution made towards the true reduction in blindness from cataract:

- **Numerator:** Number of persons whose vision has been ‘restored’ (no longer categorised as blind)
- **Denominator:** Total number of cataract blind persons operated on.

However, this will not indicate the levels of visual outcome, other than the ‘blind’ or ‘non-blind’ categorisations.

Secondly, if the audit is carried out in respect of a specific operating surgeon, the analysis of the results would indicate the quality of pre-operative, intra-operative and post-operative care given by the surgeon in question. Moreover, when such data are analysed periodically, this would serve two purposes:

- A measure of the trend in achievement of successful visual outcomes
- An indicator of areas of performance

that require improvement through continuing professional development.

Precise desirable levels of post-operative visual outcomes may be difficult to define. There is some evidence that better quality of outcomes serves as an incentive for patients to seek surgical treatment. In any event, given the importance of acceptable levels of visual outcome, the World Health Organization has suggested the following levels of visual outcomes against which results could be assessed.¹

Though not a direct indicator of the quality of visual outcome, the proportion of patients in whom an intraocular lens was implanted can sometimes be used as an indicator of the trend towards better visual rehabilitation in cataract surgery.

Measurement of Visual Outcomes in a Population Setting

These measures are obtained through population based studies of outcome and could be combined with measures of unmet need, coverage of services, identification of barriers, as well as quality of life and patient satisfaction studies.

These studies serve useful epidemiological and programme purposes. However, as the subjects examined are accumulated over a number of years, such studies do not generally have a direct application in identifying the skill enhancement needs of the operating surgeon.

Conclusion

The need for measuring outcomes, preferably over a wider spectrum than the mere visual outcome, is a critical element in measuring and tracking our achievements towards the goal of eliminating avoidable blindness by 2020. Reliance simply on the numbers of cataract operations performed would result in a state of undesired complacency.

Reference

1 WHO Informal consultation on analysis of blindness prevention outcomes. Geneva. World Health Organization. WHO/PBL/98/68. □

	Post-operative visual acuity	Available correction	Best correction
Good	6/6–6/18	>80%	>90%
Borderline	<6/18–6/60	<15%	<5%
Poor	<6/60	<5%	<5%

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Monitoring Cataract Surgical Outcomes: Methods and Tools

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Methods of Assessing Cataract Outcome

1. Population based studies

Several population-based blindness surveys and rapid assessments, conducted in the late 1990s, indicated that of all eyes operated on for cataract, 21–53% had a presenting visual acuity of less than 6/60.^{1,2,3,4} These figures include patients operated on recently as well as decades earlier. They include operations done under excellent as well as less favourable conditions, by experienced as well as less experienced surgeons, sometimes even by couchers.*

* Couching is the ‘surgical’ displacement of the cataractous lens, usually posteriorly and inferiorly into the vitreous cavity, often using a needle. It is a method used by some traditional healers.

Aphakic spectacles may have been lost or damaged. People with initial good outcome may have developed retinal disorders, reducing vision as they get older. Outcome data from surveys may not do justice to recent advancements in IOL

surgery, but they do reflect what the public sees and determine their expectations and trust on regaining sight after surgery.

2. Monitoring case studies

Routine monitoring of pre-operative, operative and post-operative data of each operated patient calculates the visual outcome and assesses the quality of cataract surgery. It is assumed that encouraging eye surgeons to monitor their own results, over time, in itself will lead to better outcomes of cataract surgery. Better results will reduce fear and motivate more patients to come for surgery. Outcome data should not be used to compare surgeons or centres, since case selection, surgical skills, procedures and facilities, follow-up periods and other factors affecting outcome, differ by surgeon and by centre. Routine monitoring should be used to evaluate results of individual surgeons or centres over time. It can be useful to evaluate the surgical learning curve of residents during their training.

The Tools

We developed a manual ‘tally’ (record) sheet system and two computerised packages. The computer systems use more input data and provide a more detailed analysis. It is important to select the method that is most suitable and usable on a regular and long term basis in your own situation. When skilled data entry operators are not



Age-related cataract – the most common cause of blindness in the world

Photo: John DC Anderson

available it is advisable to use the manual tally sheet system.

1. Manual tally sheets

This system is developed for eye units without computers or units without data entry staff. Pre-operative, operative and post-operative data are collected from the case sheet normally used by the eye surgeon(s). Alternatively, the standard Cataract Surgery Record (CSR) from the computer systems can be completed and added to the case sheet. Using the CSR would also facilitate an easy change over to a computerised system at a later stage (see Figure 2).

The data are entered on the tally sheets (Figures 1a and 1b), one row for each operated eye. Each sheet has 20 records. When 100 records are entered (5 full sheets), the totals in each column are equal to the percentages. When not all operated patients return for review, care should be taken with

Figure 1a: The Manual Tally Sheet: Discharge

	Personal & Surgery					Discharge					
	Serial number	Patient number or Patient name	Surgeon	IOL Y/N	Surgical compl.	Good 6/6–6/18	Borderline 6/24–6/60	Poor <6/60	Cause of poor outcome (<6/60)		
									Selection	Surgery	Spectacles
1											
Number of lines/spaces allows 20 records											
20											
	N=total			Y	C	G		P	D1	D2	D3

Figure 1b: The Manual Tally Sheet: >4 Weeks Post-operatively

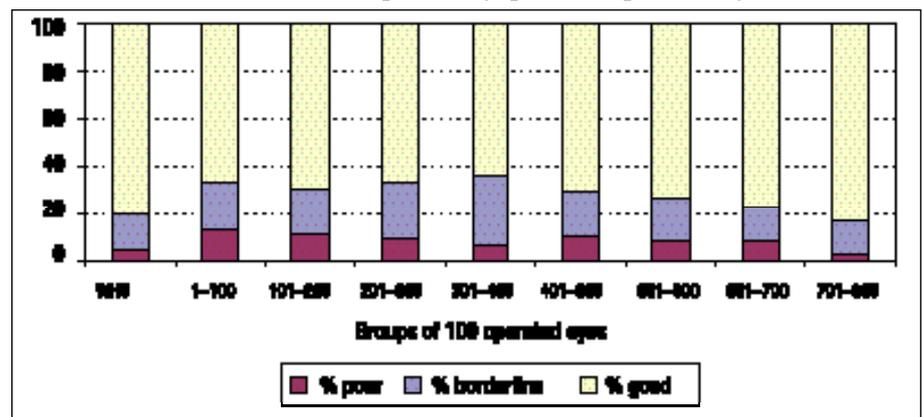
	Personal & Surgery					>4 Weeks Post-operatively							
	Serial number	Patient number or Patient name	Surgeon	IOL Y/N	Surgical compl.	No. of wks post-op.	Good 6/6–6/18	Borderline 6/24–6/60	Poor <6/60	Cause of poor outcome (<6/60)			
										Selection	Surgery	Spectacles	Sequelae
1													
Number of lines/spaces allows 20 records													
20													
	N=total			Y	C	G1			P1	F1	F2	F3	F4

5. Visual acuity in the better eye pre-operatively, at discharge and follow-up.
6. Good / borderline / poor outcome at discharge by month (presenting VA).
7. Proportion of good / borderline / poor outcome by follow-up (presenting VA).
8. Operative complications and type of complications by month.
9. Operative complications by place of surgery.
10. Operative complications by cadre of surgeons.
11. Operative complications by additional ocular pathology.
12. Operative complications by type of surgery.
13. Causes of poor outcome at discharge and follow-up.
14. Percentage of poor visual outcome at discharge and follow-up, by type and by place of surgery.

While the manual tally sheet system can register one follow-up visit at 4 or more weeks post-operatively, the computer system ideally registers three follow-up visits: at 1-3 weeks, 4-11 weeks and 12 or more weeks post-operatively. The pilot study showed that optimal visual outcome was reached at 6 months or more after surgery and that the World Health Organization visual outcome targets were realistic.⁵ In many countries not all patients return after surgery. The pilot study showed that results from patients who do come for follow-up are similar to those from patients who did not return, but were visited at home.

Bar graphs showing the proportion of good, borderline and poor outcomes per group of 100 operated eyes (Figure 3) should be displayed in the operating theatre.

Figure 3: Proportion of Good / Borderline / Poor Outcomes at 12 or more Weeks Post-operatively, per 100 Operated Eyes



The following guidelines are useful to evaluate quality:

- Proportion of cases with IOL: a target percentage can be set according to local circumstances
 - If less, improve availability and affordability of IOLs and ensure that all surgeons are adequately trained in IOL surgery and have the necessary equipment.
- Percentage of complications should be less than 10%, with posterior capsule rupture and vitreous loss each not exceeding 5%
 - If more, improve surgical technique by asking for advice from a good and experienced cataract surgeon. Also, ensure that all surgeons are adequately trained in IOL surgery and have the necessary equipment.
- At discharge, more than 50% of cases should have good presenting vision and less than 10% poor outcome
- At 4 weeks or more post-operatively, more than 80% of cases should have

good presenting vision and less than 5% poor outcome

- At 4 weeks or more post-operatively, more than 90% of cases should have good vision with best correction and less than 5% poor outcome
 - If not, analyse the causes of poor outcome. If surgical, take action as above. If refraction, provide at least best spherical correction spectacles at an affordable price.
- The trend over time is static outside the recommended limits, or worsening
 - Carefully analyse the reasons for lack of improvement and deal with identified problems.

The WHO has recommended that it should be a requirement for all eye surgeons to monitor their own results over time, and identify causes of poor outcome (selection, surgery, spectacles, sequelae). Addressing these causes is likely to improve future outcomes of cataract surgery. Monitoring outcomes is an essential part of the training of everyone who will do cataract surgery, so that it becomes routine and required practice to think about quality and how it can be improved.

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WORLD HEALTH ORGANIZATION POSTERS

PREVENTION OF BLINDNESS IN CHINESE AND TIBETAN

The posters are translations of the WHO Poster in English on
Prevention of Blindness

Eye injuries (6 pictures)

Acute onset eye conditions (5 pictures)

Gradual onset eye conditions (5 pictures)

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Monitoring Cataract Surgical Outcomes: 'Hand Written' Registration Method

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Introduction

The purpose of this hand written method of monitoring cataract surgery outcomes is to provide a practical method, assisting cataract surgeons and programme managers to monitor qualitatively the results of their cataract surgery. Such monitoring is the key to improving the quality and results of our cataract surgery.

The hand registered method is quick, simple, and friendly to use!

The Process

At discharge

- Before the patient is discharged, the Snellen visual acuity (VA) in the operated eye is tested and is recorded in the case notes
- If the VA is less than (<) 6/60, it is rechecked, both with and without a pin-hole
- If the VA is <6/60, the eye is carefully examined to determine the cause of the poor vision
- The details for each patient are recorded on form A
- The discharge is only authorised once this has happened.

At 8 week follow-up

- At 8 week or more follow-up, the Snellen visual acuity with the spectacles that the patient has or will be wearing is tested and is recorded in the case notes
- If the VA is <6/60, the eye is carefully examined to determine the cause of the poor vision
- The details for each patient are recorded on form B.

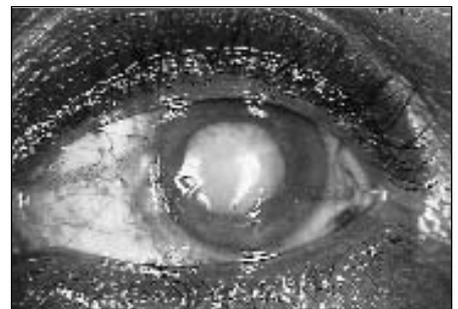
How to Complete Form A: Discharge Visual Acuity

- Form A is completed at discharge
- It should be completed for all patients who have had a cataract operation except those under the age of 20 years and those cases of cataract due to trauma

- One row of the form is completed for each cataract operated eye
- Each form has space for 20 cataract operations.

1. **IOL** – record 'yes' if an IOL was implanted and 'no' if an IOL was not used.
2. **Surgical complications** – record any surgical complications.
3. **Discharge VA** (good, borderline, poor) – tick one of the 3 columns, depending on the measured visual acuity.
4. **Cause of poor outcome** (selection, surgery, spectacles) – if the VA is recorded as less than 6/60, the reason should be recorded in the appropriate column.

- This should only be done if the VA is <6/60.
- Only one column should be filled.
- If there is more than one cause for the poor outcome, the clinically most significant cause should be identified.
- **Selection** (co-existent disease or pathology causing poor vision) – specify the disease or pathology.
- **Surgery** (intra-operative complication(s)) – specify the complication(s).
- **Spectacles** (uncorrected refractive



Hypermature cataract

Photo: Gordon J Johnson

error) – tick this column if the VA improves to 6/60 or more with a pin-hole, or with spectacles which the patient does not have. 'No IOL' operations should be checked with +10.0D spectacles.

How to Complete Form B: Follow-up Visual Acuity

- Form B is completed at follow-up at least 8 weeks after surgery
- It should be completed for all patients who have had a cataract operation except those under the age of 20 years and those cases of cataract due to trauma

Questions and Answers: Dr Hans Limburg asks Dr Colin Cook

1. Why use the manual tally sheet system?

Monitoring of cataract surgical outcomes is a tool that is guaranteed to ensure that we always continue to improve the quality and outcome of our cataract surgery. The manual tally method is a simple, quick, and inexpensive method of doing this. It is suitable for use in any hospital that does not have access to a sophisticated computer system.

2. What are the experiences in Edendale Hospital?

The system has been used in our hospital since July 2000. It is an integral part of the clinical routine. The data analysis takes about 10 minutes each month. The results are reported and discussed at staff meetings each month. The system facilitates a positive culture of quality control and accountability amongst the staff, with everyone committed to improving results and outcome whenever possible.

3. What are the results in Edendale Hospital?

Because many of our patients have to travel considerable distances for follow-up, fewer than 30% attend for any follow-up. We, therefore, only monitor the day one visual acuities before patients are discharged. We are particularly interested in seeing that <5% of poor outcome (VA <6/60) on day one is due to surgical complication. We are also particularly interested in identifying and discussing the causes of poor outcome due to surgery.

4. How many other hospitals in the region use the manual tally sheet system?

We have encouraged the use of the manual tally system in a number of hospitals in the Southern Africa region. Each of the hospitals has been advised to modify the system to best suit their own situations. We have not monitored their results, only whether they are or are not monitoring. In the planning and development of our Vision 2020 programmes, the manual monitoring of our cataract surgery outcomes is something that can be immediately and simply implemented.

Hand Written Method

- Decrease percentage with poor outcome due to surgery or need for spectacles.

What if the Results are Not Good?

Action to improve results is advisable if:

IOLs

- The percentage of cases receiving an IOL is less than 95%.

Take action to improve the availability and affordability of IOLs.

Surgical complications

- The posterior capsule rupture rate is more than 5%

- The vitreous loss rate is more than 5%
- The discharge uncorrected visual acuity is poor (<6/60) in more than 10% of cases.

Take action to improve the surgical technique by asking for advice from a good, experienced cataract surgeon.

Visual outcome

- The week 8 visual acuity with available correction is more than 5% poor outcome (<6/60)
- The week 8 visual acuity with available correction is less than 85% good outcome (6/6-6/18).

Analyse whether the major cause of poor

vision is surgical problems or correction of refractive errors.

Take action to improve the surgery as above.

Take action to provide at least best spherical correction spectacles at an affordable price.

Trends over time

- The trend over time is static outside the recommended limits
- The trend over time is worsening.

Carefully analyse the reasons for lack of improvement and take action to deal with the identified problems. □

Review Article

Monitoring Cataract Surgical Outcomes: Computerised Systems

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Introduction: Why Monitor?

It is well known that the world is facing a cataract crisis. The number of people blind from cataract increases annually, and, as the Earth's population ages, this increasing growth in cataract blindness is accelerating.¹ It is estimated that the elimination of cataract blindness will require over 30 million cataract operations to be carried out

every year by 2020 – a threefold increase in less than 20 years.

However, the cataract crisis is not solely a crisis due to low surgical output. In addition, there is evidence of a disturbingly high rate of poor surgical outcomes. In India, 15–25% of eyes see less than 6/60 with available correction.^{2,3} In China, nearly 40% of eyes had a poor outcome.⁴ The situation in Africa is unlikely to be any better.

Poor outcomes may be due to any of the following:

- Selection
- Surgery
- Spectacles and uncorrected refractive error

Outcomes can be improved by any measures that will:

- Improve case selection, and avoid surgery in patients who will not benefit



Computerised systems

Photo: Murray McGavin

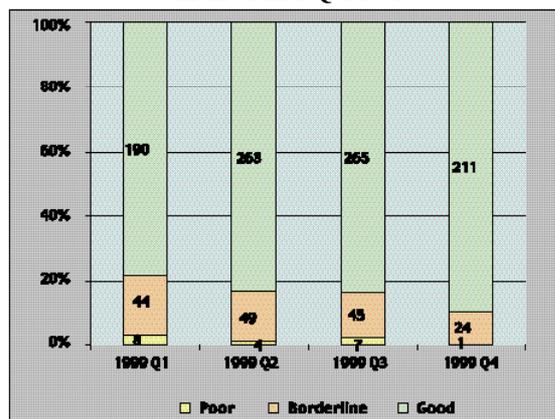
- Improve the quality of surgery, and avoid surgical complications
- Improve post-operative correction of refractive error, and minimise surgically induced ametropia.

A good cataract outcome monitoring system will contribute to all the above.

Table 1: An Example of an Automated Report of Surgical Complications

Total Operative Complications 01 January 2002 to 30 June 2002		
Surgical Complication		
• Nil	470	90.7%
• Capsulorhexis extended	14	2.7%
• Capsule rupture and vitreous loss	10	1.9%
• Unintended damage to iris	6	1.2%
• Zonular dehiscence, no vitreous loss	6	1.2%
• Capsule rupture, no vitreous loss	5	1.0%
• Zonular dehiscence and vitreous loss	3	0.6%
• Others	2	0.4%
• Small pupil, stretched	1	0.2%
• Supra-choroidal	1	0.2%
• haemorrhage	1	0.2%
Total	518	

Table 2: Quarterly Outcomes, Showing an Increase in the Proportion of Good Outcomes from 79% in the First Quarter to 89% in the Final Quarter



How to Monitor

Obviously the more data included in any monitoring system, the more information can be retrieved. However, collecting detailed data on outcomes can be time consuming. Eventually this leads to 'audit fatigue', and the information is no longer recorded. As a bare minimum, data should be collected on pre- and post-operative visual acuity, and on intra-operative complications. In a manual monitoring system, this may be as much data as can be analysed routinely. With a computerised system, analysis can be automated, so it is reasonable to collect more

data – but remember that even if analysis is automatic, data entry will still be a tedious manual task. It is important to achieve a balance between collecting all the information that may be useful, and collecting information from every patient. For monitoring purposes it is better to collect minimum data from everyone than a lot of data from a few patients.

Any cataract monitoring system should minimise the extra work required. If possible, the routine recording of clinical data should be integrated with outcome evaluation. This can be done by using a standard form for all cataract operations. This ensures that the necessary details are recorded, and makes it simple for a clerical worker to transfer them to a computer. The form is placed in the patient's file, and becomes the clinical record of the cataract surgery and post-operative care.

Data should be collected on all patients, even those in whom a good outcome is impossible owing to pre-existing co-morbidity – e.g., previous glaucoma surgery. Although this means that a higher proportion of eyes will have a poor outcome, it permits a more reliable estimate of trends within the clinic.

A defect of many outcome evaluations is that the data are collected, and analysed, but are not readily available to the surgeons and so fail to influence their practice. If surgeons do not see the results, they are not going to be motivated to collect the data. A vital part of any evaluation of outcomes is to provide regular reports to the surgeons, and to develop ways of including the findings into practice. One way of doing this is to have a quarterly meeting, at which all patients with a poor outcome are discussed, and the cause of the poor outcome is identified. Where possible, a change of practice is planned to avoid poor outcomes in the future. For example, at Kikuyu Eye Unit, Kenya, we identified vitreous loss at surgery as being associated with a ten-fold greater risk of poor outcome. This led to changes in our management of vitreous loss, and a significant reduction in the proportion of eyes suffering a poor outcome following complicated surgery.

Some surgeons may feel threatened by discussing poor outcomes in front of their colleagues. The purpose of monitoring surgical results is not to identify incompetent surgeons, but to enable every surgeon to improve their own outcomes. The World Health Organization has set targets of a minimum of 90% of eyes seeing 6/18, and a maximum of 5% seeing less than 6/60, with correction, by two months after surgery. Although it is important to aim for these targets, no one would suggest that,

once they have been achieved, there is no room for further improvement. Monitoring should not be used to check outcomes against other clinics, surgeons, or targets, but to demonstrate trends. Since different surgeons and clinics have different case loads, equipment, and patients, comparisons should be made only against historical data from the same clinic, as this is the only way to show if standards of care at any unit are improving or not.

Computerised Monitoring of Outcomes

Advantages

The major advantage of using a computerised system to monitor outcomes is that reporting can be automatic. Commercially available databases (such as Microsoft Access) have a reporting function. This allows reports to be designed, and then automatically updated. These reports may be text (Table 1), or they can be graphical (Table 2). Surgeons can obtain an immediate report of outcomes at any time, providing they know how to turn on the computer and to open the database!

Computers are good at handling numbers, so the reports can include calculations, such as the mean post-operative refractive error. In clinics that carry out pre-operative biometry, patients whose final spherical error differs from the planned refraction can be identified. Surgically induced astigmatism can be measured, and different surgical techniques compared. If pre-operative visual acuity is recorded for both eyes, it is easy to calculate the number of blind patients who have their sight restored by surgery. Outcomes for specific groups of patients – e.g., diabetics – can be evaluated separately. Although it is possible to do all this from a paper register of outcomes, it is very time-consuming, and it would be difficult to provide regular updates. Once a computerised system is in place, data analysis is easy.

Disadvantages

The major disadvantage of using a computerised system is the cost and complexity of getting it established. Although minimal computing skills are required to use the database, and to obtain reports, the design of the database and the reports do need input from someone with the necessary expertise. The necessary hardware and software should not cost more than \$1,500 - \$2,000. Many clinics will already have a computer that can be used for outcome monitoring, in which case the costs are minimal.

The second disadvantage of computerised systems is the possibility of data

loss. Irregular electricity supplies, theft, or computer viruses can all lead to corruption of vital data. The easy way to avoid this is to have an automated back-up system that copies the database on to a removable disk. This can then be stored in a safe place. If this is done regularly, then data is more secure on a computer than it is in a book, as it is impractical to copy a cataract register at frequent intervals.

Experience of Evaluating Outcomes

At Kikuyu Eye Unit, we found using a computerised system to be a valuable tool. As Table 2 shows, there was a statistically significant improvement in the results of surgery over the first year of using the system. It is hard to identify any single factor that led to this improvement. Management of the complications of surgery improved, and the number of patients with known pre-existing co-morbidity declined. I believe the most important factor was a change in attitudes. The ready availability of the outcome data meant that surgeons were immediately aware of their own results. This led to a move away from just concentrating on the numbers of operations to a culture in which quality is as important as quantity.

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Letter

Dear Editor

I read Professor M Daud Khan's article 'Training of a Cataract Surgeon' in the *Journal (J Comm Eye Health* 2002; **15**: 21–22) with keen interest. I would like to suggest that the trainee should also receive 25–30 sutures (10–0 monofilament nylon) in addition to the other equipment and materials given to them. This would complete the kit.

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Country-wide Monitoring of Cataract Surgical Outcomes

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Introduction

The Lions SightFirst Eye Hospital (LSFEH) in Lilongwe, Malawi, participated in the initial study to develop monitoring systems for cataract outcome. The pilot study took place between 1 June and 31 December, 2000. All surgery was done at the Lions SightFirst Hospital, Lilongwe. The number of cataract operations recorded in the study was 454.

However, the proportion of patients seen for review was 89%, mainly because of active follow-up of those patients who did not come for review on their own. Details are given in Table 1.

No difference in visual outcome could be demonstrated in patients who returned voluntarily for review and those who did not come and were visited at home. Distance and cost of transport are probably the main barriers preventing patients from returning for follow-up.

The overall number of cataract operations in Malawi by Service Area and Hospital Facility are given in Table 2.

Malawi Eye Care Programme

Based on this experience, the Malawi Eye Care Programme (MECP), responsible for the majority of cataract operations in the country, decided to establish a sustainable system for routine monitoring of visual outcome after cataract surgery at all surgical centres. Sight Savers International is supporting the establishment of this monitoring system. MECP conducts cataract operations in well-equipped hospitals as well as satellite hospitals, with consultants, residents and cataract surgeons, mainly through referrals from diagnostic eye camps. The main surgical intervention is extracapsular cataract extraction with posterior chamber IOLs. During the pilot study there were 2 ophthalmologists and 3 cataract surgeons involved in the programme. Now, there are 6 ophthalmologists and 2 cataract surgeons in the country-wide monitoring of cataract outcomes.

Prior to implementation, all involved staff of all the centres where cataract surgery is performed have undergone training in data collection and data entry. Patient personal data, pre-operative examination, surgery and visual acuity at discharge are written on a standardised cataract surgical record form and entered

into a computer, using a specially developed data entry programme. Subsequent visual acuity at post-operative follow-up visits are added to the record and entered into the computer as well. The computer produces standardised outcome reports.

Data is entered by one dedicated ophthalmic clinical officer. The computer is programmed in such a way that it can detect double entry, check on the frequency of post-operative follow-up and, if the completed form is incorrectly completed, it rejects the data.

Cataract Surgery in Lilongwe, Mzuzu and Blantyre

On 1 June 2002 the LSFEH began routine monitoring of cataract operations. The centres in Mzuzu and Blantyre followed by October 2002. A standard cataract surgical record form is completed for each operated eye and post-operative visual acuity is to be measured at discharge, at 1-3 weeks, 4-11 weeks and 12 or more weeks post-operatively. Patients are encouraged to come by providing them with anti-inflammatory eye drops and ready-made reading glasses at review. However, home visits to assess visual outcome will not be possible and the proportion of patients coming for review is expected to be less than in the initial study.

The cataract surgeons are required to perform a minimum of 100 cataract operations independently, and with each visual outcome is monitored. This ensures their compliance in completing the cataract surgical records. So far, the compliance from ophthalmologists, cataract surgeons and ophthalmic clinical officers reviewing operated patients at the OPD has been good.

Four ophthalmic clinic officers have been assigned to each of the three centres to ensure that post-operative appointments are arranged before the patient is discharged, that patients coming for review are seen without delays and that their data are entered into the computer.

Monitoring Cataract Outcomes

A monitoring committee, consisting of 4 eye surgeons, will review the visual outcome analysis from Lilongwe and Mzuzu. They will review their own individual results and those from the cataract surgeons on a quarterly basis and present these results in a meeting with all ophthalmologists and cataract surgeons.

However, methodology used to monitor performance over time is for each surgeon. It is not to be used to compare one surgeon against another or one hospital against another. Each surgeon can access the cases

Table 1: Outcomes by Post-operative Period in LSFEH, 2000

	Discharge	1-7 weeks		8-25 weeks		26+ weeks	
	n=454	n=257		n=221		n=361	
		pres.	best	pres.	best	pres.	best
6/6-6/18	38.5	66.5	80.2	75.1	86.9	84.8	91.1
<6/18-6/60	45.4	26.8	15.6	17.6	9.5	7.5	4.2
<6/60	16.1	6.6	4.3	7.2	3.6	7.8	4.7

Table 2: The Number of Cataract Operations in Malawi by Service Area and Hospital Facility

Service Area/Hospital	2000	2001	2002	2003 Target
*LSFEH	1070	1410	1167	1500
QECH	608	635	513	1000
EHSA-North	349	644	729	850
EHSA-Centre	-	-	123	500
EHSA-L/shore	662	650	984	1000
EHSA-South	414	733	894	1000
EHSA-L/shire	257	284	396	500
National	3360	4356	4806	6350
National-CSR	336	436	481	635
% of IOL	85	90	96	98

* Initial study was done in this Hospital

Table 3: Visual Outcomes at Discharge per Group of 100 Operated Eyes

Case numbers	Good N = %	Borderline N = %	Poor N = %
1-100	48	44	8
101-200	47	32	21
201-300	28	62	10
301-400	13	58	29
401-500	14	58	28
Total N	150	254	96
Total %	30.0%	50.8%	19.2%

which he/she has operated on which have been recorded in the computer and review them to find out the causes of poor outcome.

In Blantyre, the resident ophthalmologist will review the outcome analysis and present the results at a monitoring committee meeting for discussion.

Results

Between April 3 and October 30, 2002, 542 cataract operations from the three hospitals have been recorded in the system. This is less than normal because the operation theatre in Lilongwe was under renovation for two months. In 537 (99%) of all operated eyes an IOL was implanted. So far 31 patients have been seen 1-3 weeks after surgery, 6 after 4-11 weeks and one after 12 weeks. Despite the incentives, the follow-up rate is far less than during the initial pilot study. Although the pilot study indicated no difference in outcome between patients who came on their own and those visited at home, the proportion recorded at follow-up is so low that we only report outcome at discharge here.

The proportion of cases with good outcome (VA 6/18 or better) at discharge shows a declining trend and the proportion with poor outcomes increases (Table 3). Also, the proportion of complications increases (Table 4), but the complication rate for the last 100 operations (401-500) improves to 11%. Analysis of the Annual Report shows that these trends are

Table 4: Peri-operative Complications Per Group of 100 Operated Eyes

Case numbers	No complications N = %	Capsule rupture N = %	Vitreous loss N = %	Corneal oedema N = %	Other complications N = %
1-100	93	1	4	0	2
101-200	91	1	5	1	2
201-300	90	3	2	0	5
301-400	85	4	6	0	5
401-500	89	1	0	3	7
Total N	448	10	17	4	21
Total %	89.6%	2.0%	3.4%	0.8%	4.2%

mainly on account of two large eye camps in July and October. In July, surgeons were few and case selection was mainly done by ophthalmic assistants. This would indicate that 'selection' is the major cause of poor outcome in July.

In the October eye camp, space was short and patients were discharged on the first day post-operatively, instead of 2-3 days post-operatively. There were more cases with corneal oedema and uveitis, but it is unlikely that this will affect long-term outcome.

Discussion: Problems and Solutions

The main areas which are likely to cause poor outcome are in case selection, surgical complications, use of standard intraocular lenses (IOL) instead of IOLs determined by biometry, lack of equipment to deal with intra-operative complications, such as vitreous loss and lack of post-operative anti-inflammatory eye medication.

The initial study was done in one hospital and so follow-up was not much of a problem with patients who were usually town dwellers. However, for eye camp patients who came from far away rural areas, follow-up was a big problem because of the many barriers that exist, the major one being poverty. Very few came back for follow-up despite offered incentives - such as refund of bus fares, free eye drops, etc. In the initial study all the post-operative patients who did not come back were actively assessed in their community by

ophthalmic clinical officers (OCOs). This was a pilot study with its own budget and so money was available. But in the country-wide monitoring, active follow-up is not affordable. The best we can offer is to give the incentive of a bottle of eye drops to all post-operative patients who return for post-operative assessment. The other problem which has arisen because of country-wide monitoring is the assessment of visual acuity at the right time, which has usually been after the third post-operative day. With the camp patients this is not possible because of large numbers with few staff at satellite hospitals. What has happened is that patients were being assessed on day one post-operatively. This has affected visual outcome records because of residual eye inflammation and some epithelial keratopathy/oedema still present.

In the first eye camp the proportion of cases with poor outcome due to poor selection was rather high. This was attributed to pre-operative selection being done by OCOs only. A solution would be to ensure that all patients are seen by an ophthalmologist or cataract surgeon before surgery.

The eye department has a standard protocol and discharges patients on day 3 when visual acuity is recorded. The surgical procedure has also been standardised. In groups 301-400 and 401-500 most cases of poor outcome were attributed to surgery, particularly post-operative corneal oedema. The team will be looking at this issue and will discuss solutions to prevent subsequent problems.

Because of these experiences during the early stages of the programme certain practical measures have been taken. Discussions with Directors of District Hospitals have resulted in agreement to keep patients post-operatively for at least 3 days. Further, the eye camp team has been increased to include 2 dedicated OCOs to assess post-operative cases daily and ensure that the forms are properly completed. Besides incentives, the eye camp teams will combine eye camp screening with assessment of previous post-operative patients where applicable. □

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The Maintenance and Repair of Ophthalmic Surgical Instruments: Training at the Eye Clinic

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Ophthalmic microsurgical instruments are delicate and require special care. In developing countries, where instruments are usually difficult to replace, maintenance and repair are even more important. The Jan Worst Research Group started a project in 1994 - after several requests for assistance in the repair of ophthalmic microsurgical instruments - to train staff at eye clinics to maintain and repair these instruments.

Objectives

The objectives of this project were the following:

- Development of simple techniques to maintain and repair surgical instruments in different settings
- Assembly of a toolbox with all necessary tools, instruments and consumables to perform the maintenance and repair techniques
- Production of training and reference materials
- Train staff at eye clinics in the maintenance and repair of surgical instruments.

Methodology

Training

Training was designed for ophthalmic and technical staff in eye clinics in different hospital settings in several countries in Africa and Asia. It was decided to have training on site rather than in a central place in the country. This way more people from one clinic could be trained. In addition, this would provide the possibility of giving assistance in overcoming any initial or specific problems of a certain clinic. Further, more instruments would be available to give the staff trained more 'hands

on' training in the techniques, using instruments from their own clinic.

Toolbox

A toolbox was assembled with all necessary tools to repair instruments and to manufacture some consumables. These tools included different sharpening stones, files, pliers, needle bending pliers, soldering equipment and lens cleaning cloths with enough consumables to last the clinic for at least one year. For sustainability reasons, the tools were good quality so they would not break down. Each clinic received a toolbox with the tools and instruments which are necessary to carry out the techniques on maintenance and repair of instruments.

ITIR, Manual & Video

Together with the Intermediate Technology Information Ring (ITIR), the manual on Appropriate Technology in Ophthalmology was revised in 1996. This manual was used as a reference manual for the clinics visited. A detailed video on maintenance and repair was produced for training purposes by the Jan Worst Research Group and the ITIR. With support of the Fred Hollows Foundation, a comprehensive manual to accompany the video was written as well. The video is available in English and French as VHS videotape and Video CD (mpeg) and the manuals in English as hardcopy or pdf file.

Training Materials

For further information about these training materials, contact Dr Danny Haddad at the address given above or by email to dhaddad@hetnet.nl

Editor

Clinics

In each country where the project took place an average of four clinics were visited. An introduction was given to the ophthalmologists of the clinics, with further in-depth training of theatre nurses and/or hospital technicians. During the project, 31 clinics in nine countries (Ghana, Zimbabwe, Malawi, Tanzania, Kenya, Uganda, Ethiopia, Papua New Guinea and Nigeria) were visited. The hospitals were a mixture of teaching, provincial and mission hospitals.



Practising the techniques after instruction
Photo: Danny Haddad

Workshops

Workshops were conducted in both Lao PDR and Vietnam, with participants from six and nine clinics respectively. Due to limited time the workshops in these countries were performed at a central place rather than visiting all the separate clinics.

Techniques Taught and Used

To understand what is wrong with an instrument, its way of functioning has to be understood. This included the testing of instruments to see if they were working properly or malfunctioning.

Cleaning instruments

The importance of good cleaning of instruments was stressed, especially in regard to rust prevention and sterility when using liquid sterilisation. Correct ways of cleaning were demonstrated, using mild soaps and gauze.

Maintenance of equipment and instruments

Maintenance of ophthalmoscopes and slit-lamps was included in the training sessions after clinics reported this to be a major problem. The most common problem was accumulation of dust on lenses.

Repair of surgical instruments

The most important technique was sharpening of scissors. A small and very fine sharpening stone was included in the toolbox to sharpen ophthalmic surgical scissors. Most of the clinics visited had a box with non-functioning scissors, which were mostly blunt. Other techniques included repair of worn out needle holders and forceps.

Manufacturing of consumables

Depending on the needs of the clinic, manufacturing of consumables was taught.

The consumables offered included 8–0 silk sutures, surgical knives (using non-breakable razor blades) and cryo-extractors.

Lessons Learned

Visiting separate clinics versus workshop in a central place

At the start of the project it was decided to visit the separate clinics instead of performing one workshop at a central location, although this had a major time implication. It was possible to set up the project in this way, since volunteers performed all the projects. With the experience in Lao PDR and Vietnam, both ways could be compared. In the authors' view the visit to clinics had better results because there was time to give the trainees enough 'hands on' training and enough instruments were available for practice under guidance. During the workshop approach there were too many participants to give appropriate supervision during the practical sessions. Further, most clinics visited had specific problems which we were able to address during the visit.

One of the technicians who was trained had already received training in repair of instruments abroad. This technician complained that upon return it was not as easy as was shown during the training session.

Training of hospital technicians versus training of theatre nurses

In clinics where technicians were avail-

able, both technicians and theatre nurses were trained. Some clinics, with rotation of the nurses between theatre, OPD and the wards, wanted to have all nurses included. For these groups more general sessions were held with in-depth training for a few nurses - to become the experts in the clinic. In some of the teaching hospitals it was found that the technicians were too busy with work in the other departments to find free time to assist in the eye department. The most successful was the training of technicians in specialised eye hospitals like the National Eye Centre in Kaduna and the ECWA Eye Hospital in Kano, both in Nigeria.

Training versus donation of tools with training guides

Several of the clinics visited had received sharpening devices. Most of these came with instruction manuals and/or videos. However, the techniques were still found to be complicated and not fully understood and the sharpening devices were not utilised.

Conclusion

In the opinion of the authors it is very important to provide training for technicians and/or nurses in the maintenance and repair of microsurgical instruments in theatre and OPD. All clinics visited had a large number of instruments which were either blunt or broken. During training it is



Using newly made instruments in the operating theatre

Photo: Danny Haddad

important that the participants receive enough experience through practical training. Providing training in their own clinic gives the participants the possibility of performing repair on their own instruments and in their own setting. Donating repair sets without the appropriate training gives poor results, since most training manuals and videos are still too complex.

The importance of regular maintenance should be stressed as this will often prevent the development of defects in equipment or instruments. A record of maintenance and of items repaired should be kept. This is particularly appropriate for larger items of equipment and, for example, surgical cataract sets.

It will be helpful if each clinic has a person recognised as responsible for maintenance, who will also keep maintenance records and make sure that regular maintenance is carried out.

☆ ☆ ☆

Letter

Comparison of Cataract Surgery in a Base Hospital and in Peripheral Eye Camps

Dear Editor

Parakshit Gogate & Anil N Kulkarni
J Comm Eye Health 2002; 15: 26–27

Probably no-one will question the advantages of affordable good quality IOL surgery through satellite hospitals, near to where the patients live. The article by Gogate and Kulkarni illustrates the differences in results between hospital based surgery (ECCE/IOL and ECCE) and eye camp surgery (ICCE), in a large series.

The article states that final corrected visual acuities were much better in the Base Hospital (82.7% >6/18), compared to the Peripheral Eye Camps (43.7% > 6/18). This statement, although clearly accurate in itself, does not seem to me to reflect possibly better results and conclusions – if some of the following comments had been considered and implemented.

In the Camps, visual acuity was assessed with standard +10D aphakic correction. It

is reported that 99.1% of the patients received standard +10D aphakic spectacles after 6 weeks.

At the Base Hospital, retinoscopic refraction was done in 63.9% of the patients. This does not necessarily mean that patients also bought the spectacles according to prescription! Visual acuity is not known in the remaining 36.1%.

For comparison, it would have been better to either present visual acuity at the Base Hospital with IOL implant, without additional refraction (real life situation), or with standard +10D in aphakics, or to present retinoscopic refraction in both Camp and Base hospital for all patients. With additional retinoscopic refraction, the Camp group might well have had equally good visual results.

Poor visual results between both groups are about equal: 6/60 or worse at Camps in 5.1% and at Base Hospital in 6.1%. Vitreous loss was more often a complica-

tion in the Hospital, but the Hospital operated on more difficult cases.

In addition, 58.2% of the patients at the Base Hospital received an IOL. Thus, 41.8% were left aphakic. In combination with the poor follow-up, some of the aphakic patients may not have received any correction at all, resulting in a VA < 3/60, but no details are given of this group.

IOLs have become much cheaper since the study was done, but it should be noted that, at the time of the study, the main reason (80%) for not receiving IOLs, was inability to pay.

Another interesting point is that Camps were especially suitable for women, who often cannot travel far. This is an important factor that has to be taken into account.

The above study shows that Camps still have a role to play in remote rural areas and that results can actually be quite satisfactory.

Dr Margreet Hogeweg DCEH
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An Audit of the Use of Ophthalmic Theatre Time

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Introduction

Several barriers limit the access of blind people to cataract surgery. These barriers can be patient or provider related. Provider related factors could be overcome by improving the efficiency with which human and material resources are used.¹

One of the major barriers to the uptake of cataract surgery in developing countries is the cost to the patient of surgery.² This includes the cost of transportation for a number of clinic visits, food for the patient, a guide or carer, and the actual cost of surgery. This has reduced the number of cataract operations performed.³

The cost of consumables increases with the number of operations performed. However, the operational cost remains fixed whether one procedure or more are performed. Improving the efficiency with which human and material resources are utilised is expected to result in an increase in the number of operations performed over a period of time. This will result in a reduction in the unit cost of surgery and the waiting list of operating theatres, as previously described elsewhere.⁴

This study assessed how an ophthalmic theatre utilised its resources with a view to increasing efficiency and reducing the unit cost of surgery. It is hoped that this will remove some of the major barriers to the uptake of cataract surgery and encourage other eye units to carry out similar studies.

Materials and Methods

Elective ophthalmic operating lists were prospectively surveyed over a period of six months (July-December, 1999). The ophthalmic nurses, in charge of the theatre, timed and recorded events taking place – from the time the list was supposed to start to the end of the list. All lists were scheduled to start by 08.00 hours. There was no scheduled time for the end of any list. For the purpose of this study, a case was considered to have started with the positioning of the drapes and ended with their removal.

Turnover time was defined as the time interval between the end of one case and the beginning of the next case. Activities taking place during this time were also

noted. Delays with the start of the list or each case and the reasons for such delays were also noted.

Lists or cases that were cancelled were excluded from the study. Also excluded were lists where records were inaccurate at the end of the day.

Surgical Lists

A total of 42 elective lists were satisfactorily surveyed over the period of this study – with an average of 5 cases per list.

Thirty-eight lists (90%) included cataract extraction as a procedure. Some had only cataract extraction as the procedure for that day.

Operating Time

During the 42 lists surveyed, 185.75 hours were recorded from the scheduled start time to the end of the list. The average duration of operating lists was 4.4 hours. The actual time spent operating was 92.6 hours, 49.9% of the total time. There was an average of 25.7 minutes per case. The time given to turnover amounted to 44.5 hours (23.9%). This means that 137.1 hours (73.8%) were spent on both operating and turnover.

During turnovers, instruments are changed, one patient is helped off the table and the next is assisted onto the table and then anaesthetised. The surgeons also write their operation notes.

An average of 24.7 minutes was given to turnover. The average turnover time spent between cases done under local anaesthesia (18.9 minutes) was shorter than that between cases involving general anaesthesia (30.8 minutes). Twenty-four lists had at least one case done under general anaesthesia, with most cases done under local anaesthesia.

At least one anaesthetist was attached to each list. However, the surgeons administered all the local anaesthesia. Anaesthetists only gave general anaesthesia.

Start and Turnover Delays

All the lists surveyed started after the scheduled time. The total start delay time was 45.1 hours (24.3%) of total time.

Surgeons were the most frequent cause of start delays. A total of 16.7 hours (37.0%) of delay time was due to the late arrival of surgeons. Surgeons tended to arrive late when they had short lists.

Disruption in public power supply was responsible for 15.6 hours (34.6%) of start delays. The late arrival of anaesthetists was responsible for 1.9 hours of start delays. Other causes of late starts were due to the theatre staff failing to prepare sterile sets on time (62 minutes) and the ward staff not transferring patients to the theatre on time (35 minutes). At other times, a combination of factors caused late starts.

After the list had started a number of factors caused the next case to start late, resulting in delays. The ward 'wasted' 142 minutes trying to prepare and transfer the next patient. Thirty-six minutes were spent waiting for electricity to be restored. The surgeon attending to 'other things' caused delay of 35 minutes.

Discussion

The 42 lists surveyed showed a total of 45.1 hours were 'lost' before the first operation began, often while waiting for a member of the operating team. The most common reason for the delay was a lack of a recognised time for the patient to be in position, and anaesthetised on the table. Most members of the theatre team took the 08.00 hours start time as the time to start preparing instruments/patient or to arrive at the theatre suite. This has been observed in other studies.⁵ There is, therefore, a need to agree on the time the first patient should be anaesthetised, on the operating table and sterile instruments ready.

The average turnover time was 24.7 minutes. This is a long time for an ophthalmic theatre. This time could be shortened if the theatre has two functioning operating tables and anaesthetists are also trained to administer the local anaesthesia. Thus, it would be possible for the surgeon to move from one table to the other. This can be made possible if there are at least two theatre assistants and another in charge of cleaning and sterilising the instruments. The provision of three complete cataract sets will make this possible.

Disruption in the power supply is a problem more often found in developing countries. This could lead to cancellation of operation lists. There is a need to devise means that will reduce dependence on public power supplies.

Activity took place during 73.8% of the time. This is above that for orthopaedic⁵ and general surgery⁶ lists but below the 90% utilisation recommended by management executives.⁷ The 'Wednesday list' almost attained 90% utilisation, so this objective is possible. Staff should be assigned duties in the operating room to improve efficiency and utilisation of resources.

Conclusion

A number of our operating theatre lists are still being poorly managed, resulting in longer waiting lists, reduced hospital income and increased hospital expenditure. There is a need to improve the utilisation of personnel and time – to meet the requirements of good management and patient care.

Acknowledgements

I acknowledge with gratitude Mr Dami and Mrs Umaru for keeping the records. Many thanks to Mr Ochai for secretarial services.

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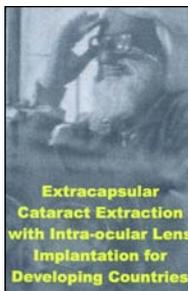
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Video

Extracapsular Cataract Extraction with Intraocular Lens Implantation for Developing Countries



John Sandford-Smith

This 40-minute video describes extracapsular lens extraction with intraocu-

lar lens implant, step by step and in detail, using instruments and equipment which are appropriate for developing countries.

The introduction sequence is very helpful and relevant, putting the subject into context. The clear and natural commentary gives the impression that the narrator (the teacher) is speaking to the viewer/listener (the learner) personally. Clear graphics complement the principles factually illustrated in the film. However, certain practices observed in this footage (filmed in an eye camp) give cause for concern. A guideline list of caution points are available

on request.

The real strength of this video is that encountered problems, difficulties and modifications are shown and that incorrect techniques are also addressed. Important principles are reinforced throughout with a useful summary at the end. Together, these points make this video a very valuable tool for teaching a surgical skill.

Sue Stevens

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Part 1 MRCOphth	9 December 2002	20–21 January 2003	None
	17 March 2003	28–29 April 2003	None
	1 September 2003	13–14 October 2003	None
Part 2 MRCOphth	22 April 2003	2 June 2003	2–6 June 2003
	22 September 2003	3 November 2003	3–7 November 2003
Part 3 MRCOphth*	20 January 2003	3 March 2003	3–7 March 2003
	4 August 2003	15 September 2003	15–19 September 2003
The Part 3 Examination will be changing in September 2003 – for details please contact the Exams Department			
Diploma in Ophthalmology (DRCOphth)	6 May 2003	16 June 2003	16–18 June 2003
	6 October 2003	17 November 2003	17–19 November 2003

From November 2001, there has been no practical refraction section in the Diploma Examination

India Examination Dates

Provided a minimum of six candidates are booked to sit, the Parts 1, 2 and 3 Membership Examinations are scheduled to be held on the following dates

Part 1 MRCOphth	17 March 2003	28–29 April 2003	None
Part 1 MRCOphth	1 September 2003	13–14 October 2003	None
Part 2 MRCOphth	1 September 2003	15 October 2003	15–16 October 2003
Part 3 MRCOphth	1 September 2003	16 October 2003	16–17 October 2003

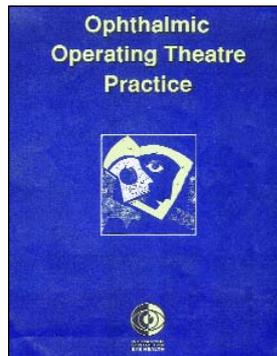
Overseas Location: Aravind Eye Hospital, Madurai, Tamil Nadu, South India

* Any changes in any of the above dates will be posted on the website and within application packs + Objective Structured Examination and Objective Structured Clinical Examination

Information, Exams syllabi, Application Forms: Examinations Department at the above address
Or Tel: 00 44 (0) 20 7935 0702 Or Fax: 00 44 (0) 20 7487 4674 Or E-mail: rco.exams@btinternet.com
Or visit the College website www.rcophth.ac.uk

Ophthalmic Operating Theatre Practice

A Manual for Developing Countries



Ingrid Cox & Sue Stevens

The worldwide effort to eliminate avoidable blindness, as outlined in the Vision 2020 campaign, requires the training of people involved and working in oph-

thalmic operating theatres. This Manual will make a major and significant contribution towards realising that aim.

This 250 page publication has 7 chapters:

- *Ophthalmic Operations*
- *Ophthalmic Surgical Instruments*
- *Equipment*
- *Control of Infection*
- *Sterilization and Disinfection*
- *Patient Care in Theatre*
- *Operating Theatre Administration.*

Each chapter is clearly set out, provides well researched current practices as well as practical advice particularly relevant to working in ophthalmic operating theatres in the developing world. Additionally, the list of learning resources and suppliers addresses provides very comprehensive coverage of the subject.

A successful surgical outcome is the product of many different but related factors. The surgeon's skill will be of no advantage, if surgical instruments are not adequately sterilized and carefully handled. This Manual will enable ophthalmic operating theatre workers to have a reference text to which they can confidently turn.

For those ex-patriate eye workers who have had the privilege of working in the developing world, the huge need for a comprehensive and authoritative text on ophthalmic operating theatre practice has been evident for many years. This has been especially true when planning to *teach* ophthalmic theatre practice. This gap in the literature has now been magnificently filled by the energy, effort and determination of Ingrid Cox and Sue Stevens.

Trevor Graves

Available from: IRC/ICEH

(Address on page 2)

Cost: £10 (plus p&p: £2 UK, £5 airmail)

Cheques payable to London School of Hygiene & Tropical Medicine

LONDON SCHOOL OF HYGIENE & TROPICAL MEDICINE
Department of Infectious & Tropical Diseases



SHORT COURSES IN COMMUNITY EYE HEALTH
February - May 2003

The School is delighted to announce several new short courses as part of the International Centre for Eye Health's Teaching Programme

CONTROL OF BLINDING EYE DISEASE
24 February - 28 March 2003

This programme will comprise two study units:

- Control of Childhood Eye Diseases and Ocular Infections
- Control of Non-communicable Adult Eye Disease

Cost: £2,300

PLANNING A VISION 2020 PROGRAMME
28 April - 30 May 2003

This programme will comprise two study units:

- How to Plan and Implement a Vision 2020 Project
- Resources and Technology for Vision 2020

Cost: £2,300

These are full-time courses running for five weeks and are suitable for all eye care workers. Certificates of attendance will be issued upon completion.

It is also possible to take, individually, any of the above or other teaching units which form part of the MSc course in Community Eye Health. For further details please contact the Registry.

Application forms for these courses are available from: Short Courses, Registry, London School of Hygiene & Tropical Medicine, 60 Bedford Square, London WC1B 3DR. Tel: +44 (0)20 7298 4848; fax: +44 (0)20 7323 0836; e-mail: shortcourses@lshtm.ac.uk Please quote reference: ACEH_11/02

Visit our website: <http://www.lshtm.ac.uk/courses/>

Journal of Community Eye Health On-Line

The Journal, including recent back issues, is available on-line at www.jceh.co.uk Articles are available as HTML documents to facilitate ease of downloading. PDF formats are also available. Please make the website known to others. We also welcome your own feedback on using the site.

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