



## LETTER TO THE EDITOR

**Simcoe cannula construction can endanger surgical outcome****Brian Savage**

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Recently I noticed with surprise, during extracapsular cataract surgery, that cortex was retreating from the anterior port of my simcoe cannula during aspiration, instead of being drawn towards it.

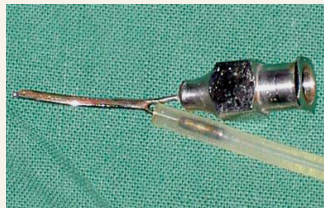
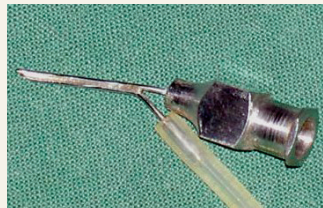
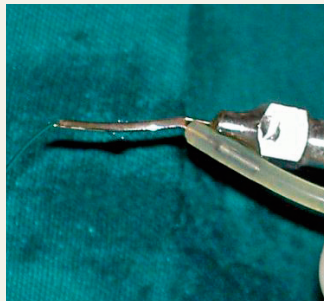
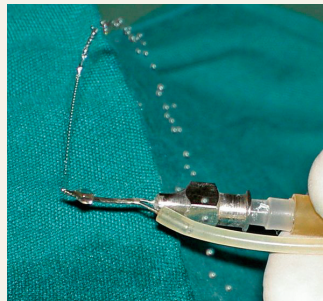
On closely examining the cannula, I discovered that the infusion entering the luer connection was plumbed to exit at the anterior port, while the syringe was vigorously aspirating anything near the large side port; iris, anterior capsule, even posterior capsule; certainly not what I was expecting!

I discussed this by email with the supplier, who apologised: "I packed Reverse Simcoe in error!" and offered a replacement.

I find that the 'Reverse' Simcoe is a frequent visitor to extracapsular cataract sets. The surgeon, keen to get in among the cortex, often does not notice he is using one until the outcome of his operation has been affected because the wrong structure has been sucked into the cannula.

It is important for the surgeon to recognise the reverse simcoe. This can be done as follows:

- 1 Preoperatively, examine each simcoe cannula before use. Check that the luer port which receives the solution giving set, allows outflow via the larger side-port, and the smaller anterior port is connected to the narrow pipe which accepts the pvc tubing and aspiration syringe (Figure 1) and not the other way round (Figure 2).
- 2 At operation, before entering the eye, run the drip, and observe the outflow of the irrigating solution: If it arcs down and forwards, this is likely to be a normal simcoe (Figure 3). If however the outflow goes straight up before curving down (Figure 4), then you are about to use a reverse simcoe!
- 3 When operating, observe which port appears to be sucking in the cortex. This should be the smaller anterior port, while the anterior chamber is maintained by the flow from the larger side port.
- 4 Inadvertent aspiration through the larger side port of a reverse simcoe, while irrigating through the smaller anterior port, can cause unexpected shallowing of the anterior chamber.

**Fig. 1. Normal simcoe cannula****Fig. 2. Reverse simcoe cannula****Fig. 3. Normal simcoe flow****Fig. 4. Reverse simcoe flow****2004/05 ICEH Community**Edited and introduced by **Daksha Patel**, International Centre for Eye Health, London**Daksha Patel (centre), ICEH Community Eye Health MSc Course Organiser, with a group of past ICEH students at the IAPB General Assembly in September 2004. DUBAI**

All ICEH MSc students carry out a dissertation project as part of the CEH course. They spend ten weeks dedicated to the project (five for field work and five for write up), and the planning is conducted throughout the year. The dissertation is about 10,000 words and requires a disciplined and dedicated approach. It is prepared in stages: the student identifies an area of interest and then carries out a literature search on the topic before finally deciding on the research question. The next stage includes designing the most appropriate methodology to answer the research question. Feasibility within the specified time frame and budget are important considerations. Students then have to seek ethical permission to carry out the project. Often the field work requires a team and students have to identify and train their own team for the project. This is then followed by the field work, data management and analysis and final write-up. The students at the end of this process are equipped to carry out research independently in their regions.

Most of the dissertations are excellent pieces of original and valuable research work. The summaries below provide some insight into the work carried out by the students at ICEH in the academic year 2003/4. Often the recommendations from dissertations get translated into action plans to reduce the burden of blindness in their communities. We consider the project work as the most important component of the learning process in our MSc course.

**Cost-effectiveness analysis of cataract services in Lagos University Teaching Hospital (LUTH), Lagos, Nigeria****Olufisayo Temitayo Aribaba**

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**Aim:** To examine the cost-effectiveness of Lagos University Teaching Hospital's cataract services.

**Methods:** A retrospective study of all consecutive cataract patients aged 18 years and above who had cataract surgery with Intraocular Lens (IOL) implants between July 2000 and June 2004. Health gains and costs incurred at the base hospital and the Pakoto PHC outreach were estimated. Those lost to follow-up before six weeks post-operatively were excluded.

The cost-effectiveness analysis used effectiveness measures based on patients' utility values given their visual acuity in the best-seeing eye and in the operated eye. The utility values had been obtained by Brown and Brown (1999, 2000, 2002, 2003) using a Time Trade-Off questionnaire.

**Results:** Cataract surgery with IOL implants accounted for 40.4 per cent of all eye surgeries. A total of 264 eyes (81.7 per cent) had unocular surgery while 42 eyes (13.0 per cent) had combined trabeculectomy for cataract and glaucoma. Analysis was based on the best seeing eye and operated eye per patient; effects were evaluated based on the difference in visual acuity gained post-surgically and their corresponding utility values. Streams of costs grouped from eight cost centres were used in assessing the cost-effectiveness and incremental

# Eye Health MSc Dissertation Summaries

in School of Hygiene and Tropical Medicine.

cost-effectiveness ratio (ICER) for each of the four scenarios. For each scenario, the presence of complications is incorporated. To do so, the final ICER are constructed using 'expected' costs and 'expected' effectiveness given the incidence of complications.

**Conclusions:** With a cost effective ratio range of 1,928-2,875 \$/quality adjusted life years gained, cataract services in LUTH fall within the cost-effective range comparable to developed countries. Making hospital-based care affordable, accessible, acceptable and effective must be a priority with complementary outreach programmes.

## Evaluation of vitamin A deficiency programme in Lagos State



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**Aim and methods:** An evaluation of the vitamin A deficiency prevention programme in two local government areas of Lagos State was conducted within the period 7/7/2004 and 23/7/2004. The aim was to determine the prevalence of xerophthalmia in children aged 24 to 71 months and assess the equity of the vitamin A programme using supplement distribution coverage, access and utility of existing facilities for vitamin A supplements distribution, the distribution, availability and affordability of fortified foods.

**Results:** A total of 2,922 children were studied, 1,428 (48.87 per cent) females and 1494 (51.13 per cent) males. The prevalence of total xerophthalmia was 0.34 per cent (95 per cent CI 0.16; 0.63 per cent). Vitamin A supplement coverage of study population was 99.1 per cent (95 per cent CI 98.7; 99.4 per cent). 15.0 per cent (95 per cent CI 13.6; 16.2 per cent) of recipients of supplements had the correct number of capsules expected for their age. All 0.9 per cent (95 per cent CI 0.6; 1.3) children who had not received supplements were from Mushin Local Government Area (LGA). There was under-utilisation of routine services by target population 16.2 per cent (14.9; 17.6 per cent) despite easy physical access reported by up to 93.8 per cent. Utilisation was worse in Agege compared to Mushin ( $p < 0.001$ ). Availability of fortified food was limited to one or two brands per market with 28.6 per cent of markets not having any. The household availability and awareness of fortified foods was better in Agege compared with Mushin LGA ( $P < 0.001$  for both variables).

**Conclusion:** Vitamin A deficiency is still a problem of mild public health significance.

## Correlation between visual outcome and cost calculation of ECCE/MSICS/PHACO in a tertiary hospital setting, Orissa, India



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**Aim and methods:** The study is designed to look into visual outcomes from the different surgical techniques: Extracapsular Cataract Extraction with Intraocular Lens (ECCE IOL), Phacoemulsification with Intraocular Lens (PHACO IOL) and Manual Small Incision Cataract Surgery with Intraocular Lens (MSICS IOL) and the provider costs related to them. The study had a retrospective and a prospective design. The retrospective part looked at visual outcomes of 1505 patients operated by three different techniques – ECCE, PHACO and MSICS. The prospective study looked into visual outcome and the cost of 150 patients selected randomly for one of the three different types of surgery.

**Results:** MSICS IOL gave best visual outcome. PHACO IOL results were good but not as good as MSICS IOL. ECCE IOL gave poorest results comparatively.

The cost of MSICS IOL was Rs 713.94 (£8.50), ECCE IOL cost was Rs 713.94 (£9.00) PHACO IOL cost Rs 954.11 (£11.40). Hence MSICS IOL costs were almost similar to ECCE IOL but PHACO IOL costs were higher. The fixed cost was Rs 553.32 (£7.00). The variability of cost was mainly in the cost of the phaco machine, its accessories and personnel costs. Personnel costs varied mainly due to the duration of a particular procedure.

**Conclusion:** MSICS is the solution for the developing world's ever increasing cataract problem. It is cheaper, gives good visual outcome and can be done in less time which suggests that it is ideal for the developing world cataract scenario.

## Prevalence of causes of blindness and visual impairment in Muyika, a rural health district of the South West Province, Cameroon



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**Aim:** To estimate the prevalence, risk factors and causes of blindness and visual impairment in the population aged 40 years and above.

**Methods:** A multistage cluster random sampling methodology was used to select 2,000 participants in 20 clusters of 100 people each. Demographic data, presenting visual acuity and ocular examination findings were collected.

**Results:** A total number of 1,787 people were examined, representing 89.35 per cent of the eligible sample. The prevalence of binocular blindness was found to be 1.62 per cent (95 per cent CI: 1.04 – 2.21 per cent), binocular severe visual impairment, 2.24 per cent (95 per cent CI: 1.55 – 2.92) and binocular visual impairment, 6.44 per cent (5.30 – 7.57 per cent). The prevalence of monocular blindness was 8.51 per cent (95 per cent CI: 7.21 – 9.80). Old age, female gender, farming and no occupation were identified as risk factors. The main causes of binocular blindness were: cataract (62.07 per cent); onchocerciasis (13.79 per cent); glaucoma (6.90 per cent) and phthisis/no globe (6.90 per cent). Refractive error was second to cataract as a cause of severe visual impairment (15.0 per cent), as well as for visual impairment (26.09 per cent). Cataract was the first cause of monocular blindness (32.03 per cent), followed by trauma (14.06 per cent). The Cataract Surgical Coverage (CSC) was 15.05 per cent for eyes and 21.73 per cent for persons. 64.29 per cent of eyes operated for cataract had poor visual outcome ( $VA < 6/60$ ). Lack of awareness of cataract (33.33 per cent) and inability to pay for services (30.13 per cent) were the most frequent barriers to cataract surgery uptake.

**Conclusions:** While a similar survey is needed for the urban area, stakeholders of the South West Province Comprehensive Eye Care Programme should develop strategies to make cataract services affordable and accessible to the population in order to improve on the cataract surgical coverage and should provide refractive error services at community level.

## Prevalence of blindness in a north-western Nigerian rural population: a rapid assessment of cataract surgical services



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**Aim and Methods:** This study was based on the World Health Organization standardised method of Rapid Assessment of Cataract Surgical Services (RACSS). A population-based cross sectional survey of people aged 40 years and over was carried out in a rural population

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between June and July 2004, to determine the prevalence of cataract blindness and coverage of cataract surgical services. Using systematic, two-stage cluster random sampling, 35 clusters were selected out of 24 villages with selection based on the probability proportional to the size (PPS) of each village. 50 people were then examined from each cluster.

**Results:** 1,573 people, out of 1,703 registered, were examined. The prevalence of cataract blindness was 4.5 per cent (95 per cent CI, 3.4-5.5). The prevalence of cataract blindness was higher in females (5.7 per cent) than males (3.4 per cent). Cataract surgical coverage for people was 11.7 per cent while coverage for couching was 21.7 per cent. Cost (39 per cent) and lack of awareness of cataract or its treatment (18 per cent) were identified as the main barriers to cataract surgery uptake.

**Conclusions:** The prevalence of blindness due mainly to cataract is unacceptably high in this rural community. The reasons are directly related to poverty, ignorance and lack of good quality cataract surgical service delivery. Establishment of good quality, high-volume and low-cost cataract service is highly desirable.

## Evaluation of visual outcome of cataract surgical services in St. Mary's Catholic Hospital, Gwagwalada, Abuja, Nigeria



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**Aim:** To evaluate visual outcome of cataract surgical services, surgical complication rate, pre-existing disease and trend in cataract surgery, and to make recommendations.

**Methods:** A retrospective study was done to determine the visual acuity of all cataract surgeries of ages greater than 17 years from 2001-2003. A standard case of all elective cataract patients who underwent surgery was extracted from patient folders in the record department and evaluated for visual outcome of cataract surgical services.

**Results:** The visual outcome was 59.6 per cent with visual acuity better than 6/18 with best correction in a study population of 1,002 patients. The sight restoration rate was 86.12 per cent. A total of 91.9 per cent operations performed were extracapsular cataract extraction with posterior chamber intraocular lens (ECCE+PC IOL). Patients with pre existing disease accounted for 15.4 per cent and those with surgical complications were 10.4 per cent of all cases. The main causes for poor outcome were poor selection of cases and surgical complications.

**Conclusions:** Good outcome of cataract surgery is achievable in St. Mary's Hospital and can be further enhanced with good patient selection and consistent availability of biometry for pre-surgical assessment. The preferred type of surgery for all cataract cases remains ECCE + PC IOL.

## Outcome of bilateral paediatric cataract surgery in a tertiary eye hospital in India



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**Aim:** To look at the outcome of bilateral paediatric cataract surgery in a tertiary eye hospital in India.

**Methods:** The records of all children under 16 years, who had undergone bilateral cataract extraction between Jan 2001-Dec 2003, with a minimum follow-up of three months, were reviewed.

**Results:** 215/257 (83.7 per cent) patients were eligible. The mean age at presentation was 53 months (range: 0-168 months). Congenital cataract was present in 107 patients (58.2 per cent) and

developmental cataract in 77 patients (41.8 per cent). Aetiology was established in 49 patients (22.8 per cent), with the commonest being genetic (14.9 per cent). Pre-operatively, 102 patients (47.4 per cent) had visual acuity less than 6/60 in the better eye. Post-operatively, 37 patients (17.2 per cent) were less than 6/60 of which 19 patients (8.9 per cent) were less than 3/60, in the better eye. 85 patients (39.5 per cent) had visual acuity equal to or better than 6/18. The mean age at surgery was 55.2 months (range; 1-168 months). 269/430 eyes (62.6 per cent) had IOL implanted. The mean duration of follow-up was 13.1 months (range; 3-38 months). The most common early post-operative complication was fibrinous uveitis seen in 57 eyes (13.3 per cent) and the most common delayed post-operative complication was Posterior Capsular Opacification (PCO) seen in 118 eyes (27.4 per cent). The most important prognostic factor for poor outcome was congenital cataract (OR: 26.3; 95 per cent CI 4.4-158.5), especially, in those operated after one year of age. The other independent risk factor for poor prognosis was total cataract (OR: 4.8; 95 per cent CI 1.3-17).

**Conclusion:** Delay in treatment of congenital cataract is associated with poor prognosis. Hence a strategy for early detection and treatment is crucial.

## Vitamin A situation and ocular disorders in children's homes in Nairobi, Kenya



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**Aim:** To determine the vitamin situation and ocular disorders in children's homes in Nairobi.

**Methods:** A cross sectional survey was carried out among children living in seven children's homes in Nairobi. Ocular examination, anthropometric measurement and serum retinol analysis were carried out.

**Results:** 403 children aged below 16 years were examined. There were no cases of clinical xerophthalmia. However, serum retinol level was assessed in a representative sample of 36 children, and 47.2 per cent of them had serum retinol below 0.70 micromol/L indicating a subclinical vitamin A deficiency. Serum retinol level was strongly associated with duration in the home  $P < 0.0001$  but not with the nutritional status score. Only 5.2% of the children were known to have received vitamin A supplementation. 8.7 per cent of the children had ocular disorders with allergy and suspected refractive error being the commonest. 3.0 per cent of the children were undernourished.

**Conclusions:** Vitamin A deficiency exists in children's homes in Nairobi with VAD being significantly associated with duration in the home and age of the child. The main ocular disorders are suspected refractive error and allergy.

## Analysis of cataract needs in two provinces of Vietnam



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**Aims:** To analyse data from RACSS study which had been conducted in two provinces (Gialai and Haiphong) Vietnam.

**Methods:** Data collected in 2000-2001 from surveys had been entered to the package for RACSS. Using the EPI-Info 6.04D and RACSS DOS programmes, the data was analysed with each level of visual acuity (3/60, 6/60 and 6/18).

**Results:** Cataract is the major cause of bilateral blindness (82 per cent in Gialai, 69 per cent in Haiphong). The age and gender adjusted prevalence of bilateral cataract blindness ( $VA < 3/60$ ) in people of 50 years and older was 2.9 per cent (95 per cent CI: 2.1-3.7) in Gialai and 1.2 per cent (95 per cent CI: 0.6-1.8) in Haiphong, with Cataract

## 'Often the recommendations from dissertations get translated into action plans to reduce the burden of blindness in their communities'

Surgical Coverage of 34 per cent in Gialai and 66 per cent in Haiphong. For VA < 6/60 the prevalence of bilateral cataract adjusted by age and gender in this group was 7.3 per cent in Gialai and 5.7 per cent in Haiphong. In this last group the Cataract Surgical Coverage (eyes) was 19 per cent in Gialai and 34 per cent in Haiphong. Of the patients operated with IOL implantation, 16.6 per cent in Gialai and 11.5 per cent in Haiphong could not see 6/60. 86 per cent in Gialai and 55 per cent in Haiphong, of those operated without IOL, could not see 6/60. The main barrier to cataract surgery was lack of awareness in Gialai, and cost in Haiphong.

**Conclusions:** To increase the Cataract Surgical Coverage in Gialai and Haiphong we need to train ophthalmologists. Health promotion, health education, cost recovery system and subsidies need to be improved.

### The distribution of axial length among young adults in urban and rural regions of Mongolia



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**Aim:** To compare distribution of axial length of the globe of young adults aged 20 to 39 years living in urban and rural regions of Mongolia.

**Methods:** The electoral register was used as the sampling frame. Ulaanbatar city was selected as the urban study site, and Selenge Aimag was chosen as rural. Approximately equal numbers of men and women aged 20-29 and 30-39 were identified by stratified, clustered random sampling, with a total of 375 people chosen in each area. Axial length (AL) was measured using A-mode ultrasound. Visual acuity and refraction were also assessed.

**Results:** Among those selected, 568 (76 per cent) were examined. Ocular biometric data were available for 566 (99.6 per cent) subjects. Mean AL was 23.35 mm (95 per cent CI, 23.27, 23.43). There was no significant difference in AL between 20's and 30's in the rural area (23.23 vs. 23.15,  $P = 0.77$ ), however, the AL was significantly longer among young people in the city (20's: 23.66 vs. 30's 23.37,  $P = 0.02$ ). In a multiple regression model examining the association of age, sex, education, occupation, income, height and area of residence (urban vs. rural), only height ( $P < 0.001$ ) and education ( $P < 0.001$ ) were significantly associated with axial length. A unit increase in educational achievement (primary, secondary and college) was associated with a 0.36 mm increase in axial length. For a 10cm increase in height, there was a corresponding 0.27 mm increase in axial length.

**Conclusions:** Mean axial length appears significantly longer among young adults in a city environment, compared with those in rural areas. This difference is explicable on the grounds of differences in educational achievement and height.

### Development of QOL instrument for the assessment of low vision of people aged 30 years and above in Bangladesh



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**Aim:** To review existing quality of life (QOL) instruments and to modify and validate one for use with Bangladeshi adults with low vision (aged 30 years and above).

**Methods:** This multi-method study used both qualitative and quantitative research methods in a sequential manner to identify the domains, to develop a QOL instrument and to validate the instrument

through pilot testing and re-testing.

**Results:** The designed instrument showed the average questionnaire items' relevance to people with low vision was higher than those with normal vision. It was also observed that there was good correlation between the items of the instrument. There was good percentage of agreement on item responses to establish reliability.

**Conclusions:** On the basis of our findings in the literature review and qualitative research, our study provides support that the QOL instrument developed by Ellwein et al. is simple, valid, and reliable. It can be used for the assessment for vision-specific quality of life of Bangladeshi adults with low vision.

### Systematic review: modelling the prevalence of blindness and visual impairment in the Caribbean



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**Aim:** To review all available evidence on the causes and prevalence of blindness and visual impairment in the Commonwealth Caribbean and Haiti, and the results extrapolated to the rest of the region focusing on VISION 2020 priority conditions.

**Methods:** Published literature from 1965 to 2004 were searched in Pub-Med, Med-Line, CAREC, Cochrane, LILACS, and MedCarib. Search terms: blindness, visual impairment, Caribbean Islands, West Indies, prevalence, the individual countries and combinations of these specific terms. CCB, OSWI, Caribbean Health Research Council, Government ministries and relevant personnel were approached for unpublished data/report for the region.

**Results:** The Barbados Eye Study (BES) was the largest and only population-based study to investigate blindness and visual impairment in black adults (> 40 years), in the region. The results from BES were extrapolated to the rest of the region, using the confidence interval to obtain a range that contains the true estimate with 95 per cent certainty. Childhood blindness (CB) estimates were modelled on both the crude estimates deduced from the only published article on CB and the algorithm based on under five year old mortality rates. The second set of estimates gave an overall number of blind children for the Commonwealth Caribbean (CC) of 588, more than twice that of the first, 216. The available data on cataract surgical services in the CC showed a huge disparity in the CSR: 390 in St Lucia and 3,786 in Montserrat. There was a substantial inequality in the number of eye-care professionals, with six countries without a single ophthalmologist.

**Conclusions:** The region needs population-based surveys to assess the services in place for the VISION 2020 priority conditions, and more investment in human resources. A standardised method of data collection is required with a centralised database.



### Submissions to Exchange

*Community Eye Health Journal* invites readers to exchange views and experiences. In the Exchange section we include letters to the editor and short reports about prevention of blindness activities, achievements and

lessons from different countries. Examples of reports considered for publication include outstanding achievements of eye care programmes, interesting insights from eye care work, and summaries of research projects. Reports will normally be between 200 – 300 words, but submissions of up to 500 words will be considered. Please send your contributions to The Editor at the address on the inside cover page, or email [victoria.francis@ishtm.ac.uk](mailto:victoria.francis@ishtm.ac.uk) mentioning Exchange in your title.