

**National Cataract Surgery Registry**



Ministry of Health Malaysia

**THE SECOND REPORT OF THE  
NATIONAL CATARACT SURGERY REGISTRY  
2003**

**Edited by**

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## **Forward**

I am proud to present you the second National Cataract Surgery Registry annual report of 2003. We have now 32 participating centres, with 3 new source data producers, i.e. Hospital Selayang, Hospital Kuala Lipis and, Klinik Pakar Mata Azman .

With the 2-year data, we can now compare the trend in cataract surgery. We have data from 16,815 patients in 2003 as compared to 13,025 in the year 2002. There was a 5 % increase in the number of phacoemulsification surgery performed and a 2% increase in the proportion of patients with good visual outcome, when comparing to 2002 report.

We have made some changes in the outcome clinical record form for the year 2004. This is aim to capture data inline with the national indicator approach (NIA), collected by the Quality Assurance Programme of the Medical Development Division, Ministry of Health. One of them is the rate of unplanned return to operating theatre within one week post-operation.

We look forward to see the 2004 report, which will certainly provide us with more information about the trend of practice pattern and surgery outcome. The 2004 report will also include data from the Department of Ophthalmology, Hospital UKM.

I would like to take this opportunity to express my gratitude to Dr. Mariam Ismail, the chairperson of NCSR in the year 2002 for her continuous support and advice.

Once again, I thank all source data producers for your contribution.

Dr. Goh Pik Pin  
Chairperson  
NCSR 2004

## **ACKNOWLEDGMENTS**

The prospective nature of data collection in NCSR is a challenge to all participating centres. We appreciate the commitment and effort of all doctors, optometrists, paramedics and site coordinators in each participating centers.

We would like to thank the staff at CSRU, particularly Dr. Jamaiyah Haniff, the head of Clinical Registry Unit, the Clinical Registry Manager, Staff Nurse Lee Poe Poay and the Clinical Registry Assistant, Ms Sharmila Bt Saari, and En Fauzan Jamaluddin for data management and Dr. LimTeck Onn and Ms Teh Poh Geok for data analysis.

We are grateful to the support of the Deputy Director General (Research and Technical Support) of Ministry of Health, Dato` Dr. Mohd Ismail Merican, Dr. Mariam Ismail, the Head of Ophthalmology Service, and the Director, Kuala Lumpur Hospital, as well as the NCSR sponsors: the Medical Development Division, Ophthalmology Service and Clinical Research Centre, of the Ministry of Health .

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Thank you very much.

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## **ABOUT NATIONAL CATARACT SURGERY REGISTRY**

### **INTRODUCTION**

The National Cataract Surgery Registry is a disease outcome registry. It is a prospective, ongoing systematic collection of data pertaining to patients who have had cataract surgery. Data collected include demography, operative events, post-operative visual outcomes and probable causes for poor outcome. These data are used to calculate cataract surgery rates and to evaluate surgical outcome. Such information is useful for performance audit in each participating ophthalmology department, leading to improvement in cataract surgery service, and to assist Ministry of Health, non-governmental organization, private eye care providers and industry in blindness prevention programme planning and evaluation in the country. Analyzed data is presented in report and is disseminated to contributors and other users of the registry at a timely and regular fashion.

NCSR was established in January 2002. In the first year, there are 30 source data producers (SDP) /participating centres in the registry consisting of 28 ophthalmology departments from the Ministry of Health Hospitals, Hospital Angkatan Tentera Kem Terendak, and Universiti Sains Malaysia Hospital. In the year 2003, there were 32 SDP, with addition of Hospital Kuala Lipis, Hospital Selayang and Klinik Azman , but with temporary exclusion of Hospital Miri, due to the absent of ophthalmologist and thus a small number of cataract surgery performed.

### **OBJECTIVES**

The objectives of National Cataract Surgery Registry are to:

- 1 Determine the frequency and distribution of cataract surgery in Malaysia. These are useful measures of the health burden arising of cataract and its treatment provision in the country
- 2 Determine the outcomes, and factors influencing outcomes of cataract surgery. This serves the needs of outcome assessment.
- 3 Evaluate cataract surgery services. This serves the need of accountability.
- 4 Stimulate and facilitate research on cataract and its management.

The objectives listed above, while typical of any cataract surgery registry, is clearly rather ambitious and certainly cannot be met right away. Thus the registry is implemented in phases.

Phase 1 of the proposed cataract surgery register shall be limited to Public Hospitals only.

Phase 2 of the proposed cataract surgery register shall expand the coverage of Phase 1 to include university, private hospitals and private ophthalmologists in the country.

### **SPONSORS OF NCSR**

Ophthalmology Service, Ministry of Health  
Clinical Research Centre, Ministry of Health

## CLINICAL RESEARCH CENTRE

The Clinical Research Centre is the designated collaborating unit to the NCSR. It provides the functional capacity to support the operations of the NCSR.

The CRC is the clinical research arm of the Ministry of Health. Apart from the NCSR, CRC currently also supports the National Renal Registry, National Cancer Registry, National Neonatal Registry, National Mental Health Registry, National HIV/AIDS Treatment Registry and National Transplant Registry.

In recent years, CRC has emerged to become the preferred collaborating partner for medical professional groups to establish disease and treatment registries in the country. This is because CRC possesses sophisticated facility and equipment, state of the art technology, and most importantly the trained human resources such as registry managers, epidemiologists, statisticians, information technology professionals and other supporting staff skilled in registry operations. These resources are consolidated in the Disease and Treatment Registry Unit in the CRC. The unit specializes in assisting medical professionals to establish and operate their registries.

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## ABBREVIATIONS

CF	Counting finger
CI	Confidence interval
CMO	Cystoid macular oedema
CSRU	Cataract surgery registry unit
ECCE	Extracapsular cataract extraction
HM	Hand movement
IOL	Intraocular lens
ICCE	Intracapsular cataract extraction
NPL	No perception of light
PCO	Posterior capsule opacification
PCR	Posterior capsule rapture
PE	Phacoemulsification
PL	Perception of light
SDP	Source data producers
VA	Visual acuity
ZD	Zonular dialysis

## GLOSSARY

Advisory Committee	A committee, board, council, panel or group thereof that is established by the sponsors of the registry to govern the registry. The Advisory Committee shall direct and control the activities of the designated collaborating unit, which manages the day-to-day operations of the registry.
Advisory Committee member	An individual appointed to serve on an advisory committee. Members may have relevant expertise and/or represent the interest of SDP, users or donor.
Chairperson	An advisory committee member who is appointed to preside at committee meetings and ensure that all rules of order and conduct are maintained during each session.
Disease Register	The ongoing systematic collection, analysis and interpretation of a specific disease data essential to the planning, implementation and evaluation of clinical and public health practice, closely integrated with dissemination of these data to those who need to know. The final link in the chain is the application of these data to the management, prevention and control of the disease. A registration system includes a functional capacity for data collection, analysis and dissemination linked to clinical and public health programs.
Secretary	The individual responsible for an advisory committee's overall administrative management. He/she is ordinarily a staff provided by the designated collaborating unit for the purpose.
Source data producer	The individuals or institutions that report the required data to the registry.
Sponsor	The individuals or institutions that own the registry.

## REGISTRY METHODS

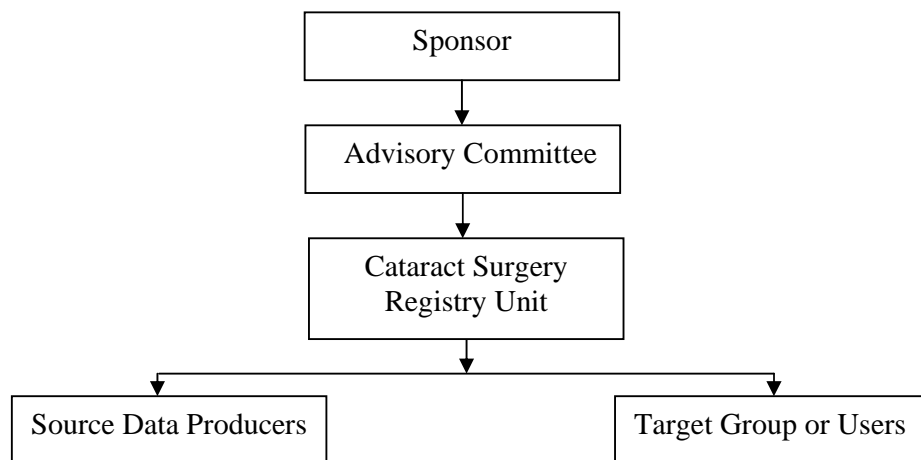
The following aspects of registry methods are described below.

1. Organization and Administrative structure
2. Data standards
3. Data flow process
4. Legal aspects and confidentiality

### 1.ORGANISATION AND ADMINISTRATIVE STRUCTURE

In brief, the organizational structure of NCSR consists of sponsors, advisory committee, cataract surgery registry unit (CSRU), source data producers and target groups/users. The Ophthalmology Service and the Clinical Research Centre, both of the MOH, jointly sponsor the registry. The NCSR is governed by an advisory committee who oversees the operations of registry. The cataract surgery registry unit, which is based at the Clinical Research Centre, MOH, provides the functional capacity to support the operation of NCSR. The source data producers are Departments of Ophthalmology, both public and private, who provide data on patients who have had cataract surgeries. The users or target groups are individuals or institutions to which the regular registry reports are addressed.

The description of the duties and functions of each entity depicted follows.



#### **Sponsor**

The registry is jointly sponsored by the Ophthalmology Service and the Clinical Research Centre; both of the MOH.

#### **Sponsors shall**

- ◆ Be responsible to Director General of Health, MOH for the effective, efficient and responsive operations of the registry.
- ◆ Provide leadership and direction for the registry.
- ◆ Establish an Advisory Committee, jointly chair the committee and appoint members to the Advisory committee. Membership should represent all interested parties. These must include source data producers, Target groups or users and representative from the Cataract Surgery Registry Unit.
- ◆ Provide the financial, human and information resources required, if necessary with financial contribution from industry or donor agencies.

### **Advisory Committee**

An Advisory Committee for cataract surgery register shall be established by sponsors to oversee the operations of registry. Interested parties including source data producers and target groups or users are represented on this committee.

The Committee shall

- ◆ Provide leadership and direction for cataract surgery registry.
- ◆ Ensure the continuing relevance of registry.
- ◆ Determine policy and procedures for the operations of the registry.
- ◆ Designate a collaborating unit to be the Cataract Surgery Registry Unit.
- ◆ Oversee the progress of registry.
- ◆ Facilitate access to data sources.
- ◆ Galvanize commitment of all stakeholders.

### **Cataract Surgery Registry Unit (CSRU)**

The CSRU in the Clinical Research Centre (CRC) is established to provide functional capacity to support the operation of the NCSR. Here, the collection and analysis of data, and feedback of information collected are performed. CSRU is a sophisticated unit staffed by epidemiologist, statistician, information technology personnel and other supporting staff.

To achieve the objectives of the NCSR, the function of CSRU is to ensure:

1. The complete enumeration of all cataract surgery done at the SDP centres
2. The validity of the data collected

### **Source Data Producers (SDP)**

These are individual Departments of Ophthalmology who collect the required data. It is the most costly and difficult element of the system. As the data collected has to be systematic and uniform, and producers of source data need to be trained and motivated to ensure high data quality.

There are 30 Ophthalmology departments under Ministry of Health (MOH), one under Ministry of Defence and 3 in the local universities. Of these public operated ophthalmology departments, 32 registered as source data producers in the year 2003. This gives a coverage rate of 91% in the government hospitals. If only the MOH hospitals are taken into account, the coverage rate is 97%. Of the 32 SDPs, 30 participated for the full year.

### **Users or Target groups**

These are the individuals or institutions to which the regular registry reports are addressed.

They include

- Public health practitioner
- Health provider
- Industry
- Decision maker
- Researcher
- Press and public

It is their needs for information to assist in planning and implementing disease management, control and prevention activity that justify the investment in registry.

## **2.DATA STANDARDS**

The data collected are patient demography, cause of cataract, first or second eye surgery, prior intra-ocular surgery, pre-existing ocular co-morbidity and systemic co-morbidity, pre-operative unaided and refracted vision, surgeon's status, type of admission (day care or non day care surgery), urgency of surgery, type of anesthesia, types of sedation, types of IOL (placement of IOL, material, foldable or non-foldable), and intra-ocular complication, post-operative complications, post-operative best corrected visual acuity by 12 weeks, and possible factors contributing to post-operative refracted VA of worse than 6/12.

## **3.DATA FLOW PROCESS**

### **Inclusion criteria**

All patients, regardless of age, who have undergone cataract surgery, including those who have combined cataract surgery, are included in the registry. Patients who have their lens removal, decided by surgeons while performing the other surgeries, usually during vitreo-retinal surgery were excluded.

### **Data Collection On Clinical Record Forms**

Three clinical record forms are used in NCSR. They are:

- i. Pre-clerking record
- ii. Operative records
- iii. Cataract surgery outcomes through 12 weeks post-op record

These forms are used as medical records in the day-to-day patient care at the eye departments, with duplicate copies to be sent to CSRU. By doing so, there is no additional work in data collection.

The pre-clerking records gather information on patient demography, cause of cataract, first or second eye surgery, prior intra-ocular surgery, pre-existing ocular co-morbidity and systemic co-morbidity, pre-operative unaided and refracted vision; the operative record forms capture data related to surgical procedure, surgeon's status, type of admission (day care or non day care surgery), urgency of surgery, type of anesthesia, both local and systemic sedation, types of IOL (placement of IOL, material, foldable or non-foldable), and intra-ocular complication, and the cataract outcome records collect data on post-operative complications and post-operative best corrected visual acuity by 12 weeks, as well as the possible factors contributing to post-operative refracted VA of worse than 6/12. Refer appendix 1 for the clinical record forms.

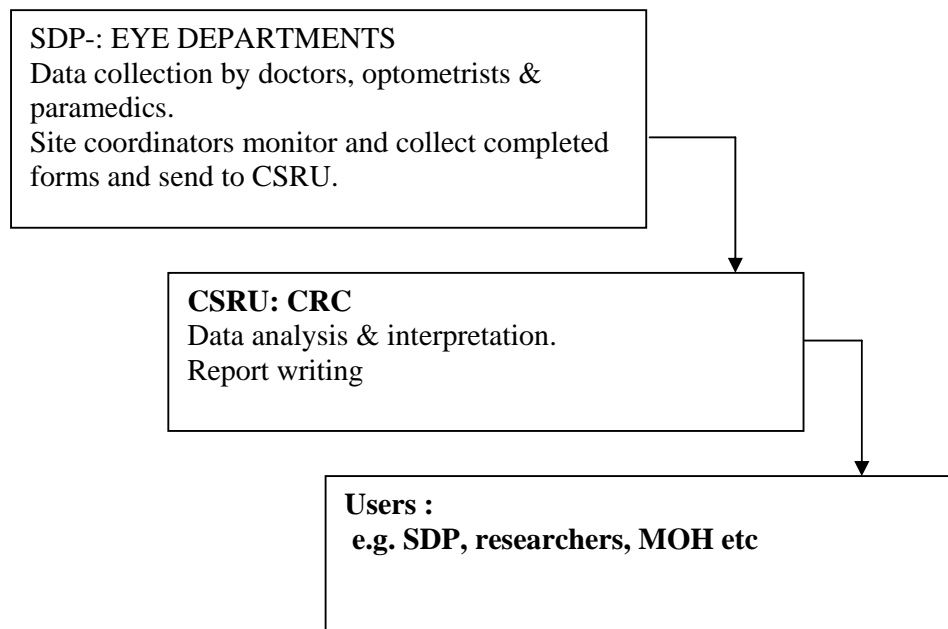
The data transferred to CSRU are kept strictly confidential with access only to authorized individual working in the CSRU.

## Data flow

Doctors complete the pre-clerking forms while doing pre-clerking of patients. Upon completion of surgery, the operative records are entered. Post-operative findings and visual outcome findings are filled in the post-operative records by  $12 \pm 2$  weeks post-op. Site coordinators ensure completeness of case ascertainment and completeness of data collection. She/he will send the completed forms, together with the operating list to CSRU in a monthly basis.

Data submission by SDP is tracked by CSRU computer system, which flags any late submission and automatically sends a reminder.

An instruction manual is used as reference and is available at <http://www.crc.gov.my/ncsr> website . It is also used as a training manual to new doctors and other new staff who join the eye department.



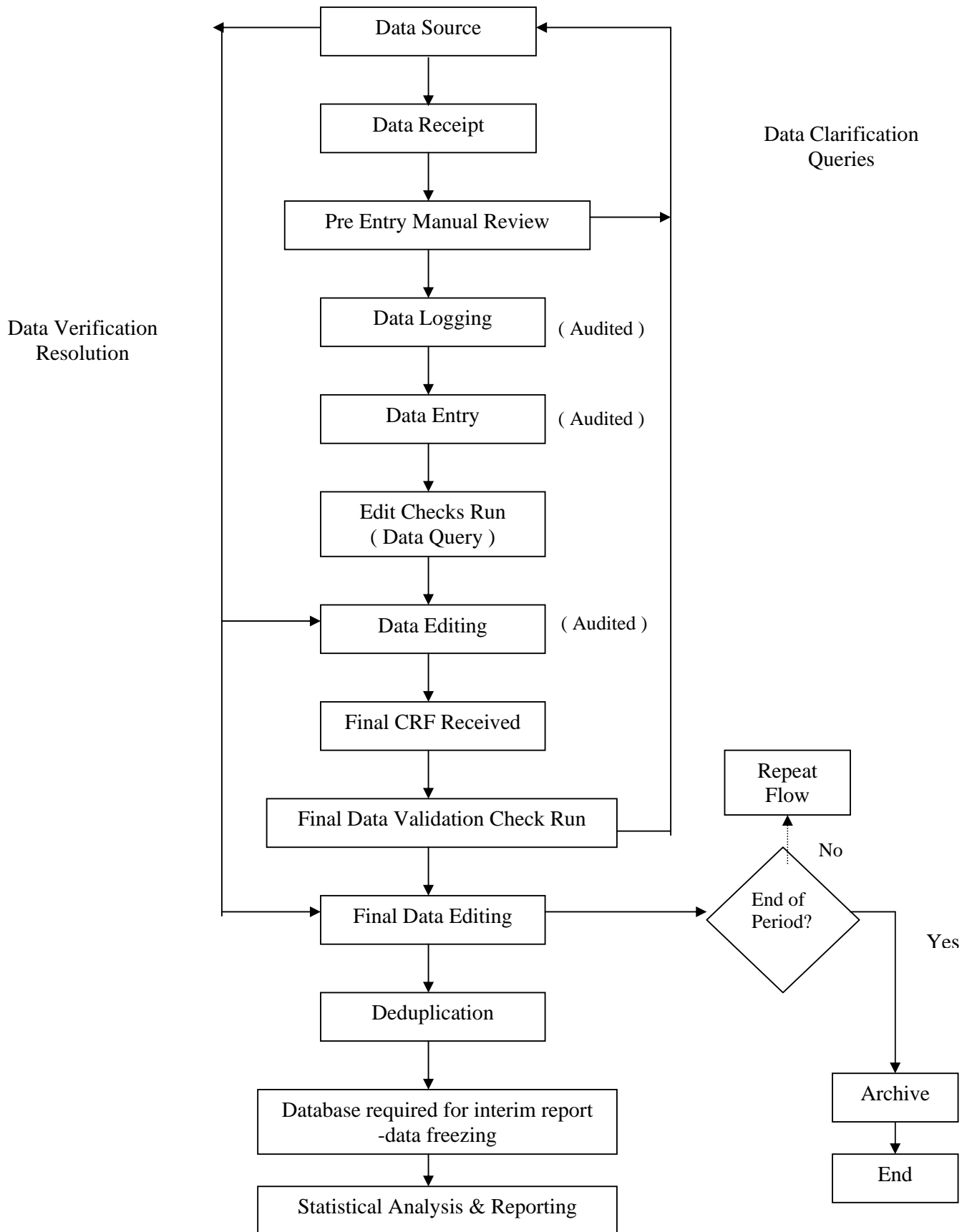
## Data Management At CSRU

### Visual review, data entry, data update and edit checks

Data received by the CSRU were logged-in and manually reviewed to check for completeness and error. Data without apparent problems were entered into the registry database. Edit checks were performed periodically to identify potential data errors, such as missing data, non-allowed values, out of range numeric values, inconsistent data and error with deduplication. Data queries that are resolved are then updated to the database.

To ensure complete enumeration and validity of data, a series of tasks as shown in the figure below have to be in place.

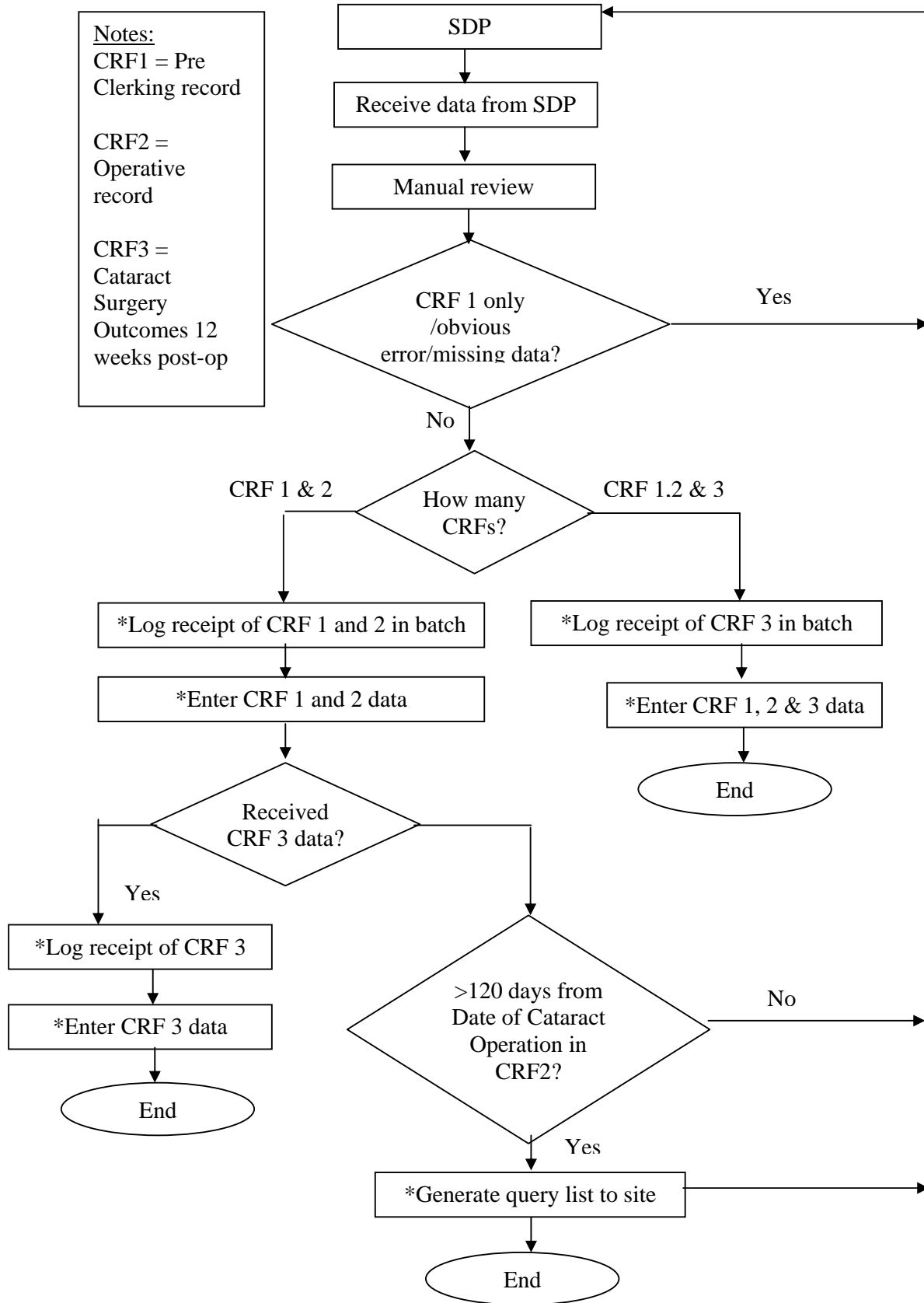
**OVERALL DATA MANAGEMENT FLOW**



# OVERALL DATA FLOW PROCESS

Functions

Notes:  
 CRF1 = Pre  
 Clerking record  
  
 CRF2 =  
 Operative  
 record  
  
 CRF3 =  
 Cataract  
 Surgery  
 Outcomes 12  
 weeks post-op





## **Statistical Analysis**

Descriptive analysis was employed in this report. All data were described in terms of percentages except continuous data, like follow-up period and age, where summary statistics like mean, median, 25<sup>th</sup> percentile and 75<sup>th</sup> percentile were calculated.

We ignored the missing data and confined the analysis to available data. Therefore, no imputation was done.

## **4.LEGAL ASPECT AND CONFIDENTIALITY**

Data transfer from source data producers is entirely voluntary. There is no legal provision to compel any individual or institution to report or transfer its data to the CSRU.

The data transferred to CSRU is of course highly sensitive and has to be kept strictly confidential with access only to authorized individual working in the CSRU. Strict data protection procedure will need to be put in place, following standard disease registration practice, and in compliance with applicable regulatory guidelines.

## **REPORT SUMMARY**

The 2003 annual report contains data from 16,815 patients who had cataract surgery performed in January to December 2003 from 32 SDPs/ centres and whose complete set of clinical record forms (CRF) were received by Cataract Surgery Registry Unit by 31<sup>st</sup> July, 2004. A total 15,821 patients had complete set of three CRFs. As not all the patients who had cataract surgery done had the complete set of CRFs, the number of surgeries did not reflect the true magnitude of cataract surgery performed in each centre. Two-year comparison was possible for 19 centres as they participated fully for the year 2002 and 2003. As returns of CRF continued after the printing of 2002 annual report, the data for 2002 displayed here may not be the same as that in the printed report.

### **1. PATIENTS' CHARACTERISTICS**

- 1.1 The mean age of patients operated was 63.7 years (minimum 1 month, maximum 100 years). Most patients operated were in the age group of 65-74 years (39%). The age distributions were similar to that of the year 2002.
- 1.2 As of 2002, 50% of patients who had cataract operation was female.
- 1.3.a Like 2002, 70% of the patients had first eye operation while 30% had second eye operation.
- 1.3.b Of the 3337 patients who had second eye surgery performed, the average time period for the second eye surgery was 10 months.
- 1.4 Ocular co-morbidity was noted in 36% of the patients. Among the commonest were diabetic retinopathy (10%) and glaucoma (7%). Three hundred and twenty five patients (2%) had lens related problem such as phacomorphic, phacolytic and subluxated or dislocated lens. Twelve percent of the patients had poor view of the posterior segment and thus presence of pre-existing ocular co-morbidity could not be determined.
- 1.5 Systemic co-morbidity was noted in 59% of the patients. Hypertension was the most common (38%) followed by diabetes mellitus (31%), ischaemic heart disease (9%) and asthma/ COAD (5%).
- 1.6.a Of the 16,815 patients, 16,723 (93.5%) have records of presenting vision and only 2104 patients (12.6%) have records of refracted vision. Based on presenting vision as measurement, there was a bimodal trend of visual status at pre-clerking, i.e. vision between 6/24 to 6/60 (28%), and vision at worse than counting fingers (CF) (48%). While using refracted vision as measurement, most patients had vision between 6/12 to 6/36 (52%). Majority of the patients (61%) presented with vision of worse than 3/60 in the operated eye, which, based on WHO definition, fell into blindness category. Many of these patients did not have refraction done.

- 1.6.b There seems to be no gender differences in terms of preoperative visual acuity. Among those presented with unaided vision of 3/60 or worse 51% were women, (49% with refracted vision). Presumably there was no gender inequity in terms of accessibility to cataract surgery service.
- 1.7 Senile/age related cataract accounted for 93% and traumatic cataract accounted for 2% of the causes of cataract. Four hundred and ninety two patients (2%) had congenital or developmental cataract.

## **2. CATARACT SURGERY PRACTICE**

- 2.1 The month of July had the highest number of cataract surgeries performed (11%) while November had the least number of cases (5%).
- 2.2 Centre B performed the highest number of cataract surgery (n=1063) and centre AF performed the least number of cataract surgery (n=62). Two centres performed less than 100 cataract surgery in the year 2003 (Centre Y and AF). Eleven centres ( B,E,G,I,J,L,N,P,S,V,AD) have increased the number of cataract surgery performed as compared to year 2002.
- 2.3 Like 2002, day care surgery was less frequently performed compared to in-patient surgery. The average percentage of day care surgery performed was 37% (39% in the year 2002). When excluding combined surgery and cataract surgery performed in children less than 18 years, 38 % was performed as day care. Centre AE performed all its cataract surgery as day care while centre C, J, N, R and AF did not perform any day care surgery.
- 2.4 Extracapsular cataract extraction (ECCE) was the most common type of cataract surgery performed. Forty eight percent of cataract surgeries were ECCE, this was followed closely with phacoemulsification (PE) at 46%, 3% were PE convert to ECCE, 3% were lens aspiration and 1% were intracapsular cataract extraction (ICCE). There was an increase in the percentage of surgeons performing phacoemulsification surgery from 40% in 2002 to 46% in 2003. Centres A,B,F,H,I,J,L,O,P,S,T,AB,AC and, AE perform more phacoemulsification than other type of surgeries . Centres S and AE performed the highest percentage of phacoemulsification at 76% and 75% respectively. Three centres – C, N and R did not performed phacoemulsification surgery.
- 2.5 Only 3% (n=581) of the cataract surgeries had some form of combined surgery. Combined cataract and filtering surgery (n=148) was the commonest form of combined surgery. Centres R and AB performed the highest number of combined surgery at 10% each. Centres AA and AF did not perform any combined surgery.
- 2.6 Almost all cataract surgeries were performed for elective reasons with only 1% of the cases requiring emergency cataract surgery. Six centres (C,H,J,N,O and AE) performed purely elective surgery. At all other centres, emergency cataract surgeries was performed at varying frequencies and ranged between 1 to 3%.

- 2.7 Ninety three percent of cataract surgeries were performed under local anaesthesia (LA). The frequency of utilization of LA ranged between 86% to 100% at the various centres. Seven percent of cataract surgeries were performed under general anaesthesia (GA). At centres D,G,M,N,T,U and Y GA was utilized for more than 10% of their cases and this ranged between 11-14%.
- 2.8 For cataract surgeries performed under LA, the type of LA most commonly performed was subtenon anaesthesia (52%). This was followed by retrobulbar anaesthesia (19%), peribulbar anaesthesia (16%) and topical anaesthesia (18%). There was an increase in the usage of topical anaesthesia from 12% in 2002 to 18% in 2003.

Generally more than one type of LA was utilised at each centre. Though there was usually a preference towards one type of LA at each centre. Centres E and J performed purely subtenon anaesthesia while centre AF performed only retrobulbar anaesthesia.

Eleven of the 32 centres utilized facial block, a local anaesthesia aims to prevent over action of the orbicularis oculi muscle, this ranged between 1% to 98% ( mean of 6%).

- 2.9 Cataract surgery in some cases may require more than one type of LA to provide adequate anaesthesia. Of the 93% of cataract surgeries requiring LA, 89% were given only one type of LA with the remaining 11% requiring more than one type of LA. There was an increase in the number of centres utilizing purely single LA ( i.e from 8 centres in 2002 to 14 centres in 2003).
- 2.10 Seventy seven percent of cataract surgeries undergoing LA did not have any form of sedation. The number of centres not utilizing any form of sedation increased from 4 centres in 2002 to 10 centres) in 2003.

Among the 23% of patients who were given sedation, oral sedation was the commonest sedation used (21%). Intravenous and intramuscular sedation were infrequently used (between 1% to 8%) at most centres with the exception of centres C and E where 87% and 25% of the cases received intramuscular sedation.

- 2.11 Majority of the patients had intraocular lens implantation (97.5%). Posterior chamber (PC) intraocular lens (IOL) is the normal placement of an IOL in uncomplicated surgery. PC IOLs were placed in 97% of the cataract surgeries. No centre had 100% PC IOL placement.

Anterior chamber (AC) IOLs were placed in 2.5% of cases and this ranged between 1% to 8% at the various centres. Some cases with AC IOL may not be a result of complication but planned based on preoperative assessment.

- 2.12 Four hundred and seventeen patients (2.5%) had cataract surgery without IOL implantation. Of these, 138 cases (33%), IOL had been planned but lens implantation was not possible at the time of surgery. In the remaining 279 (67%) cases no IOL was planned for implantation at the time of surgery. Lens implantation may not have been planned for various reason based on preoperative assessment.
- 2.13 There was a gradual decline in the usage of PMMA lens from 73% in 2002 to 62% in 2003. The utilization of acrylic IOLs on the other hand doubled from 13% in 2002 to 27% in 2003. Sixty two percent of the eyes have non-foldable IOLs and 38% had foldable IOLs.

### **3. CATARACT SURGERY OUTCOMES**

#### **3.1 CATARACT SURGERY COMPLICATIONS -INTRA-OPERATIVE**

- 3.1.1 Overall, 10% of the cataract surgeries performed had intra-operative complications. Posterior capsule rupture with vitreous loss was the commonest (5%), while posterior capsule rupture without vitreous loss (2%), zonular dialysis with vitreous loss (1%) and zonular dialysis without vitreous loss (1%) were the other types of intra-operative complications

As for surgical techniques, PE converted to ECCE cases had the highest complication rate (44%), followed by ICCE (41%). The rates of complication in ECCE and PE were almost similar, being 9% respectively.

- 3.1.2 In cases of combined surgeries, 18% had intra-operative complication. Complication was most commonly seen among cataract surgeries combined with vitreo-retinal surgeries (24%). Of all the combined surgeries, posterior capsule rupture with vitreous loss was the commonest intra-operative complication (8%).
- 3.1.3 Eighteen percent of emergency cases had intra-operative complications compared to 10% of elective cases. Posterior capsule rupture with vitreous loss was the most frequent complication in these patients (5%).
- 3.1.4 Proportion of patients who had intra-operative complications was similar whether the operation was done under general or local anaesthesia. (10% respectively) Posterior capsule rupture with vitreous loss was the most frequent complication in these patients (5%).
- 3.1.5 The rate for intra-operative complication was higher among patients who had subtenon, peribulbar, or subconjunctival anaesthesia (11% respectively) as compared to topical or retrobulbar anaesthesia (8% respectively).
- 3.1.6 The occurrence of intra-operative complications was almost similar whether single (10%) or multiple (12%) administrations of local anaesthesia were given to patients.

- 3.1.7 Intravenous use of sedatives (20%) had a higher percentage of intra-operative complications compared to those given no sedation (10%), oral sedation alone (8%), intramuscular (7%) or intravenous plus oral (6%).
- 3.1.8 Patients who were not given any sedation have an almost similar rate of intra-operative complication (10%) as compared to those who were given single sedation (9%) or those who had multiple sedations (7%).
- 3.1.9 Patients who had AC IOL implanted had the highest rate of intra-operative complications (78%) as compared to those who had PCIOL (7%). There was a 26% complication rate for those who had scleral fixated IOLs. Among patients who had ACIOL, 46% of them had posterior capsule rupture with vitreous loss.
- 3.1.10 For those without IOL implantation, patients who were planned to have IOL implanted had higher percent of intra-operative complications at 70% compared to those who were not planned to have IOL implantation (28%). Understandably, the earlier group was those who had intra-operative complication rendering IOL implantation impossible. Posterior capsule rupture with vitreous loss was the commonest complication among patients who did not have IOL implanted (20%).
- 3.1.11 Gazetting specialists were noted to have the highest rate of intra-operative complication (12%), while the rate for specialists was 9% and for medical officers was 11%.

### **3.2 CATARACT SURGERY COMPLICATIONS -POST-OPERATIVE**

(Note: Post-operative complications were recorded during the follow-up visits within 12 weeks post-operative period. They are based on clinical judgment.)

- 3.2.1 Overall, 9% of patients had postoperative complication. Central corneal edema within 4 mm of visual axis (2 %) and astigmatism of more than 3 diopters (3 %) were the most common complications seen.
- 3.2.2 The rate of complication when foldable IOLs were implanted was 6% as compared to 10% when non-foldable IOLs were implanted. Patients with non-foldable IOLs had higher percentages of astigmatism of more than 3 diopters (5%) compared to those with foldable IOLs (1%).
- 3.2.3 Without taking surgeon status and type of surgery into consideration, the rate of complications was highest when PMMA IOLs were used (10%). This is followed by acrylic IOLs and silicone IOLs (6% respectively).
- 3.2.4 Nine centres (A, B, G, M, R, U, W, X, AB, AF) had post-operative complication rates was worse than the average 9%.

### **3.3 POST-OPERATIVE FOLLOW UP PERIOD**

- 3.3.1 Of the 16,815 patients who had cataract surgery, 2106 (13%) patients did not have refraction during the first 3 months following surgery. Their median post-operative follow-up period was at 4.1 weeks. Two third of them (75 percentile) had follow up period of 11.1 weeks.
- 3.3.2 Of the 16,815 patients who had cataract surgery, 13,645 (81%) patients had post-operative refraction. Their median post-operative follow-up period was 10.7 weeks. Two third of them (75 percentile) had follow up period of 13.1 weeks. Of note, patients who underwent PE had shorter follow-up periods compared to patients who had other types of surgeries.

### **3.4 POST-OPERATIVE VISUAL ACUITY**

- 3.4.1a Of the 16,815 patients operated, 14,683 (87%) had data on unaided post-operative visual acuity. Of these, 38% obtained post-operative unaided VA of 6/12 or better.

Of the 16,815 patients operated 12,830 (76%) had data on post-operative refracted visual acuity. Of these, 82% obtained post-operative refracted VA of 6/12 or better.

One percent of the operated eyes had post-operative refracted VA (6% with unaided VA) at the blindness category (refracted VA 3/60 and worse). Thus, 5% of the operated eyes who were blind, measured with unaided vision, improved to better than 3/60 when refraction was performed.

- 3.4.1b Excluding patients with ocular co-morbidities , patients whose cataract were due to secondary causes, and non-combined cataract surgery, 43% of the patients had post operative unaided vision of 6/12 or better, and 89% had post-op refracted vision of 6/12 or better.

Figures 3.4.1.2 and 3.4.1.3 showed the visual improvement before and after cataract surgery. In general, post-op VA was better than pre-op VA and the difference was more apparent when unaided VA was taken as the measurement.

- 3.4.2 When comparing post-op refracted VA in relation to types of surgery, patients who had PE had a significantly higher percentage of good visual outcome (93% , 95% CI 92, 94) ) as compared to ECCE (85%, 95%CI 83, 86) ). Based on unaided VA, 51% of patients who had PE and 34% of patients who had ECCE achieved good visual outcome.

3.4.3 When comparing age and visual outcome for all cataract surgeries, patients who were younger than 14 years and older than 85 years had lower percentage of good VA outcome of 6/12 or better (64% in both groups respectively). Those between the ages of 25 to 65 had the highest percentage of refracted VA 6/12 or better. (92-95%)

3.4.4 In general, post-op visual outcome was similar among male (90%) and female patients (88%).

3.4.5 In the presence of ocular co-morbidities, only 69% of the patients obtained good visual outcome as compared to patients without ocular co-morbidities (89%).

In general, presence or absent of systemic co-morbidity did not affect the post-op visual outcome (89% vs. 88%).

3.4.6 In general patients who had intra-operative or post-operative complications have poorer visual outcome than patients who did not have complications.

Seventy eight percent of patients with intra-operative complications had post-operative VA 6/12 or better compared to 90% for those without intra-op complications.

For those with post-operative complications, 73% of them had refracted VA 6/12 or better compared to 90% for those without post-operative complications.

In the presence of intra-operative or post-operative complications, PE had better outcome (83 and 78%) compared to any other type of cataract surgeries with complications.

3.4.7 In general, patients who had elective surgery have better visual outcome (89%) compared to emergency cataract surgery (83%).

3.4.8 Patients who received local anaesthesia had a better visual outcome compared to those who received general anaesthesia (89% and 81% respectively).

Patients who had topical or subconjunctival anaesthesia had the highest percentage with good outcome (91%). This may be due to the fact that most of them had PE performed.

Percentage of good outcome was almost similar among those who had peribulbar (87%), retrobulbar (89%), and subtenon (89%). There is minimal difference in visual outcome among patients who were given and those who were not given systemic sedation (87 and 89%).

3.4.9 In general, patients who did not have combined surgeries had better outcome (81%) compared to those who had combined surgery (64%).



- 3.4.10 Understandably, patients who had IOL implanted had better refracted visual outcome (89%) compared to those who did not had IOL (42%).

Ninety-four percent of patients with foldable IOLs had a postoperative visual acuity of 6/12 or better, compared to 86% of those with non-foldable IOLs. Among those who underwent PE, the percentage of good visual outcome was almost similar between foldable or non-foldable IOLs (94% vs.91%).

When comparing IOL material regardless of surgery type, 94% of patients who received both acrylic and silicone IOLs had a good visual outcome. 86% of patients using PMMA IOLs had refracted visual outcome of 6/12 or better.

Among patients who had ECCE, the visual outcome differs on whether PMMA (79%), acrylic (78%) or silicone IOL (76%) was implanted. However, among patients who had PE, patients who had PMMA had lower percent of good outcome (91%) while there was no difference in visual outcome between patient who had silicone or acrylic IOL implantation (94% and 94% respectively).

- 3.4.11 When comparing visual outcome among patients who were without ocular comorbidity (n=8679) in relation to surgeons status, percent of patient with good visual outcomes was highest amongst those performed by specialists (90%, 95% CI 89,90) followed by gazetted specialists (86%,95% CI 84,89) and medical officers (85%,95% CI 83,87). However, the differences in performance became not significant when they were compared by surgery types.

- 3.4.12 When comparing among centres, percent of post-operative visual outcome of 6/12 or better in the 32 centres ranged from 72% to 98%, with the average of 83%. Four out of 32 centres performed below the average.

Among ECCE cataract surgeries, percent of good outcome ranged from 61% to 100% in all centres, with the average of 81%. Nine out of 32 centres performed below average.

Among PE cataract surgeries, percent of good outcome ranged from 82% to 100% in all centres, with the average of 85%. One out of 32 centres performed below average.

### **3.5 POST-OPERATIVE REFRACTED VA IMPROVED BY ONE OR MORE LINE SNELLEN CHART**

- 3.5.1 Of the 16,815 patients operated, only 1105 (68%) patients had refracted vision for both pre-op and post-op assessment. Among these 1105 patients, 93% of them had one or more line of visual improvement postoperatively, while 4% experienced no change in visual acuity and 3% had reduced vision. Among those with one line visual improvement, the highest percentage was lens aspiration (100%, but small sample, n=13), PE (94%), followed by ECCE (93%), and PE converted to ECCE (93%).

- 3.5.2 In the absence of ocular co-morbidity, 93% of patients had visual improvement of one line or more. With ocular co-morbidity, 86% of the patients had visual improvement.
- 3.5.3 In the absence of intra-op complications, 94% of patients had visual improvement of one line or more. Even with the presence of intra-op complication, 84% of the patients had visual improvement.
- 3.5.4 Whether patients had or did not have systemic co-morbidity, there is no difference in the proportion of patient with visual improvement (93%).
- 3.5.5 When comparing visual outcome in patients who were without ocular co-morbidity in relation to surgeon's status, there were no significant differences among patients who had cataract surgeries performed by specialists, gazetted specialists or medical officers. However, among patients who had PE, specialist performed better than gazetted specialist (95% vs. 82%).

### **3.6 FACTORS CONTRIBUTING TO POST-OPERATIVE VA WORSE THAN 6/12**

- 3.6.1 Of the 986 patients who had postoperative refracted visual acuity of worse than 6/12, only 888 (90%) had factors identified for poor outcome.

High astigmatism (40%) was the main cause for poor outcome followed by posterior capsular opacification (15%) and cystoid macular oedema (6%).

Among the 41 patients who were noted to have post-operative endophthalmitis, 10 (24.4%) had post-operative best corrected visual acuity of worse than 6/12. The rate of post-operative endophthalmitis reported in the 2003 cataract surgery registry was 0.24% (41/16815).

## 1. PATIENTS' CHARACTERISTICS

Table 1.1: Age Distributions

Age, Years	N=16811
Mean	63.7
Median	66
Minimum	1 Month
Maximum	100
% Distributions	
Age Group	
<1 Year	0.1
1-14 Years	1
15-24 Years	1
25-34 Years	1
35-44 Years	3
45-54 Years	12
55-64 Years	27
65-74 Years	39
75-84 Years	15
>=85 Years	2

Figure 1.1: Age Distributions

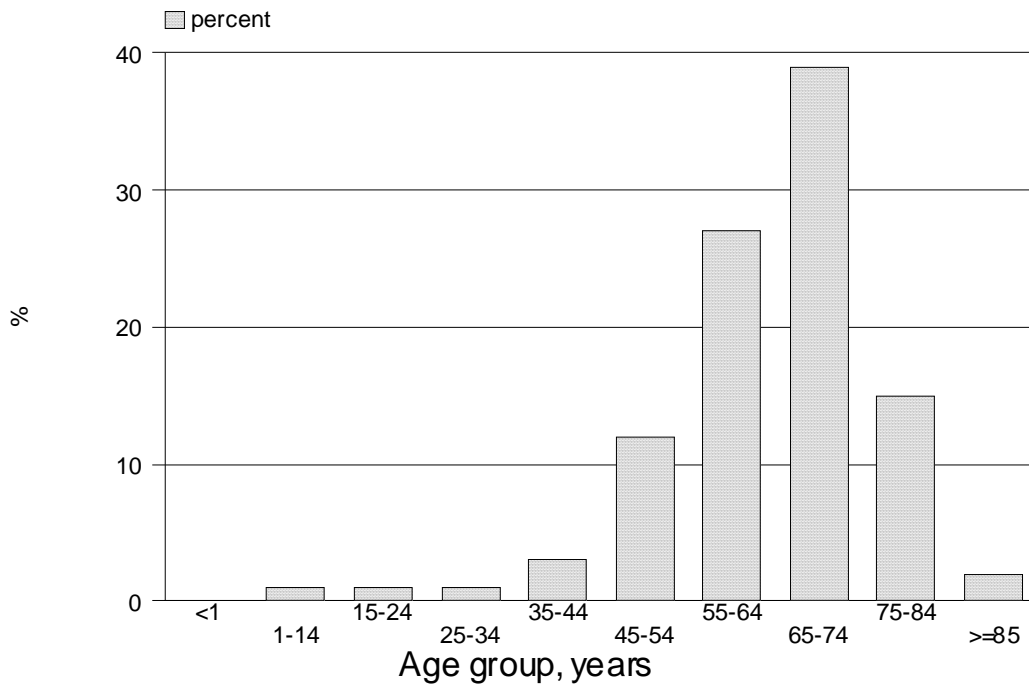


Table 1.2: Gender Distributions

Gender	N=16815
	%
Male	50
Female	50

Table 1.3(a) : Number Of Patients With First Eye And Second Eye Surgery

Type Of Surgery	No.	%
N	16815	100
First Eye	11851	70
Second Eye	4964	30

Table 1.3(b): Period Of Time Before Second Eye Surgery

Period, Months	N= 3337
Mean	16.87
Sd	19.64
Minimum	0
Maximum	278.21
Median	10.18

Sd=Standard Deviation

Table 1.4: Number Of Patients With Ocular Co-Morbidity

Patients With Ocular Co-Morbidity	No.	%
N	16815	100
Patients With Any Ocular Co-Morbidity	6068	36
Patients With Specific Ocular Co-Morbidity		
Anterior Segment		
1. Pterygium Involving The Cornea	393	2
2. Corneal Opacity	200	1
3. Glaucoma	1096	7
4. Chronic Uveitis	48	0.3
5. Pseudoexfoliation	254	2
Len Related Complication		
1. Phacomorphic	152	1
2. Phacolytic	63	0.4
3. Subluxated/Disclosed	110	1
Posterior Segment		
1. Diabetic Retinopathy: Non Proliferative	965	6
2. Diabetic Retinopathy: Proliferative	366	2
3. Diabetic Retinopathy: CSME	177	1
4. Diabetic Retinopathy: Vitreous Haemorrhage	106	1
5. ARMD	215	1
6. Other Macular Disease (Includes Hole Or Scar)	106	1
7. Optic Nerve Disease, Any Type	76	0.5
8. Retinal Detachment	177	1
9. Cannot Be Assessed	1962	12
Miscellaneous		
1. Amblyopia	61	0.4
2. Significant Previous Eye Trauma	80	0.5
3. Pre-Existing Non Glaucoma Field Defect	3	0.02
Other	827	5

Table 1.5: Number Of Patients With Systemic Co-Morbidity

Patients With Systemic Co-Morbidity	No.	%
N	16815	100
Patients With Any Systemic Co-Morbidity	9933	59
Patients With Specific Systemic Co-Morbidity		
1.Hypertension	6408	38
2.Diabetes Mellitus	5136	31
3.Ischaemic Heart Disease	1538	9
4.Renal Failure	303	2
5.Cerebrovascular Accident	165	1
6.Coad/Asthma	907	5
7.Hansen's Disease	5	0.03
8.Allergies	63	0.4
Other	1139	7

Table 1.6(a): Pre-Operative Visual Acuity Measurement

Pre-Operative VA	Unaided		Refracted	
	N=16723	100%	N=2104	100%
	No.	%	No.	%
6/5	2	0.01	0	0
6/6	20	0.1	22	1
6/9	92	1	94	4
6/12	282	2	211	10
6/18	647	4	319	15
6/24	1209	7	308	15
6/36	1510	9	254	12
6/60	1960	12	198	9
5/60	302	2	31	1
4/60	298	2	28	1
3/60	514	3	60	3
2/60	666	4	71	3
1/60	1001	6	74	4
CF	3408	20	186	9
HM	3567	21	174	8
PL	1211	7	73	3
NPLI	34	0.2	1	0.05

Figure 1.6: Pre-Operative Visual Acuity Measurement

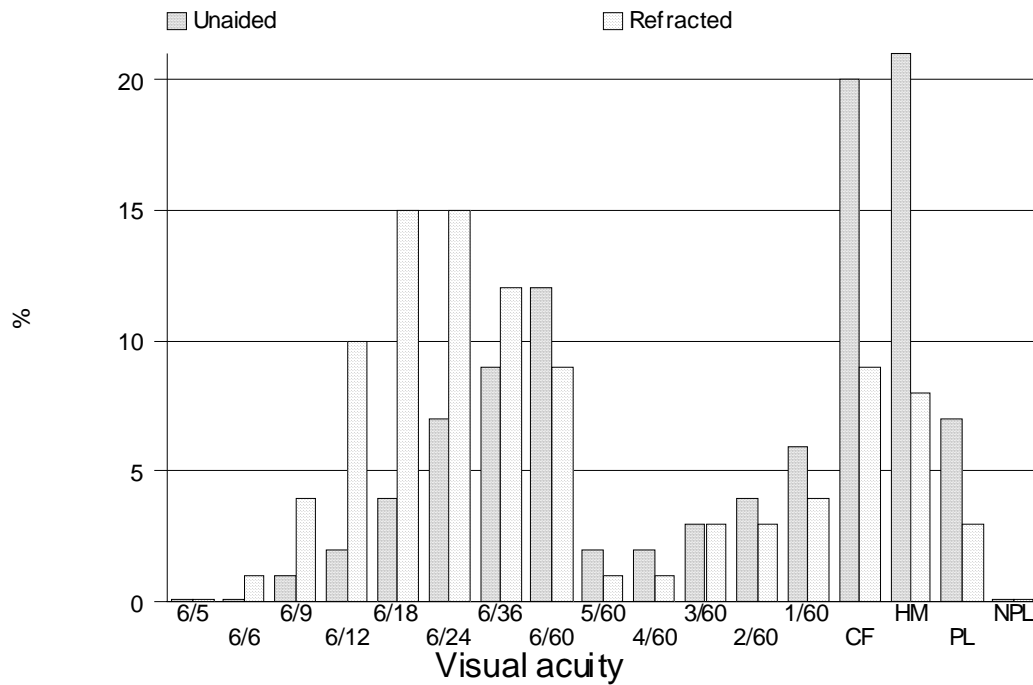


Table 1.6(b): Pre-Operative Visual Acuity Measurement By Gender

Pre-Operative VA 3/60 Or Worse	Unaided		Refracted	
	No.	%	No.	%
N	10401	100	639	100
Gender				
Male	5092	49	325	51
Female	5309	51	314	49

Table 1.7: Causes Of Cataract

Causes Of Cataract	No.	%
N	16815	100
Primary Cataract		
Senile/Age Related	15623	93
Congenital	175	1
Development	317	2
Other	46	0.3
Secondary Cataract		
Trauma	399	2
Drug Induced	81	0.5
Surgery Induced	67	0.4
Other	107	1



## 2. CATARACT SURGICAL PRACTICES

Table 2.1: Number (%) Of Surgery Done By Month

Month	No.	%
N	16815	100
January	1399	8
February	1197	7
March	1389	8
April	1495	9
May	1364	8
June	1400	8
July	1862	11
August	1538	9
September	1530	9
October	1666	10
November	917	5
December	1058	6

Figure 2.1: Number (%) Of Surgery

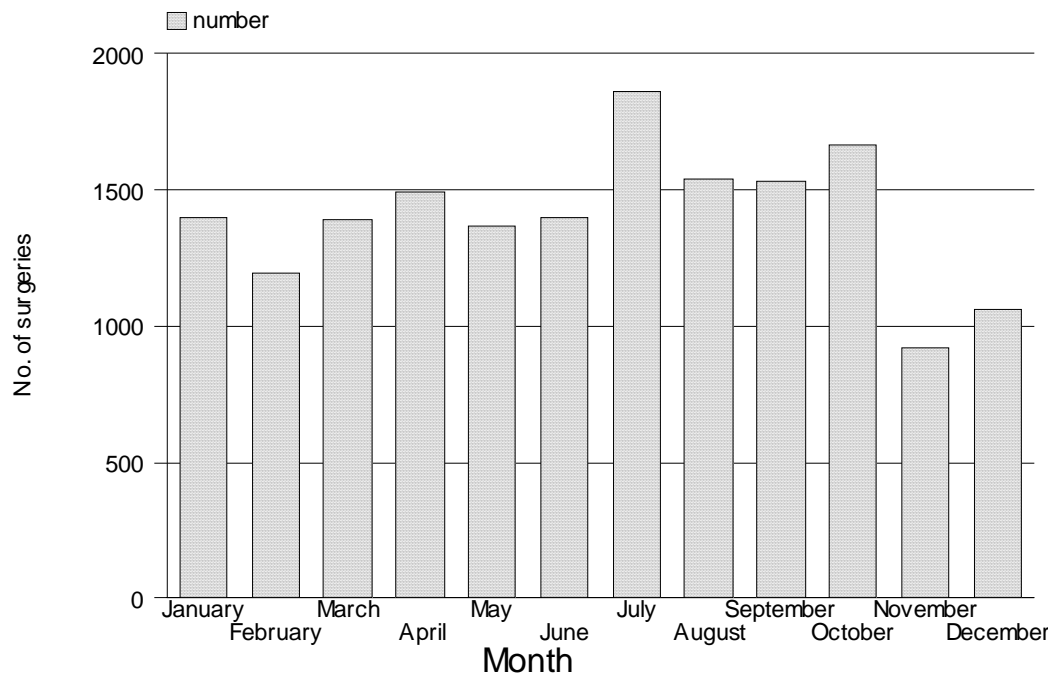


Table 2.2: Number Of Surgery Done By Centre, 2002 And 2003

Centre	Year 2002		Year 2003	
	No.	%	No.	%
All Sites	13025	100	16815	100
A	154	1	199	1
B*	956	7	1063	6
C	129	1	133	1
D	27	0.2	1057	6
E*	294	2	363	2
F*	1079	8	858	5
G*	422	3	274	2
H*	737	6	672	4
I*	1017	8	1029	6
J*	519	4	605	4
K*	1141	9	943	6
L*	480	4	702	4
M*	830	6	794	5
N*	260	2	310	2
O*	1009	8	844	5
P*	414	3	552	3
Q*	429	3	346	2
R	188	1	263	2
S*	392	3	619	4
T*	421	3	395	2
U*	801	6	699	4
V*	268	2	395	2
W	285	2	597	4
X	70	1	134	1
Y	42	0.3	87	1
Z	213	2	619	4
Aa	37	0.3	167	1
Ab	Na	Na	980	6
Ac	127	1	539	3
Ad*	233	2	395	2
Ae	Na	Na	120	1
Af	Na	Na	62	0.4
Ag	51	0.4	Na	Na

Footnote: \*Centre Which Participated From Jan 2002 To Dec 2003, Full 2 Years

Na = Not available

Figure 2.2: Number Of Surgery Done By Center

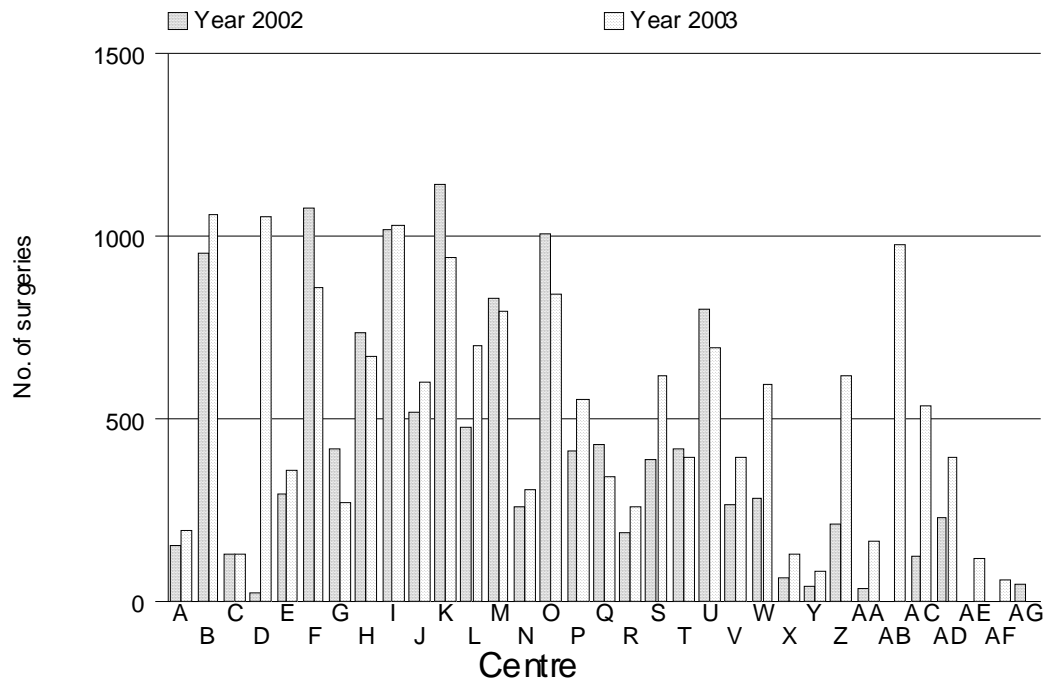


Table 2.3: Distribution Of Day Care Setting By Centre, All Surgery And Those Excluded Children Below 18 Years And Combined Surgery

Centre	Day Care Year 2002						Day Care Year 2003					
	All Surgery			Exclude Children And Combined Surgery			All Surgery			Exclude Children And Combined Surgery		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%
All Sites	13025	4996	39	1244	488	39	16815	6203	37	15981	6089	38
A	154	0	0	142	0	0	199	5	3	188	5	3
B	956	226	24	893	218	24	1063	270	25	1002	262	26
C	129	0	0	120	0	0	133	0	0	125	0	0
D	27	1	4	26	1	4	1057	30	3	994	27	3
E	294	10	3	279	10	4	363	5	1	329	5	2
F	1079	957	89	1023	926	91	858	712	83	841	708	84
G	422	223	53	382	206	54	274	111	41	246	100	41
H	737	599	81	694	578	83	672	567	84	617	544	88
I	1017	891	88	967	875	90	1029	905	88	957	884	92
J	519	10	2	509	10	2	605	0	0	594	0	0
K	1141	763	67	1104	759	69	943	764	81	922	759	82
L	480	51	11	457	51	11	702	55	8	663	55	8
M	830	349	42	790	345	44	794	396	50	736	390	53
N	260	0	0	253	0	0	310	0	0	282	0	0
O	1009	100	10	991	100	10	844	48	6	822	47	6
P	414	49	12	393	48	12	552	132	24	537	130	24
Q	429	34	8	409	34	8	346	175	51	339	175	52
R	188	0	0	173	0	0	263	1	0.4	234	1	0.4
S	392	209	53	382	207	54	619	168	27	599	166	28
T	421	175	42	405	172	42	395	106	27	384	105	27
U	801	21	3	773	21	3	699	8	1	667	8	1
V	268	2	1	246	2	1	395	11	3	379	11	3
W	285	14	5	274	14	5	597	27	5	562	26	5
X	70	56	80	68	55	81	134	97	72	132	96	73
Y	42	26	62	41	26	63	87	68	78	86	68	79
Z	213	208	98	212	207	98	619	525	85	611	519	85
Aa	37	1	3	37	1	3	167	2	1	167	2	1
Ab	Na	Na	Na	Na	Na	Na	980	750	77	876	733	84
Ac	127	20	16	126	20	16	539	140	26	527	139	26
Ad	233	1	0.4	225	1	0.4	395	5	1	383	5	1
Ae	Na	Na	Na	Na	Na	Na	120	120	100	119	119	100
Af	Na	Na	Na	Na	Na	Na	62	0	0	61	0	0
Ag	51	0	0	51	0	0	Na	Na	Na	Na	Na	Na

Figure 2.3(a): Distribution Of Day Care And In Patient By Centre, Year 2003

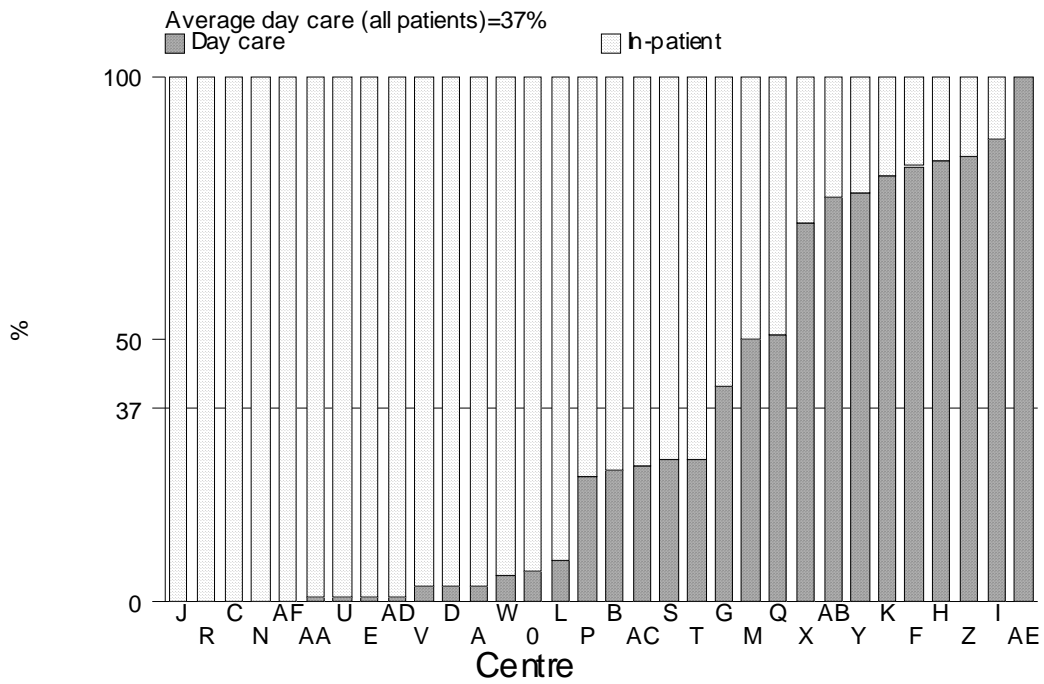


Figure 2.3(b): Distribution Of Day Care And In Patient By Centre (Exclude Children And Those With Combined Surgery), Year 2003

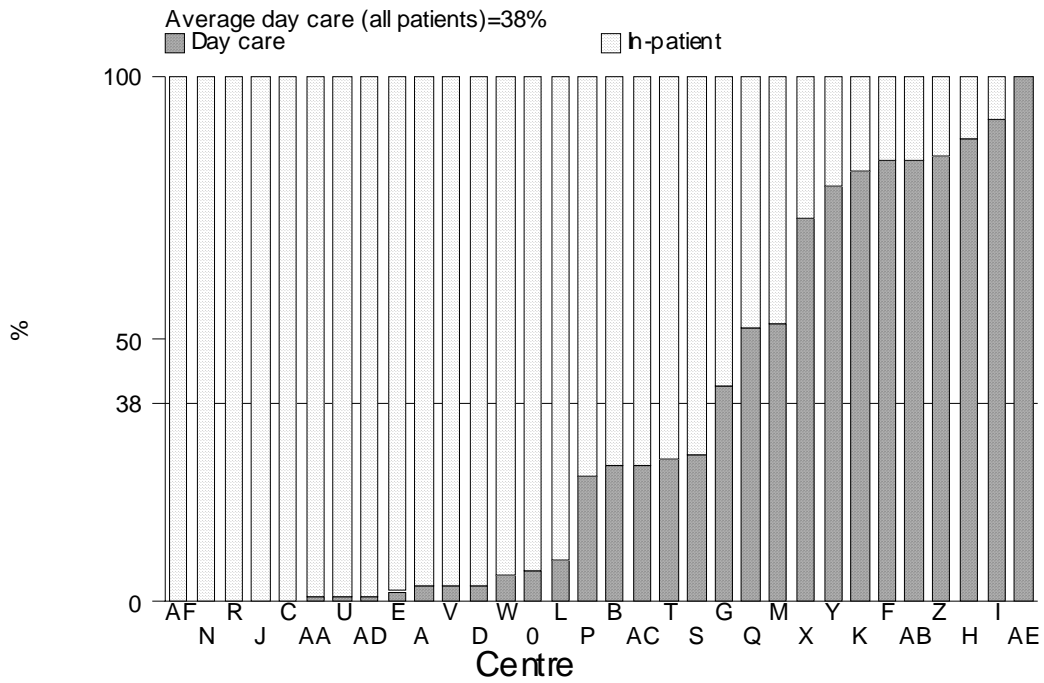


Table 2.4: Distribution Of Types Of Cataract Surgery By Centre

Centre	Types Of Cataract Surgery													
	All Surgeries		Lens Aspiration		ECCE		PE		PE Converted To ECCE		ICCE		Secondary IOL Implant	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All Centres	16815	100	435	3	8012	48	7674	46	469	3	94	1	131	1
A	199	100	3	2	74	37	117	59	5	3	0	0	0	0
B	1063	100	25	2	664	62	351	33	9	1	10	1	4	0
C	133	100	2	2	130	98	0	0	0	0	0	0	1	1
D	1057	100	16	2	669	63	339	32	11	1	7	1	15	1
E	363	100	12	3	335	92	16	4	0	0	0	0	0	0
F	858	100	11	1	356	41	440	51	42	5	1	0	8	1
G	274	100	21	8	163	59	74	27	11	4	3	1	2	1
H	672	100	34	5	229	34	377	56	18	3	7	1	7	1
I	1029	100	27	3	329	32	630	61	16	2	11	1	16	2
J	605	100	13	2	177	29	398	66	16	3	0	0	1	0
K	943	100	14	1	466	49	432	46	24	3	7	1	0	0
L	702	100	30	4	230	33	406	58	23	3	1	0	12	2
M	794	100	40	5	517	65	203	26	23	3	6	1	5	1
N	310	100	15	5	288	93	1	0	0	0	4	1	2	1
O	844	100	17	2	326	39	484	57	11	1	2	0	4	0
P	552	100	9	2	187	34	321	58	24	4	6	1	5	1
Q	346	100	7	2	196	57	116	34	25	7	1	0	1	0
R	263	100	0	0	252	96	1	0	8	3	0	0	2	1
S	619	100	8	1	125	20	470	76	10	2	4	1	2	0
T	395	100	11	3	134	34	245	62	3	1	2	1	0	0
U	699	100	28	4	323	46	323	46	15	2	3	0	7	1
V	395	100	16	4	219	55	134	34	20	5	3	1	3	1
W	597	100	30	5	323	54	209	35	25	4	7	1	3	1
X	134	100	1	1	95	71	29	22	7	5	0	0	2	1
Y	87	100	2	2	75	86	9	10	1	1	0	0	0	0
Z	619	100	5	1	328	53	240	39	41	7	4	1	1	0
Aa	167	100	2	1	161	96	2	1	1	1	0	0	1	1
Ab	980	100	19	2	248	25	671	68	33	3	1	0	8	1
Ac	539	100	4	1	135	25	350	65	34	6	2	0	14	3
Ad	395	100	13	3	183	46	183	46	12	3	1	0	3	1
Ae	120	100	0	0	29	24	90	75	0	0	0	0	1	1
Af	62	100	0	0	46	74	13	21	1	2	1	2	1	2

Table 2.5: Distribution Of Combined Surgery By Centre

Centre	Combined Surgery												
	All Surgeries No.	Any Combined Surgery		Pterygium Surgery		Filtering Surgery		Vitreo-Retinal Surgery		Penetrating Keratoplasty		Other	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All Centres	16815	581	3	120	1	210	1	100	1	0	0	170	1
A	199	9	5	8	4	0	0	0	0	0	0	1	1
B	1063	45	4	14	1	12	1	0	0	0	0	19	2
C	133	6	5	4	3	1	1	0	0	0	0	1	1
D	1057	55	5	12	1	32	3	0	0	0	0	14	1
E	363	26	7	2	1	22	6	0	0	0	0	2	1
F	858	9	1	0	0	1	0	1	0	0	0	8	1
G	274	11	4	5	2	4	1	1	0	0	0	1	0
H	672	34	5	19	3	7	1	0	0	0	0	10	1
I	1029	52	5	2	0	31	3	7	1	0	0	12	1
J	605	5	1	0	0	3	0	0	0	0	0	2	0
K	943	18	2	5	1	6	1	5	1	0	0	2	0
L	702	21	3	0	0	6	1	3	0	0	0	14	2
M	794	41	5	2	0	13	2	14	2	0	0	12	2
N	310	21	7	12	4	6	2	0	0	0	0	4	1
O	844	8	1	2	0	5	1	0	0	0	0	1	0
P	552	9	2	1	0	5	1	0	0	0	0	3	1
Q	346	5	1	1	0	0	0	0	0	0	0	4	1
R	263	27	10	19	7	9	3	0	0	0	0	5	2
S	619	17	3	0	0	13	2	0	0	0	0	5	1
T	395	4	1		0	1	0	2	1	0	0	1	0
U	699	16	2	2	0	5	1	0	0	0	0	9	1
V	395	5	1	1	0	2	1	0	0	0	0	2	1
W	597	18	3	1	0	10	2	4	1	0	0	5	1
X	134	2	1	0	0	0	0	0	0	0	0	2	1
Y	87	1	1	0	0	0	0	0	0	0	0	1	1
Z	619	4	1	4	1	0	0	0	0	0	0	0	0
Aa	167	0	0	0	0	0	0	0	0	0	0	0	0
Ab	980	94	10	3	0	8	1	63	6	0	0	21	2
Ac	539	11	2	0	0	6	1	0	0	0	0	5	1
Ad	395	6	2	1	0	2	1	0	0	0	0	3	1
Ae	120	0	0	0	0	0	0	0	0	0	0	0	0
Af	62	1	2	0	0	0	0	0	0	0	0	1	2

Table 2.6: Proportion Of Nature Of Cataract Surgery

Centre	N	Nature Of Cataract Surgery			
		Emergency		Elective	
		No.	%	No.	%
All Centres	16815	159	1	16656	99
A	199	1	1	198	99
B	1063	11	1	1052	99
C	133	0	0	133	100
D	1057	7	1	1050	99
E	363	6	2	357	98
F	858	11	1	847	99
G	274	6	2	268	98
H	672	3	0	669	100
I	1029	7	1	1022	99
J	605	1	0	604	100
K	943	11	1	932	99
L	702	16	2	686	98
M	794	8	1	786	99
N	310	1	0	309	100
O	844	3	0	841	100
P	552	3	1	549	99
Q	346	2	1	344	99
R	263	2	1	261	99
S	619	4	1	615	99
T	395	4	1	391	99
U	699	6	1	693	99
V	395	4	1	391	99
W	597	10	2	587	98
X	134	2	1	132	99
Y	87	1	1	86	99
Z	619	5	1	614	99
Aa	167	5	3	162	97
Ab	980	7	1	973	99
Ac	539	5	1	534	99
Ad	395	6	2	389	98
Ae	120	0	0	120	100
Af	62	1	2	61	98



Table 2.7: Type Of Anaesthesia

Centre	N	Types Of Anaesthesia			
		General		Local	
		No.	%	No.	%
All Centres	16815	1136	7	15679	93
A	199	3	2	196	98
B	1063	77	7	986	93
C	133	8	6	125	94
D	1057	129	12	928	88
E	363	19	5	344	95
F	858	59	7	799	93
G	274	37	14	237	86
H	672	36	5	636	95
I	1029	55	5	974	95
J	605	19	3	586	97
K	943	52	6	891	94
L	702	38	5	664	95
M	794	89	11	705	89
N	310	43	14	267	86
O	844	52	6	792	94
P	552	5	1	547	99
Q	346	22	6	324	94
R	263	6	2	257	98
S	619	57	9	562	91
T	395	50	13	345	87
U	699	84	12	615	88
V	395	29	7	366	93
W	597	36	6	561	94
X	134	11	8	123	92
Y	87	10	11	77	89
Z	619	13	2	606	98
Aa	167	11	7	156	93
Ab	980	30	3	950	97
Ac	539	34	6	505	94
Ad	395	20	5	375	95
Ae	120	0	0	120	100
Af	62	2	3	60	97

Figure 2.7: Type Of Anaesthesia

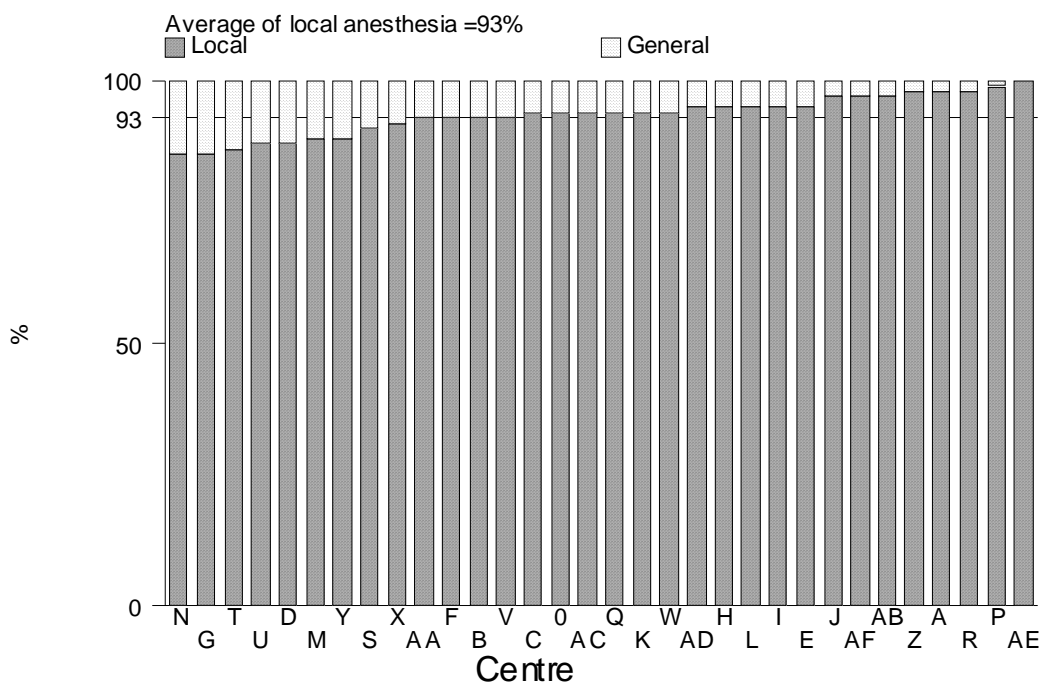


Table 2.8: Type Of Local Anaesthesia

Centre	Local Anaesthesia														
	N	Retrobulbar		Peribulbar		Subtenon		Subconjunctival		Facial Block		Topical		Other	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All Centres	15679	2952	19	2575	16	8076	52	141	1	865	6	2819	18	0	0
A	196	0	0	1	1	134	68	5	3	0	0	61	31	0	0
B	986	900	91	1	0	101	10	1	0	216	22	1	0	0	0
C	125	124	99	0	0	0	0	0	0	122	98	0	0	0	0
D	928	57	6	2	0	627	68	109	12	0	0	183	20	0	0
E	344	0	0	0	0	344	100	0	0	0	0	0	0	0	0
F	799	22	3	115	14	488	61	0	0	4	1	210	26	0	0
G	237	0	0	2	1	140	59	1	0	1	0	93	39	0	0
H	636	9	1	343	54	292	46	2	0	21	3	481	76	0	0
I	974	2	0	0	0	400	41	1	0	5	1	568	58	0	0
J	586	1	0	1	0	585	100	0	0	0	0	0	0	0	0
K	891	1	0	3	0	883	99	1	0	2	0	4	0	0	0
L	664	50	8	289	44	184	28	1	0	79	12	237	36	0	0
M	705	62	9	542	77	175	25	2	0	0	0	1	0	0	0
N	267	230	86	6	2	25	9	3	1	128	48	1	0	0	0
O	792	675	85	75	9	40	5	0	0	0	0	9	1	0	0
P	547	23	4	427	78	1	0	3	1	0	0	94	17	0	0
Q	324	0	0	1	0	240	74	0	0	0	0	84	26	0	0
R	257	1	0	254	99	2	1	0	0	23	9	0	0	0	0
S	562	0	0	0	0	184	33	4	1	0	0	386	69	0	0
T	345	220	64	71	21	65	19	1	0	39	11	18	5	0	0
U	615	21	3	13	2	582	95	0	0	0	0	0	0	0	0
V	366	12	3	5	1	308	84	1	0	2	1	41	11	0	0
W	561	3	1	0	0	558	99	0	0	0	0	0	0	0	0

Centre	Local Anaesthesia														
	N	Retrobulbar		Peribulbar		Subtenon		Subconjunctival		Facial Block		Topical		Other	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
X	123	8	7	0	0	115	93	0	0	0	0	0	0	0	0
Y	77	0	0	1	1	73	95	0	0	0	0	3	4	0	0
Z	606	3	0	3	0	599	99	1	0	0	0	0	0	0	0
Aa	156	5	3	128	82	24	15	0	0	0	0	0	0	0	0
Ab	950	95	10	148	16	467	49	3	0	1	0	256	27	0	0
Ac	505	19	4	122	24	371	73	0	0	0	0	0	0	0	0
Ad	375	349	93	22	6	36	10	2	1	222	59	1	0	0	0
Ae	120	0	0	0	0	33	28	0	0	0	0	87	73	0	0
Af	60	60	100	0	0	0	0	0	0	0	0	0	0	0	0

\* % May Add To More Than 100 % As One Patient Might Have More Than One Type Of Local Anaesthesia.

Table 2.9: Distribution Of Single And Multiple Local Anaesthesia

Centre	N	Local Anaesthesia			
		Single No.	%	Multiple No.	%
All Centres	15679	13994	89	1685	11
A	196	191	97	5	3
B	986	757	77	229	23
C	125	4	3	121	97
D	928	878	95	50	5
E	344	344	100	0	0
F	799	760	95	39	5
G	237	237	100	0	0
H	636	138	22	498	78
I	974	972	100	2	0
J	586	585	100	1	0
K	891	889	100	2	0
L	664	518	78	146	22
M	705	628	89	77	11
N	267	141	53	126	47
O	792	785	99	7	1
P	547	546	100	1	0
Q	324	323	100	1	0
R	257	234	91	23	9
S	562	550	98	12	2
T	345	278	81	67	19
U	615	614	100	1	0
V	366	363	99	3	1
W	561	561	100	0	0
X	123	123	100	0	0
Y	77	77	100	0	0
Z	606	606	100	0	0
Aa	156	155	99	1	1
Ab	950	931	98	19	2
Ac	505	498	99	7	1
Ad	375	128	34	247	66
Ae	120	120	100	0	0
Af	60	60	100	0	0

Table 2.10: Type Of Sedation Given To Patient Who Had Local Anaesthesia

Centre		Types Of Sedation									
		No Sedation		Oral Alone		Intravenous Alone		Intravenous Plus Oral		Intra-Muscular	
	N	No.	%	No.	%	No.	%	No.	%	No.	%
All Centres	15679	12021	77	3354	21	91	1	53	0	261	2
A	196	191	97	2	1	0	0	0	0	3	2
B	986	352	36	601	61	9	1	27	3	0	0
C	125	15	12	0	0	1	1	0	0	109	87
D	928	796	86	90	10	43	5	0	0	0	0
E	344	142	41	202	59	0	0	0	0	87	25
F	799	764	96	32	4	2	0	2	0	0	0
G	237	222	94	9	4	6	3	0	0	0	0
H	636	623	98	1	0	7	1	2	0	3	0
I	974	968	99	3	0	1	0	1	0	1	0
J	586	584	100	1	0	0	0	0	0	1	0
K	891	313	35	555	62	4	0	2	0	17	2
L	664	663	100	1	0	0	0	0	0	0	0
M	705	139	20	552	78	1	0	11	2	7	1
N	267	235	88	30	11	2	1	0	0	0	0
O	792	114	14	677	85	1	0	0	0	0	0
P	547	199	36	344	63	2	0	3	1	0	0
Q	324	323	100	1	0	0	0	0	0	0	0
R	257	233	91	24	9	0	0	0	0	0	0
S	562	562	100	0	0	0	0	0	0	0	0
T	345	334	97	8	2	0	0	0	0	3	1
U	615	613	100	2	0	0	0	0	0	0	0
V	366	152	42	182	50	2	1	3	1	30	8
W	561	554	99	7	1	0	0	0	0	0	0
X	123	120	98	2	2	1	1	0	0	0	0
Y	77	77	100	0	0	0	0	0	0	0	0
Z	606	605	100	1	0	0	0	0	0	0	0
Aa	156	151	97	5	3	0	0	0	0	0	0
Ab	950	921	97	19	2	8	1	2	0	0	0
Ac	505	505	100	0	0	0	0	0	0	0	0
Ad	375	371	99	3	1	1	0	0	0	0	0
Ae	120	120	100	0	0	0	0	0	0	0	0
Af	60	60	100	0	0	0	0	0	0	0	0

\* % May Add To More Than 100 % As One Patient Might Have More Than One Type Of Sedation.

Table 2.11: Intraocular Lens Implantation

## 2.11(a) IOL Implantation

	No.	%
With IOL	16397	97.5
Without IOL	417	2.5
All	16814	100

## 2.11(b) Distribution Of IOL Placement

Centre		Cataract Surgery With IOL					
		Posterior Chamber IOL		Anterior Chamber IOL		Scleral Fixated IOL	
	N	No.	%	No.	%	No.	%
All Centres	16397	15959	97	404	2	34	0.2
A	196	193	98	3	2	0	0
B	1047	1030	98	17	2	0	0
C	128	126	98	2	2	0	0
D	1036	1022	99	14	1	0	0
E	361	359	99	2	1	0	0
F	832	804	97	26	3	2	0.2
G	256	247	96	8	3	1	0.4
H	640	622	97	17	3	1	0.2
I	982	959	98	16	2	7	1
J	595	586	98	9	2	0	0
K	919	883	96	36	4	0	0
L	688	669	97	18	3	1	0.1
M	771	758	98	8	1	5	1
N	304	287	94	17	6	0	0
O	823	815	99	7	1	1	0.1
P	539	520	96	16	3	3	1
Q	339	329	97	10	3	0	0
R	256	250	98	6	2	0	0
S	619	611	99	8	1	0	0
T	392	387	99	5	1	0	0
U	685	641	94	44	6	0	0
V	391	385	98	4	1	2	1
W	579	563	97	12	2	4	1
X	131	121	92	10	8	0	0
Y	86	83	97	3	3	0	0
Z	617	582	94	35	6	0	0
Aa	165	163	99	2	1	0	0
Ab	935	915	98	19	2	1	0.1
Ac	528	515	98	7	1	6	1
Ad	376	357	95	19	5	0	0
Ae	119	117	98	2	2	0	0
Af	62	60	97	2	3	0	0

Table 2.12: Distribution Of Cataract Surgery Without IOL

Centre	N	Cataract Surgery Without IOL			
		IOL Planned But Not Implanted		No IOL Was Planned	
		No.	%	No.	%
All Centres	417	138	33	279	67
A	3	0	0	3	100
B	16	3	19	13	81
C	5	1	20	4	80
D	21	11	52	10	48
E	2	0	0	2	100
F	26	13	50	13	50
G	18	2	11	16	89
H	32	14	44	18	56
I	47	9	19	38	81
J	10	3	30	7	70
K	24	7	29	17	71
L	14	7	50	7	50
M	23	4	17	19	83
N	6	3	50	3	50
O	21	7	33	14	67
P	13	3	23	10	77
Q	7	1	14	6	86
R	7	3	43	4	57
S	0	0	0	0	0
T	3	0	0	3	100
U	14	8	57	6	43
V	3	0	0	3	100
W	18	3	17	15	83
X	3	0	0	3	100
Y	1	0	0	1	100
Z	2	0	0	2	100
Aa	2	1	50	1	50
Ab	45	19	42	26	58
Ac	11	8	62	3	23
Ad	19	8	42	11	58
Ae	1	0	0	1	100
Af	0	0	0	0	0



Table 2.13: Distribution Of IOL- Materials And Types

IOL	No.	%
N	16401	100
Materials		
Pmma	10203	62
Silicone	1776	11
Acrylic	4418	27
Other	4	0.02
Types		
Foldable	6197	38
Non-Foldable	10204	62

### 3. CATARACT SURGERY OUTCOMES

#### 3.1 Cataract Surgery Complications - Intra-Operative

Table 3.1.1: Distribution Of Intra-Operative Complications By Type Of Cataract Surgery

Type Of Intra-Operative Complications	Types Of Cataract Surgery													
	All Surgeries		Lens Aspiration		ECCE		PE		PE TO ECCE		ICCE		Secondary IOL Implant	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N	16815	100	435	100	8012	100	7674	100	469	100	94	100	131	100
Any Intra-Op Complication	1673	10	50	11	697	9	667	9	206	44	39	41	14	11
1. Posterior Capsule Rupture With Vitreous Loss	776	5	31	7	297	4	330	4	113	24	3	3	2	2
2. Posterior Capsule Rupture Without Vitreous Loss	260	2	10	2	77	1	159	2	12	3	2	2	0	0
3. Zonular Dialysis With Vitreous Loss	203	1	2	0.5	105	1	39	1	38	8	18	19	1	1
4. Zonular Dialysis Without Vitreous Loss	124	1	1	0.2	65	1	42	1	9	2	7	7	0	0
5. Loss Of Nucleus Material Into Vitreous	27	0.2	0	0	3	0.04	20	0.3	4	1	0	0	0	0
6. Choroidal/Suprachoroidal Haemorrhage	8	0.05	0	0	4	0.05	3	0.04	0	0	1	1	0	0
7. Significant Trauma To Cornea Or Iris	73	0.4	1	0.2	42	1	29	0.4	0	0	1	1	0	0
8. Other	266	2	7	2	129	2	72	1	40	9	8	9	10	8

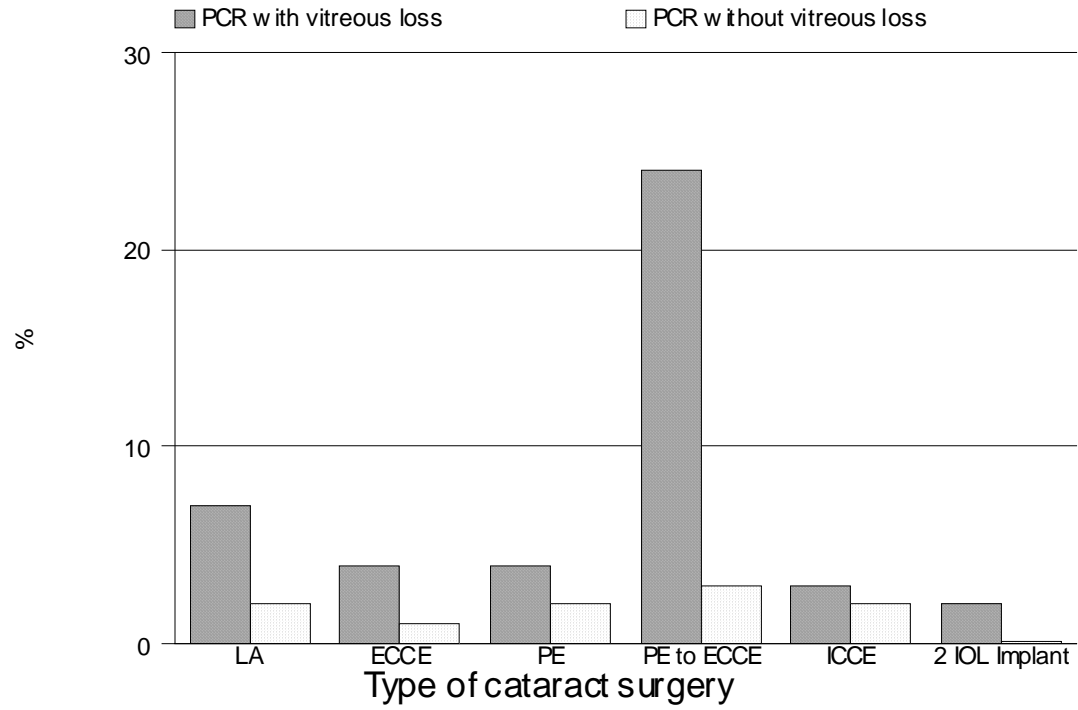
\* Number In Each Column Might Add Up To Be More Than That Recorded At Row With ' Any Intra-Op Complication' As One Patient Might Have More Than One Type Of Intra-Operative Complications.

Figure 3.1.1.1 Distribution Of Intra-Operative Complication



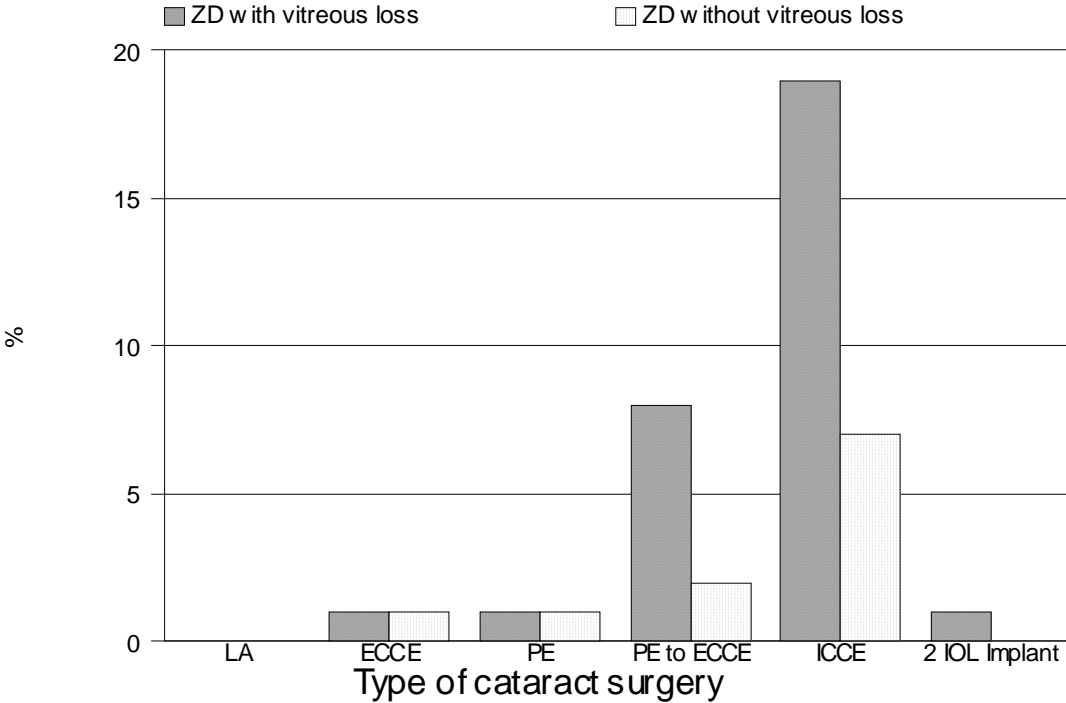
Intra-Operative Complication: Index Refers To Table 3.1.1

Figure 3.1.1.2: Distribution Of Intra-Operative Complication By Posterior Capsule Rupture With Vitreous Loss And Posterior Capsule Rupture Without Vitreous Loss



LA=Lens Aspiration  
 2 IOL Implant=Secondary IOL Implant

Figure 3.1.1.3: Distribution Of Intra-Operative Complication By Zonular Dialysis With Vitreous Loss And Zonular Dialysis Without Vitreous Loss



LA=Lens Aspiration  
 2 IOL Implant=Secondary IOL Implant

Table 3.1.2: Distribution Of Intra-Operative Complications By Combined Surgery

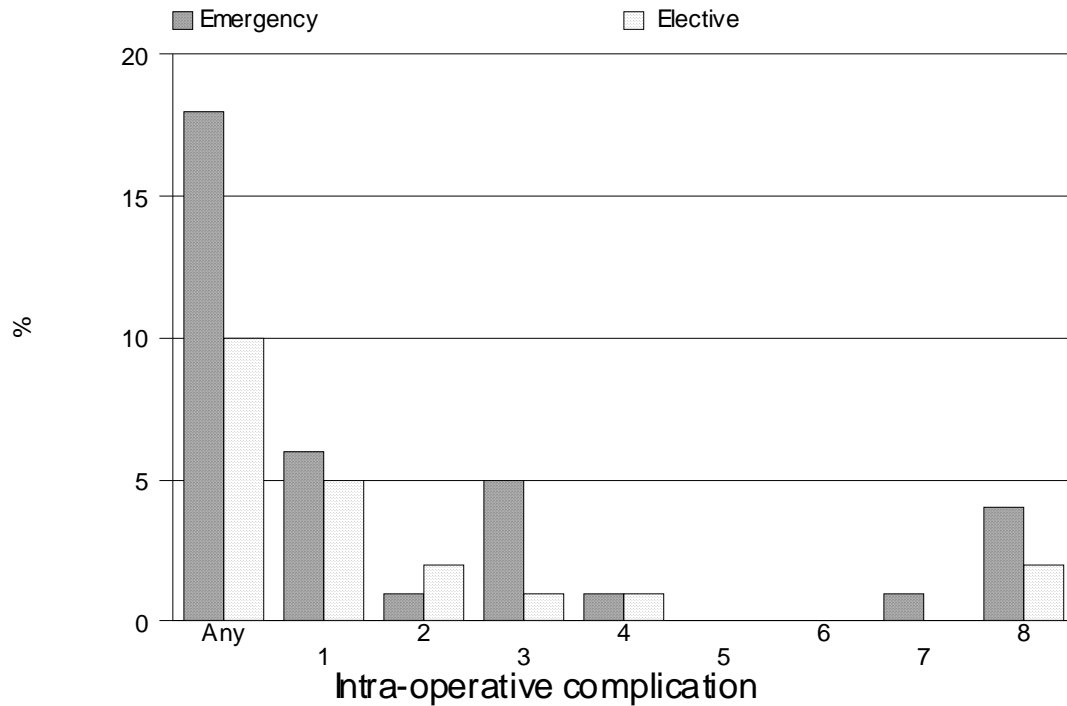
Type Of Intra-Operative Complications	Combined Surgery													
	All Surgeries		Any Combined Surgery		Pterygium Surgery		Filtering Surgery		Vitreo-Retinal Surgery		Penetrating Keratoplasty		Other	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N	16815	100	581	100	120	100	210	100	100	100	0	0	170	100
Any Intra-Op Complication	1673	10	105	18	10	8	18	9	24	24	0	0	57	34
1. Posterior Capsule Rupture With Vitreous Loss	776	5	49	8	6	5	3	1	10	10	0	0	32	19
2. Posterior Capsule Rupture Without Vitreous Loss	260	2	11	2	1	1	3	1	4	4	0	0	3	2
3. Zonular Dialysis With Vitreous Loss	203	1	17	3	2	2	4	2	2	2	0	0	11	6
4. Zonular Dialysis Without Vitreous Loss	124	1	5	1	0	0	1	0.5	2	2	0	0	2	1
5. Loss Of Nucleus Material Into Vitreous	27	0.2	5	1	0	0	0	0	2	2	0	0	3	2
6. Choroidal/Suprachoroidal Haemorrhage	8	0.05	0	0	0	0	0	0	0	0	0	0	0	0
7. Significant Trauma To Cornea Or Iris	73	0.4	10	2	1	1	3	1	2	2	0	0	4	2
8. Other	266	2	18	3	1	1	4	2	4	4	0	0	9	5

\*Number In Each Column Might Add Up To Be More Than That Recorded At Row With ‘ Any Intra-Operative Complication’ As One Patient Might Have More Than One Type Of Intra-Operative Complications

Table 3.1.3: Distribution Of Intra-Operative Complications By Nature Of Cataract Surgery

Type Of Intra-Operative Complications	Nature Of Cataract Surgery					
	All Patients		Emergency		Elective	
	No.	%	No.	%	No.	%
N	16815	100	159	100	16656	100
Any Intra-Op Complication	1673	10	28	18	1645	10
1. Posterior Capsule Rupture With Vitreous Loss	776	5	10	6	766	5
2. Posterior Capsule Rupture Without Vitreous Loss	260	2	2	1	258	2
3. Zonular Dialysis With Vitreous Loss	203	1	8	5	195	1
4. Zonular Dialysis Without Vitreous Loss	124	1	2	1	122	1
5. Loss Of Nucleus Material Into Vitreous	27	0.2	0	0	27	0.2
6. Choroidal/Suprachoroidal Haemorrhage	8	0.05	0	0	8	0.05
7. Significant Trauma To Cornea Or Iris	73	0.4	1	1	72	0.4
8. Other	266	2	6	4	260	2

Figure 3.1.3: Distribution Of Intra-Operative Complications By Nature Of Cataract Surgery

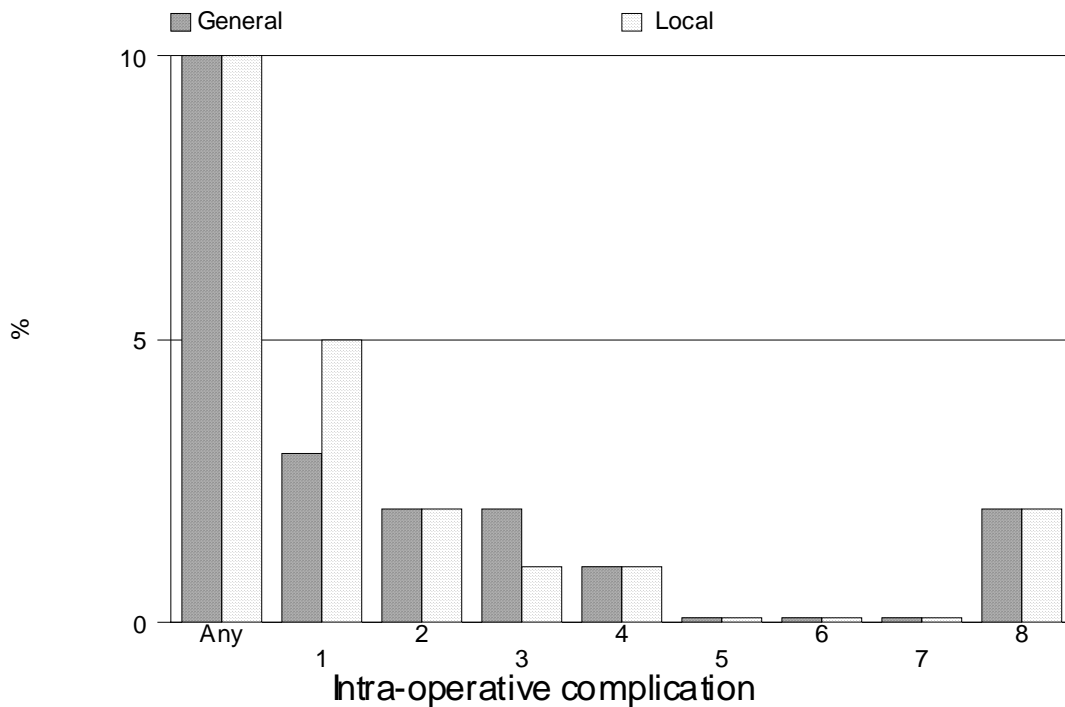


Intra-Op Complication: Index Refers To Table 3.1.3

Table 3.1.4: Distribution Of Intra-Operative Complications By Type Of Anaesthesia

Type Of Intra-Operative Complications	Types Of Anaesthesia					
	All Patients		General		Local	
	No.	%	No.	%	No.	%
N	16815	100	1136	100	15679	100
Any Intra-Op Complication	1673	10	114	10	1559	10
1. Posterior Capsule Rupture With Vitreous Loss	776	5	38	3	738	5
2. Posterior Capsule Rupture Without Vitreous Loss	260	2	19	2	241	2
3. Zonular Dialysis With Vitreous Loss	203	1	25	2	178	1
4. Zonular Dialysis Without Vitreous Loss	124	1	11	1	113	1
5. Loss Of Nucleus Material Into Vitreous	27	0.2	2	0.2	25	0.2
6. Choroidal/Suprachoroidal Haemorrhage	8	0.05	0	0	8	0.1
7. Significant Trauma To Cornea Or Iris	73	0.4	4	0.4	69	0.4
8. Other	266	2	22	2	244	2

Figure 3.1.4: Distribution Of Intra-Operative Complications By Type Of Anaesthesia



Intra-Op Complication: Index Refers To Table 3.1.4



Table 3.1.5: Distribution Of Intra-Operative Complications By Type Of Local Anaesthesia

Type Of Intra-Op Complications	Types Of Local Anaesthesia															
	Local Anaesthesia		Retrolbulbar		Peribulbar		Subtenon		Sub-Conjunctival		Facial Block		Topical		Other	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N	15679	100	2952	100	2575	100	8076	100	141	100	865	100	2819	100	0	0
Any Intra-Op Complication	1559	10	236	8	275	11	906	11	16	11	104	12	232	8	0	0
1. Posterior Capsule Rupture With Vitreous Loss	738	5	107	4	126	5	430	5	10	7	51	6	130	5	0	0
2. Posterior Capsule Rupture Without Vitreous Loss	241	2	51	2	35	1	128	2	3	2	27	3	39	1	0	0
3. Zonular Dialysis With Vitreous Loss	178	1	25	1	34	1	106	1	1	1	6	1	19	1	0	0
4. Zonular Dialysis Without Vitreous Loss	113	1	15	1	17	1	79	1	0	0	7	1	6	0.2	0	0
5. Loss Of Nucleus Material Into Vitreous	25	0.2	6	0.2	4	0.2	12	0.1	0	0	2	0.2	5	0.2	0	0
6. Choroidal/Suprachoroidal Haemorrhage	8	0.1	0	0	0	0	5	0.1	1	1	0	0	3	0.1	0	0

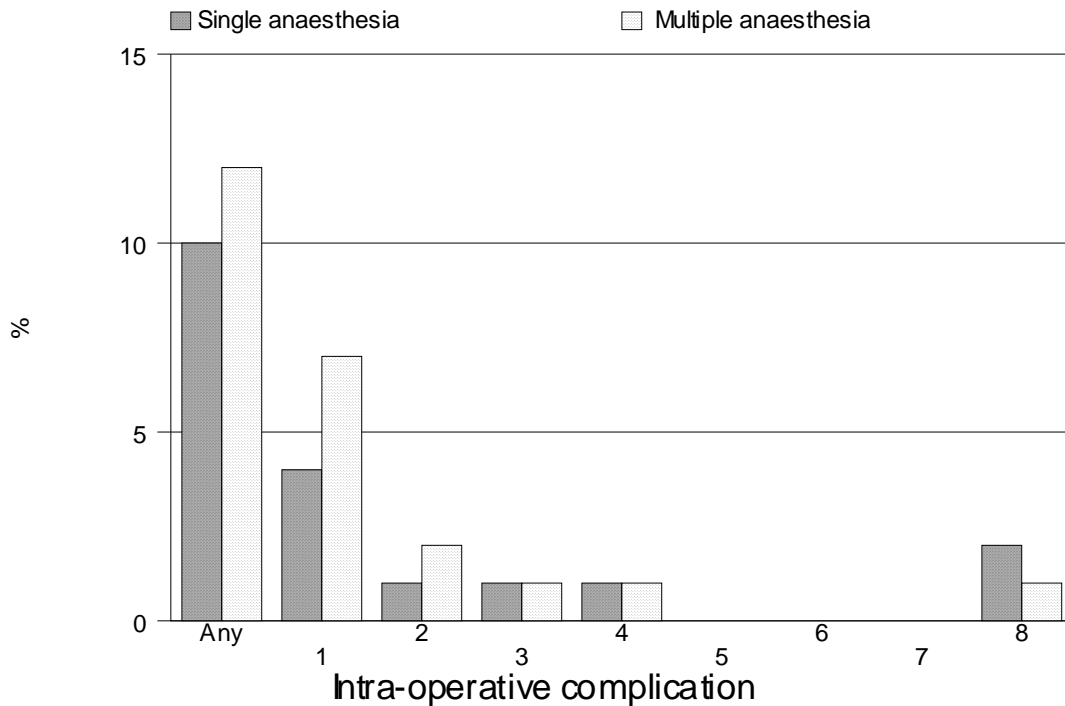
Type Of Intra-Op Complications	Types Of Local Anaesthesia															
	Local Anaesthesia		Retrobulbar		Peribulbar		Subtenon		Sub-Conjunctival		Facial Block		Topical		Other	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
7.Significant Trauma To Cornea Or Iris	69	0.4	8	0.3	18	1	38	0.5	0	0	4	0.5	7	0.2	0	0
8.Other	244	2	29	1	50	2	145	2	3	2	9	1	32	1	0	0

\* Number In Each Column Might Add Up To Be More Than That Recorded At Row With ‘ Any Intra-Op Complication’ As One Patient Might Have More Than One Type Of Intra-Operative Complications

Table 3.1.6: Distribution Of Intra-Operative Complications By Single Or Multiple Local Anaesthesia

Type Of Intra-Operative Complications	Local Anaesthesia			
	Single		Multiple	
	No.	%	No.	%
N	13994	100	1685	100
Any Intra-Op Complication	1353	10	206	12
1.Posterior Capsule Rupture With Vitreous Loss	624	4	114	7
2.Posterior Capsule Rupture Without Vitreous Loss	201	1	40	2
3.Zonular Dialysis With Vitreous Loss	165	1	13	1
4.Zonular Dialysis Without Vitreous Loss	102	1	11	1
5.Loss Of Nucleus Material Into Vitreous	22	0.2	3	0.2
6.Choroidal/Suprachoroidal Haemorrhage	7	0.1	1	0.1
7.Significant Trauma To Cornea Or Iris	63	0.5	6	0.4
8.Other	220	2	24	1

Figure 3.1.6: Distribution Of Intra-Operative Complications By Single Or Multiple Local Anaesthesia



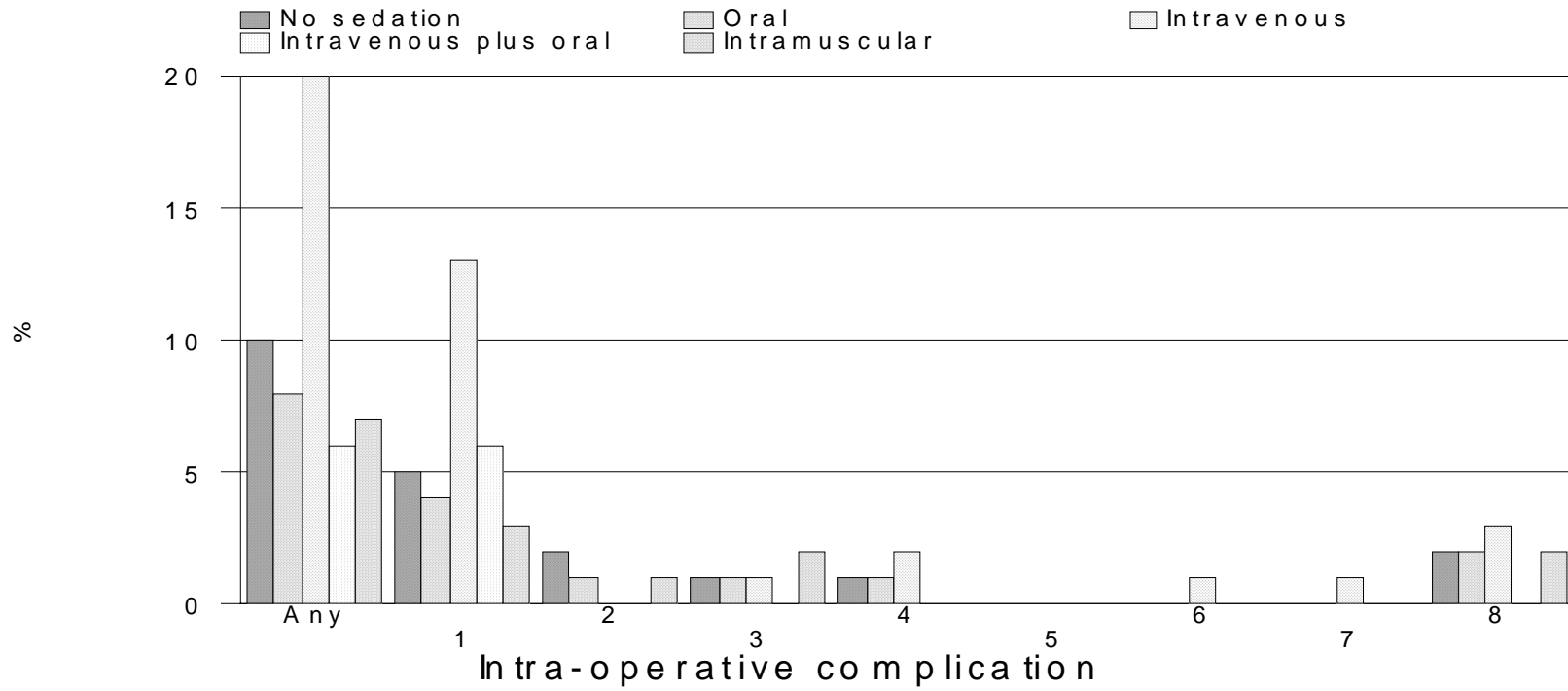
Intra-Op Complication: Index Refers To Table 3.1.6

Table 3.1.7: Distribution Of Intra-Operative Complications By Type Of Sedation

Type Of Intra-Operative Complications	Types Of Sedation									
	No Sedation		Oral Alone		Intravenous Alone		Intravenous Plus Oral		Intramuscular	
	No.	%	No.	%	No.	%	No.	%	No.	%
N	12021	100	3354	100	91	100	53	100	261	100
Any Intra-Op Complication	1249	10	278	8	18	20	3	6	18	7
1. Posterior Capsule Rupture With Vitreous Loss	587	5	132	4	12	13	3	6	8	3
2. Posterior Capsule Rupture Without Vitreous Loss	210	2	30	1	0	0	0	0	2	1
3. Zonular Dialysis With Vitreous Loss	145	1	29	1	1	1	0	0	4	2
4. Zonular Dialysis Without Vitreous Loss	92	1	19	1	2	2	0	0	0	0
5. Loss Of Nucleus Material Into Vitreous	20	0.2	5	0.1	0	0	0	0	0	0
6. Choroidal/Suprachoroidal Haemorrhage	6	0.05	1	0.03	1	1	0	0	0	0
7. Significant Trauma To Cornea Or Iris	57	0.5	11	0.3	1	1	0	0	0	0
8. Other	182	2	56	2	3	3	0	0	4	2

\* Number In Each Column Might Add Up To Be More Than That Recorded At Row With ' Any Intra-Op Complication' As One Patient Might Have More Than One Type Of Intra-Operative Complications

Figure 3.1.7: Distribution Of Intra-Operative Complications By Type Of Sedation

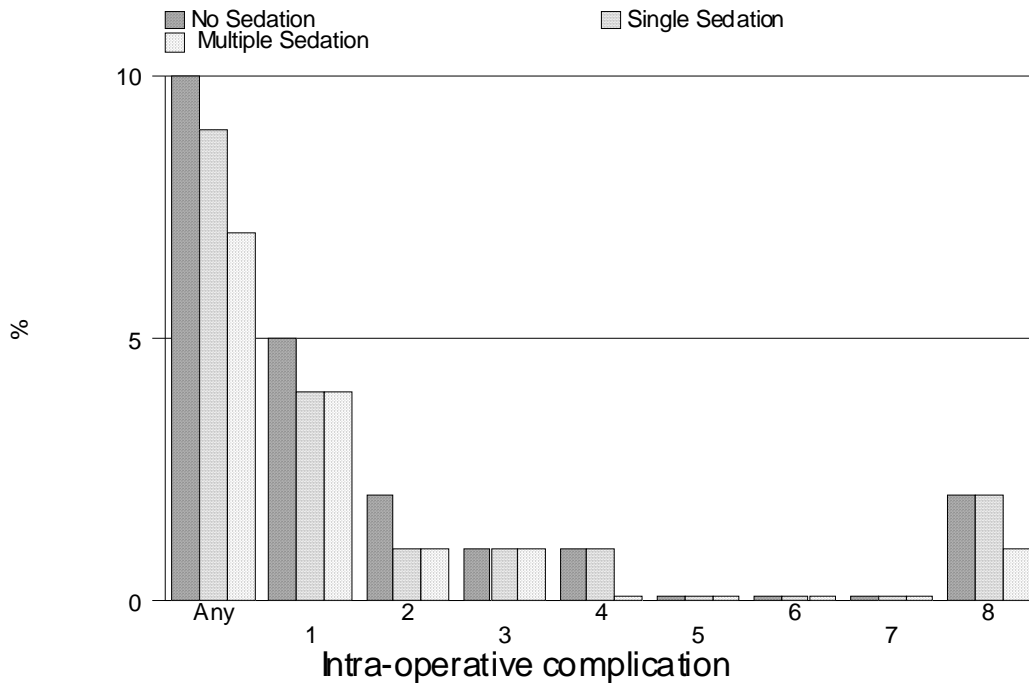


Intra-Op Complication: Index Refers To Table 3.1.7

Table 3.1.8: Distribution Of Intra-Operative Complications By Sedation

Type Of Intra-Operative Complications	Sedation					
	No Sedation		Single		Multiple	
	No.	%	No.	%	No.	%
N	12021	100	3557	100	101	100
Any Intra-Op Complication	1249	10	303	9	7	7
1. Posterior Capsule Rupture With Vitreous Loss	587	5	147	4	4	4
2. Posterior Capsule Rupture Without Vitreous Loss	210	2	30	1	1	1
3. Zonular Dialysis With Vitreous Loss	145	1	32	1	1	1
4. Zonular Dialysis Without Vitreous Loss	92	1	21	1	0	0
5. Loss Of Nucleus Material Into Vitreous	20	0.2	5	0.1	0	0
6. Choroidal/Suprachoroidal Haemorrhage	6	0.05	2	0.1	0	0
7. Significant Trauma To Cornea Or Iris	57	0.5	12	0.3	0	0
8. Other	182	2	61	2	1	1

Figure 3.1.8: Distribution Of Intra-Operative Complications By Sedation

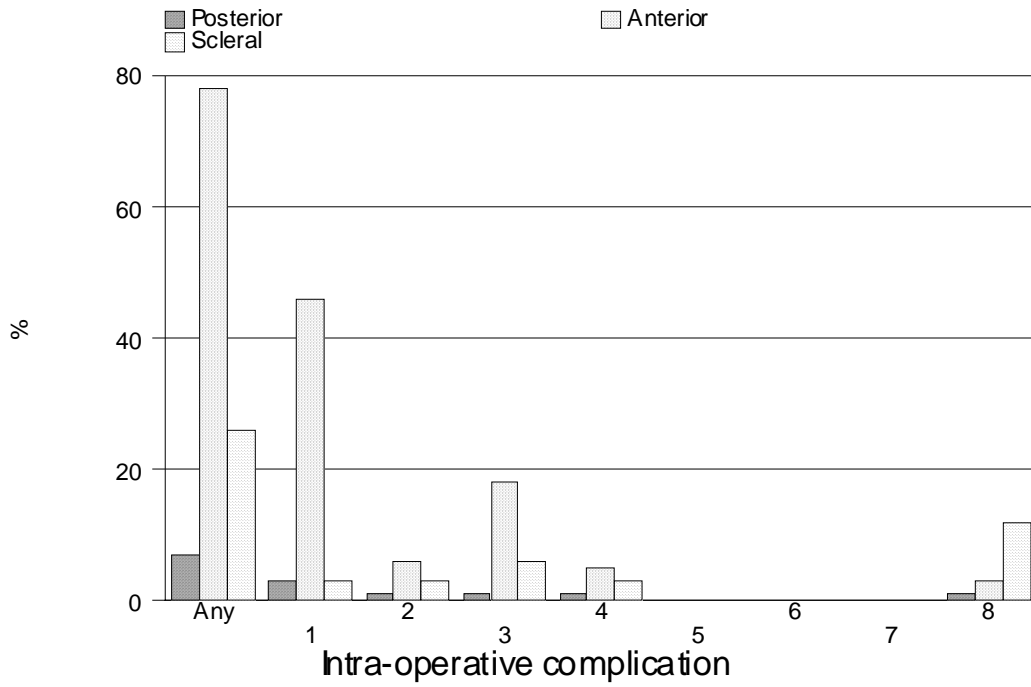


Intra-Op Complication: Index Refers To Table 3.1.8

Table 3.1.9: Distribution Of Intra-Operative Complications By Cataract Surgery With IOL

Type Of Intra-Operative Complications	Cataract Surgery With IOL							
	All Patients With IOL		Posterior Chamber IOL		Anterior Chamber IOL		Scleral Fixated IOL	
	No.	%	No.	%	No.	%	No.	%
N	16397	100	15959	100	404	100	34	100
Any Intra-Op Complication	1499	9	1173	7	317	78	9	26
1. Posterior Capsule Rupture With Vitreous Loss	694	4	508	3	185	46	1	3
2. Posterior Capsule Rupture Without Vitreous Loss	239	1	212	1	26	6	1	3
3. Zonular Dialysis With Vitreous Loss	162	1	87	1	73	18	2	6
4. Zonular Dialysis Without Vitreous Loss	117	1	94	1	22	5	1	3
5. Loss Of Nucleus Material Into Vitreous	16	0.1	14	0.1	2	0.5	0	0
6. Choroidal/Suprachoroidal Haemorrhage	2	0.01	2	0.01	0	0	0	0
7. Significant Trauma To Cornea Or Iris	69	0.4	68	0.4	1	0.2	0	0
8. Other	236	1	219	1	13	3	4	12

Figure 3.1.9: Distribution Of Intra-Operative Complications By Cataract Surgery With IOL



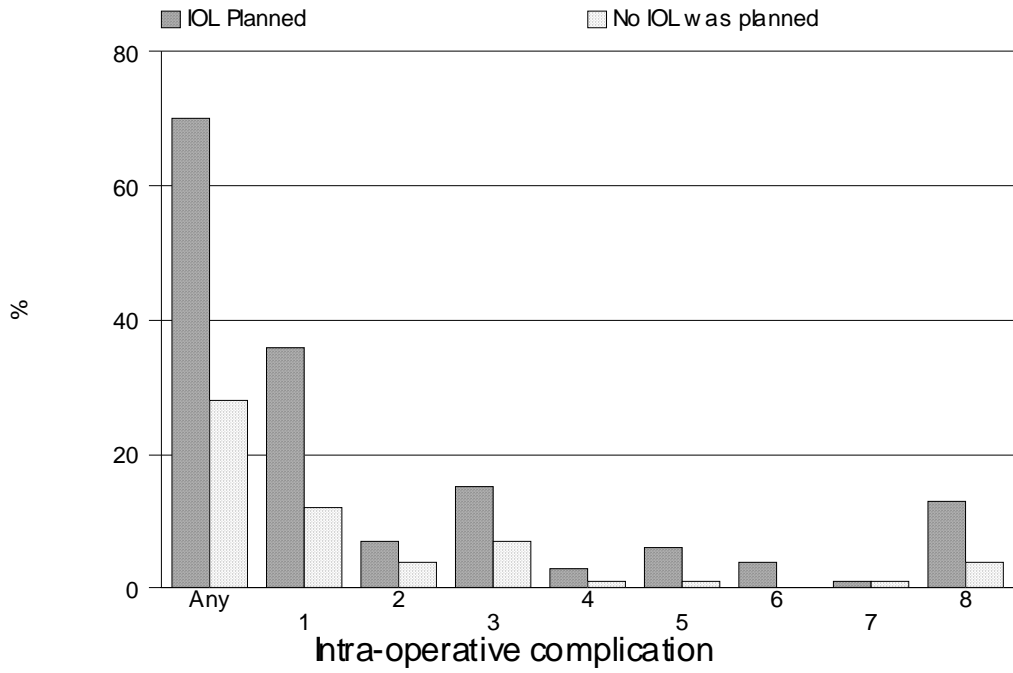
Intra-Op Complication: Index Refers To Table 3.1.09



Table 3.1.10: Distribution Of Intra-Operative Complications By Cataract Surgery Without IOL

Type Of Intra-Operative Complications	Cataract Surgery Without IOL					
	All Patients Without IOL		IOL Planned, But Not Implanted		No IOL Was Planned	
	No.	%	No.	%	No.	%
N	417	100	138	100	279	100
Any Intra-Op Complication	174	42	96	70	78	28
1. Posterior Capsule Rupture With Vitreous Loss	82	20	50	36	32	11
2. Posterior Capsule Rupture Without Vitreous Loss	21	5	10	7	11	4
3. Zonular Dialysis With Vitreous Loss	41	10	21	15	20	7
4. Zonular Dialysis Without Vitreous Loss	7	2	4	3	3	1
5. Loss Of Nucleus Material Into Vitreous	11	3	8	6	3	1
6. Choroidal/Suprachoroidal Haemorrhage	6	1	5	4	1	0.4
7. Significant Trauma To Cornea Or Iris	4	1	2	1	2	1
8. Other	30	7	18	13	12	4

Figure 3.1.10: Distribution Of Intra-Operative Complications By Cataract Surgery Without IOL

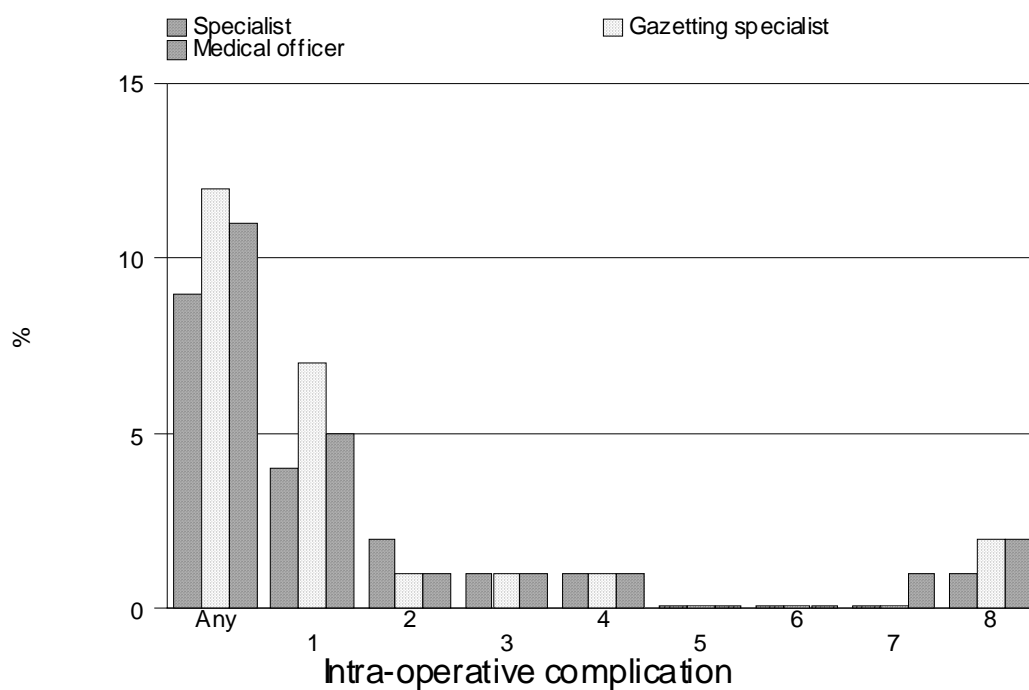


Intra-Op Complication: Index Refers To Table 3.1.10

Table 3.1.11: Distribution Of Intra-Operative Complications By Surgeon Status

Type Of Intra-Operative Complications	Surgeon Status							
	All Patients		Specialist		Gazetting Specialist		Medical Officer	
	No.	%	No.	%	No.	%	No.	%
N	16815	100	12072	100	1510	100	3233	100
Any Intra-Op Complication	1673	10	1144	9	185	12	344	11
1. Posterior Capsule Rupture With Vitreous Loss	776	5	520	4	99	7	157	5
2. Posterior Capsule Rupture Without Vitreous Loss	260	2	199	2	21	1	40	1
3. Zonular Dialysis With Vitreous Loss	203	1	151	1	18	1	34	1
4. Zonular Dialysis Without Vitreous Loss	124	1	81	1	16	1	27	1
5. Loss Of Nucleus Material Into Vitreous	27	0.2	22	0.2	2	0.1	3	0.1
6. Choroidal/Suprachoroidal Haemorrhage	8	0.05	6	0.05	2	0.1	0	0
7. Significant Trauma To Cornea Or Iris	73	0.4	42	0.3	7	0.5	24	1
8. Other	266	2	171	1	27	2	68	2

Figure 3.1.11: Distribution Of Intra-Operative Complications By Surgeon Status



Intra-Op Complication: Index Refers To Table 3.1.11

### 3.2 Cataract Surgery Complications - Post-Operative

Table 3.2.1: Distribution Of Post-Operative Complications

Post-Operative Complications	No.	%
N	16815	100
Patients With Any Post-Op Complication	1514	9
Patients With Specific Post-Op Complication		
1.Central Edema Within 4mm Of Visual Axis	358	2
2.Raised IOP Of More Than 30mmhg	184	1
3.Suture Abscess	43	0.3
4.Severe Iritis With Fibrin	45	0.3
5.Iris Prolapse/Wound Dehiscence	43	0.3
6.Vitreous Incarceration Into Wound	8	0.05
7.Vitreous In AC Touching Cornea	5	0.03
8.IOL Decentration/Dislocation	32	0.2
9.Cystoid Macular Edema	52	0.3
10.Endophthalmitis	41	0.2
11.New Retinal Break	3	0.02
12.Retinal Detachment	29	0.2
13.Astigmatism Of > 3 Diopters	534	3
14.Posterior Capsule Opacification	114	1
15.Other	186	1

Table 3.2.2: Distribution Of Post-Operative Complications By IOL Types

Post-Operative Complications	N	Type Of IOL			
		Foldable		Non-Foldable	
		No.	%	No.	%
N	16815	6197	100	10204	100
Patients With Any Post-Op Complication	1514	380	6	1068	10
Patients With Specific Post-Op Complication					
1. Central Edema Within 4mm Of Visual Axis	358	147	2	189	2
2. Raised IOP Of More Than 30mmhg	184	65	1	111	1
3. Suture Abscess	43	11	0.2	32	0.3
4. Severe Iritis With Fibrin	45	12	0.2	28	0.3
5. Iris Prolapse/Wound Dehiscence	43	2	0	40	0.4
6. Vitreous Incarceration Into Wound	8	0	0	6	0.1
7. Vitreous In AC Touching Cornea	5	0	0	4	0
8. IOL Decentration/Dislocation	32	6	0.1	26	0.3
9. Cystoid Macular Edema	52	10	0.2	42	0.4
10. Endophthalmitis	41	14	0.2	23	0.2
11. New Retinal Break	3	3	0	0	0
12. Retinal Detachment	29	6	0.1	15	0.1
13. Astigmatism Of > 3 Diopters	534	50	1	473	5
14. Posterior Capsule Opacification	114	33	1	78	1
15. Other	186	55	1	111	1

Table 3.2.3: Distribution Of Post-Operative Complication By Material

Post-Operative Complications	N	Type Of Material							
		PMMA		Silicone		Acrylic		Other	
		No.	%	No.	%	No.	%	No.	%
N	16815	10203	100	1776	100	4418	100	4	100
Patients With Any Post-Op Complication	1514	1068	10	99	6	281	6	0	0
Patients With Specific Post-Op Complication									
1. Central Edema Within 4mm Of Visual Axis	358	189	2	31	2	116	3	0	0
2. Raised IOP Of More Than 30mmhg	184	111	1	14	1	51	1	0	0
3. Suture Abscess	43	32	0.3	3	0.2	8	0.2	0	0
4. Severe Iritis With Fibrin	45	28	0.3	7	0.4	5	0.1	0	0
5. Iris Prolapse/Wound Dehiscence	43	40	0.4	1	0.1	1	0	0	0
6. Vitreous Incarceration Into Wound	8	6	0.1	0	0	0	0	0	0
7. Vitreous In AC Touching Cornea	5	4	0	0	0	0	0	0	0
8. IOL Decentration/Dislocation	32	26	0.3	1	0.1	5	0.1	0	0
9. Cystoid Macular Edema	52	42	0.4	3	0.2	7	0.2	0	0
10. Endophthalmitis	41	23	0.2	5	0.3	9	0.2	0	0
11. New Retinal Break	3	0	0	1	0.1	2	0	0	0
12. Retinal Detachment	29	15	0.1	2	0.1	4	0.1	0	0
13. Astigmatism Of > 3 Diopters	534	473	5	12	1	38	1	0	0
14. Posterior Capsule Opacification	114	78	1	12	1	21	0.5	0	0
15. Other	186	111	1	9	1	46	1	0	0

Table 3.2.4: Post-Operative Complication By Centre

Post-Operative Complications	N	Centre											
		A		B		C		D		E		F	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N	16815	199	100	1063	100	133	100	1057	100	363	100	858	100
Patients With Any Post-Op Complication	1514	21	11	130	12	2	2	84	8	15	4	66	8
Patients With Specific Post-Op Complication													
1.Central Edema Within 4mm Of Visual Axis	358	3	2	16	2	0	0	37	4	0	0	3	0
2.Raised IOP Of More Than 30mmhg	184	3	2	5	0	0	0	14	1	2	1	5	1
3.Suture Abscess	43	3	2	0	0	0	0	2	0	0	0	4	0
4.Severe Iritis With Fibrin	45	0	0	2	0	0	0	5	0	0	0	0	0
5.Iris Prolapse/Wound Dehiscence	43	1	1	2	0	0	0	3	0	0	0	4	0
6.Vitreous Incarceration Into Wound	8	0	0	1	0	0	0	0	0	0	0	1	0
7.Vitreous In AC Touching Cornea	5	0	0	0	0	0	0	0	0	0	0	0	0
8.IOL Decentration/Dislocation	32	0	0	0	0	0	0	3	0	3	1	2	0
9.Cystoid Macular Edema	52	1	1	0	0	0	0	2	0	0	0	0	0
10.Endophthalmitis	41	3	2	2	0	0	0	2	0	0	0	3	0
11.New Retinal Break	3	0	0	0	0	0	0	0	0	0	0	0	0
12.Retinal Detachment	29	0	0	3	0	0	0	2	0	0	0	0	0
13.Astigmatism Of > 3 Diopters	534	0	0	71	7	0	0	21	2	5	1	35	4
14.Posterior Capsule Opacification	114	1	1	12	1	1	1	1	0	3	1	1	0
15.Other	186	7	4	20	2	1	1	14	1	1	0	8	1

		Centre											
		G		H		I		J		K		L	
Post-Operative Complications	N	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N	16815	274	100	672	100	1029	100	605	100	943	100	702	100
Patients With Any Post-Op Complication	1514	79	29	17	3	59	6	16	3	28	3	11	2
Patients With Specific Post-Op Complication													
1.Central Edema Within 4mm Of Visual Axis	358	46	17	1	0	6	1	0	0	0	0	3	0
2.Raised IOP Of More Than 30mmhg	184	6	2	1	0	3	0	2	0	9	1	0	0
3.Suture Abscess	43	5	2	1	0	0	0	0	0	0	0	0	0
4.Severe Iritis With Fibrin	45	1	0	0	0	1	0	0	0	0	0	1	0
5.Iris Prolapse/Wound Dehiscence	43	1	0	1	0	1	0	0	0	0	0	0	0
6.Vitreous Incarceration Into Wound	8	0	0	0	0	0	0	0	0	0	0	0	0
7.Vitreous In AC Touching Cornea	5	0	0	0	0	0	0	0	0	0	0	0	0
8.IOL Decentration/Dislocation	32	0	0	2	0	1	0	0	0	1	0	0	0
9.Cystoid Macular Edema	52	0	0	1	0	7	1	1	0	5	1	0	0
10.Endophthalmitis	41	2	1	4	1	3	0	1	0	3	0	0	0
11.New Retinal Break	3	0	0	0	0	1	0	0	0	0	0	0	0
12.Retinal Detachment	29	0	0	4	1	1	0	0	0	0	0	0	0
13.Astigmatism Of > 3 Diopters	534	13	5	0	0	24	2	4	1	3	0	3	0
14.Posterior Capsule Opacification	114	6	2	0	0	7	1	4	1	3	0	1	0
15.Other	186	6	2	5	1	9	1	4	1	4	0	1	0



		Centre											
		M		N		O		P		Q		R	
Post-Operative Complications	N	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N	16815	794	100	310	100	844	100	552	100	346	100	263	100
Patients With Any Post-Op Complication	1514	178	22	11	4	56	7	1	0	7	2	63	24
Patients With Specific Post-Op Complication													
1.Central Edema Within 4mm Of Visual Axis	358	41	5	2	1	21	2	0	0	2	1	16	6
2.Raised IOP Of More Than 30mmhg	184	15	2	0	0	3	0	0	0	1	0	14	5
3.Suture Abscess	43	8	1	0	0	3	0	0	0	0	0	0	0
4.Severe Iritis With Fibrin	45	1	0	2	1	6	1	0	0	0	0	1	0
5.Iris Prolapse/Wound Dehiscence	43	2	0	1	0	2	0	0	0	1	0	3	1
6.Vitreous Incarceration Into Wound	8	4	1	0	0	0	0	0	0	0	0	1	0
7.Vitreous In AC Touching Cornea	5	1	0	0	0	0	0	0	0	0	0	2	1
8.IOL Decentration/Dislocation	32	5	1	0	0	2	0	0	0	0	0	3	1
9.Cystoid Macular Edema	52	12	2	0	0	0	0	0	0	0	0	3	1
10.Endophthalmitis	41	1	0	0	0	2	0	0	0	1	0	2	1
11.New Retinal Break	3	1	0	0	0	0	0	0	0	0	0	0	0
12.Retinal Detachment	29	4	1	1	0	0	0	0	0	0	0	2	1
13.Astigmatism Of > 3 Diopters	534	82	10	1	0	7	1	0	0	2	1	0	0
14.Posterior Capsule Opacification	114	13	2	5	2	0	0	0	0	0	0	4	2
15.Other	186	12	2	0	0	7	1	0	0	0	0	20	8

		Centre													
		S		T		U		V		W		X		Y	
Post-Operative Complications	N	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N	16815	619	100	395	100	699	100	395	100	597	100	134	100	87	100
Patients With Any Post-Op Complication	1514	32	5	26	7	182	26	18	5	122	20	24	18	5	6
Patients With Specific Post-Op Complication															
1.Central Edema Within 4mm Of Visual Axis	358	13	2	11	3	40	6	3	1	20	3	1	1	0	0
2.Raised IOP Of More Than 30mmhg	184	4	1	2	1	21	3	1	0	27	5	1	1	0	0
3.Suture Abscess	43	9	1	0	0	0	0	0	0	1	0	0	0	0	0
4.Severe Iritis With Fibrin	45	0	0	1	0	7	1	0	0	4	1	1	1	0	0
5.Iris Prolapse/Wound Dehiscence	43	1	0	0	0	4	1	0	0	10	2	1	1	0	0
6.Vitreous Incarceration Into Wound	8	0	0	0	0	0	0	0	0	1	0	0	0	0	0
7.Vitreous In AC Touching Cornea	5	0	0	0	0	1	0	1	0	0	0	0	0	0	0
8.IOL Decentration/Dislocation	32	0	0	0	0	0	0	0	0	3	1	2	1	0	0
9.Cystoid Macular Edema	52	0	0	2	1	2	0	1	0	8	1	1	1	0	0
10.Endophthalmitis	41	0	0	0	0	0	0	0	0	0	0	1	1	1	1
11.New Retinal Break	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12.Retinal Detachment	29	1	0	1	0	2	0	1	0	2	0	1	1	0	0
13.Astigmatism Of > 3 Diopters	534	3	0	7	2	93	13	7	2	44	7	15	11	3	3
14.Posterior Capsule Opacification	114	3	0	3	1	21	3	0	0	16	3	5	4	0	0
15.Other	186	1	0	0	0	5	1	4	1	2	0	3	2	1	1

		Centre													
		Z		Aa		Ab		Ac		Ad		Ae		Af	
Post-Operative Complications	N	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N	16815	619	100	167	100	980	100	539	100	395	100	120	100	62	100
Patients With Any Post-Op Complication	1514	13	2	4	2	194	20	23	4	18	5	3	3	6	10
Patients With Specific Post-Op Complication															
1.Central Edema Within 4mm Of Visual Axis	358	1	0	0	0	64	7	6	1	1	0	1	1	0	0
2.Raised IOP Of More Than 30mmhg	184	1	0	1	1	37	4	4	1	2	1	0	0	0	0
3.Suture Abscess	43	0	0	0	0	0	0	7	1	0	0	0	0	0	0
4.Severe Iritis With Fibrin	45	0	0	0	0	9	1	0	0	0	0	0	0	3	5
5.Iris Prolapse/Wound Dehiscence	43	0	0	0	0	4	0	0	0	1	0	0	0	0	0
6.Vitreous Incarceration Into Wound	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.Vitreous In AC Touching Cornea	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8.IOL Decentration/Dislocation	32	0	0	0	0	2	0	0	0	2	1	1	1	0	0
9.Cystoid Macular Edema	52	1	0	1	1	3	0	1	0	0	0	0	0	0	0
10.Endophthalmitis	41	2	0	0	0	2	0	0	0	6	2	0	0	0	0
11.New Retinal Break	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0
12.Retinal Detachment	29	0	0	0	0	4	0	0	0	0	0	0	0	0	0
13.Astigmatism Of > 3 Diopters	534	7	1	0	0	75	8	5	1	0	0	2	2	2	3
14.Posterior Capsule Opacification	114	0	0	0	0	0	0	0	0	3	1	0	0	1	2
15.Other	186	0	0	2	1	45	5	1	0	3	1	0	0	0	0

### 3.3 Post-Operative Follow-Up Period

Table 3.3.1: Median Follow-Up Period In Weeks (Patients With Only Unaided Vision, Refraction Was Not Performed)

Type Of Surgery	N	Median	25 <sup>th</sup> Percentile	75 <sup>th</sup> Percentile
All Surgeries	2106	4.1	1.1	11.1
Lens Aspiration	86	5.9	1.6	13.9
ECCE	1053	3.9	1.1	10.9
PE	902	4.1	1.1	11
PE TO ECCE	32	5.5	1.1	14.5
ICCE	17	4.9	1.7	9.6
Secondary IOL Implant	16	1.6	0.7	9.9

Table 3.3.2: Median Follow-Up Period In Weeks (Patients With Refracted Vision)

Type Of Surgery	N	Median	25 <sup>th</sup> Percentile	75 <sup>th</sup> Percentile
All Surgeries	13645	10.7	7.9	13.1
Lens Aspiration	285	11	7.9	13.9
ECCE	6388	11.3	8.7	13.4
PE	6394	9.9	7.3	12.6
PE TO ECCE	413	11.4	8.4	13.7
ICCE	68	10.7	7.8	13.5
Secondary IOL Implant	97	11.6	7.7	13.9

### 3.4 Post-Operative Visual Acuity

Table 3.4.1: Distribution Of Post-Operative VA

(a) All Patients, With Primary Cause Of Cataract And Not Combined Surgery

VA Post Operative	Unaided		Refracted	
	N=14683 No.	100% %	N=12830 No.	100% %
6/5	16	0.1	86	1
6/6	604	4	3626	28
6/9	2195	15	4666	36
6/12	2734	19	2191	17
6/18	2916	20	890	7
6/24	2342	16	476	4
6/36	1810	12	314	2
6/60	998	7	207	2
5/60	110	1	9	0.1
4/60	92	1	24	0.2
3/60	150	1	42	0.3
2/60	126	1	37	0.3
1/60	97	1	37	0.3
CF	259	2	109	1
HM	141	1	79	1
PL	56	0.4	22	0.2
NPL	37	0.3	15	0.1

(b) All Patients, With Primary Cause Of Cataract, Not Combined Surgery And Without Ocular Co-Morbidity

VA Post Operative	Unaided		Refracted	
	N=9857 No.	100% %	N=8679 No.	100% %
6/5	9	0.1	65	1
6/6	485	5	2729	31
6/9	1662	17	3343	39
6/12	2025	21	1556	18
6/18	2017	20	466	5
6/24	1585	16	230	3
6/36	1117	11	133	2
6/60	575	6	71	1
5/60	58	1	3	0.03
4/60	40	0.4	4	0.05
3/60	68	1	12	0.1
2/60	58	1	8	0.1
1/60	25	0.3	6	0.1
CF	82	1	30	0.3
HM	31	0.3	13	0.1
PL	10	0.1	6	0.1
NPL	10	0.1	4	0.05

Without Ocular Co-Morbidity  
 Only Single Cataract Surgery (Combine=None)  
 Primary Only For Cause Of Cataract

Figure 3.4.1.1(b): Distribution Of Post-Operative VA

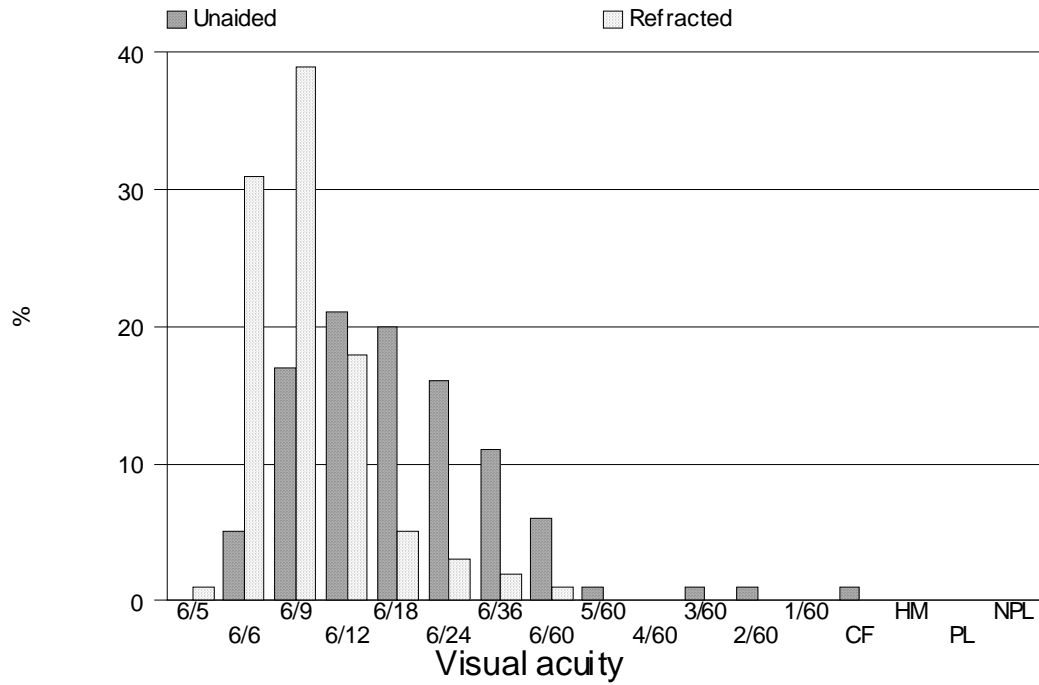


Figure 3.4.1.2: Cumulative Distribution Of Visual Acuity By Pre- And Post-Operative Unaided VA

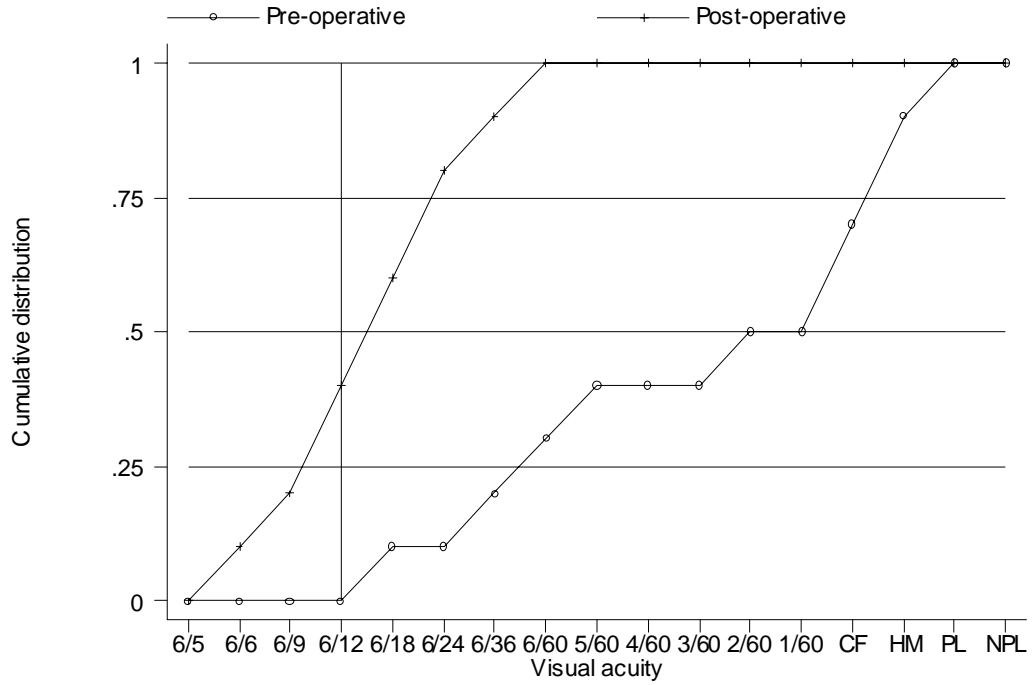


Figure 3.4.1.3: Cumulative Distribution Of Visual Acuity By Pre- And Post-Operative Refracted VA

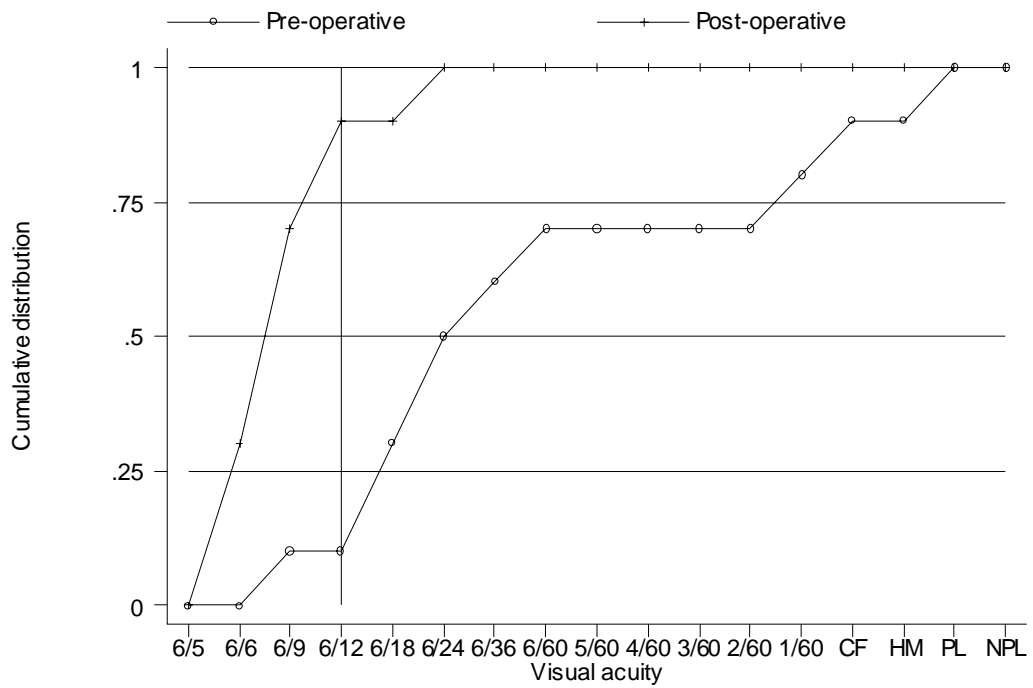
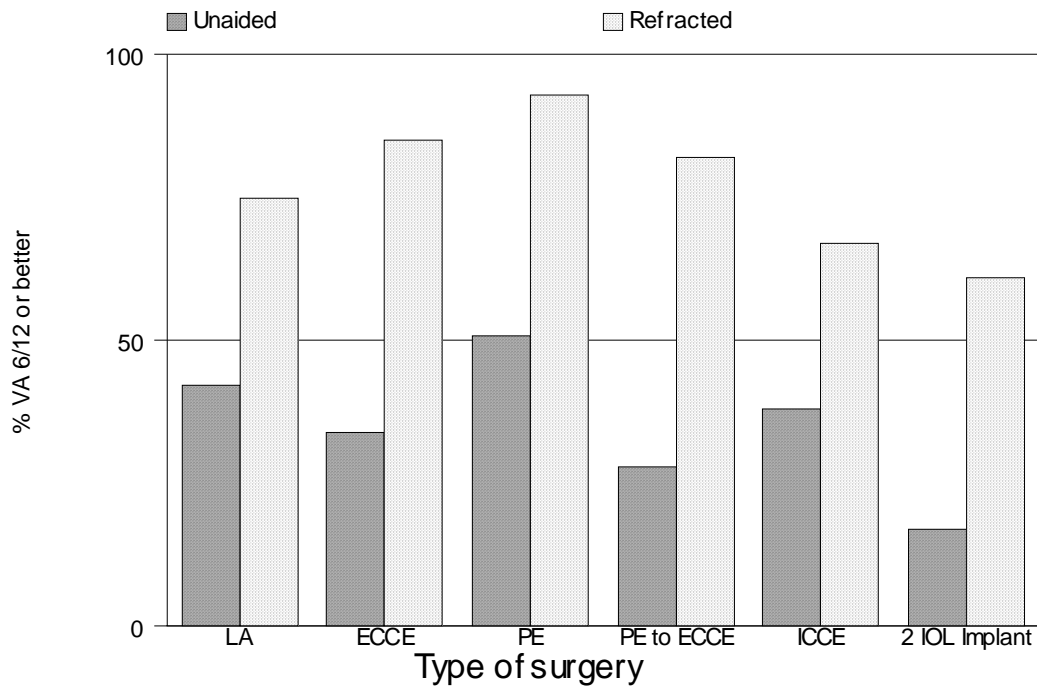




Table 3.4.2: Distribution Of Post-Operative Refracted VA 6/12 Or Better At The Last Follow Up Among Patients Without Ocular Co-Morbidities, By Surgery

Type Of Surgery	Unaided			Refracted		
	N	VA 6/12 Or Better No.	%	N	VA 6/12 Or Better No.	%
All Surgeries	9857	4181	42	8679	7693	89
Lens Aspiration	123	52	42	100	75	75
ECCE	4445	1507	34	3838	3245	85
PE	4928	2524	51	4410	4111	93
PE TO ECCE	311	88	28	289	236	82
ICCE	8	3	38	6	4	67
Secondary IOL Implant	42	7	17	36	22	61

Figure 3.4.2: Percent Of Patients With Refracted VA 6/12 Or Better At The Last Follow Up, By Surgery



\* LA=Lens Aspiration

\* 2 IOL Implant=Secondary IOL Implant

Table 3.4.3: Distribution Of Post-Operative Refracted VA 6/12 Or Better In Relation To Age And Type Of Surgery, Among Patients Without Ocular Co-Morbidities

Factor	Types Of Cataract Surgery																				
	All Surgeries			Lens Aspiration			ECCE			PE			PE TO ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N	8677	7691	89	100	75	75	3838	3245	85	4408	4109	93	289	236	82	6	4	67	36	22	61
Age Group, Year																					
<1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-14	53	34	64	48	33	69	3	0	0	1	1	100	0	0	0	0	0	0	1	0	0
15-24	27	22	81	23	18	78	3	3	100	0	0	0	1	1	100	0	0	0	0	0	0
25-34	40	38	95	7	7	100	12	10	83	17	17	100	1	1	100	0	0	0	3	3	100
35-44	222	208	94	9	8	89	82	77	94	123	116	94	5	5	100	1	1	100	2	1	50
45-54	963	898	93	4	3	75	389	353	91	532	509	96	35	31	89	1	1	100	2	1	50
55-64	2406	2214	92	4	3	75	1010	889	88	1304	1253	96	76	62	82	3	2	67	9	5	56
65-74	3529	3120	88	3	3	100	1578	1332	84	1815	1680	93	121	98	81	1	0	0	11	7	64
75-84	1311	1077	82	1	0	0	676	532	79	581	507	87	46	34	74	0	0	0	7	4	57
>=85	125	80	64	0	0	0	85	49	58	35	26	74	4	4	100	0	0	0	1	1	100

Table 3.4.4: Distribution Of Post-Operative Refracted VA 6/12 Or Better In Relation To Gender And Type Of Surgery, Among Patients Without Ocular Co-Morbidities

Factor	Types Of Cataract Surgery																				
	All Surgeries			Lens Aspiration			ECCE			PE			PE TO ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N	8679	7693	89	100	75	75	3838	3245	85	4410	4111	93	289	236	82	6	4	67	36	22	61
Gender																					
Male	4217	3785	90	60	46	77	1763	1512	86	2228	2093	94	136	114	84	6	4	67	24	16	67
Female	4462	3908	88	40	29	73	2075	1733	84	2182	2018	92	153	122	80	0	0	0	12	6	50

Table 3.4.5: Distribution Of Post-Operative Refracted VA 6/12 Or Better In Relation To Comorbidity And Type Of Surgery, Among Patients Without Ocular Co-Morbidities

Factor	Types Of Cataract Surgery																				
	All Surgeries			Lens Aspiration			ECCE			PE			PE TO ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
All	12830	10569	82	146	94	64	6080	4756	78	6102	5380	88	401	294	73	37	13	35	64	32	50
Ocular Co-Morbidity																					
Yes	4151	2876	69	46	19	41	2242	1511	67	1692	1269	75	112	58	52	31	9	29	28	10	36
No	8679	7693	89	100	75	75	3838	3245	85	4410	4111	93	289	236	82	6	4	67	36	22	61
Systemic Co-Morbidities ( Among Patients Without Ocular Co-Morbidity)																					
Yes	4907	4376	89	13	11	85	2155	1819	84	2547	2390	94	174	144	83	3	2	67	15	10	67
No	3772	3317	88	87	64	74	1683	1426	85	1863	1721	92	115	92	80	3	2	67	21	12	57

Table 3.4.6: Distribution Of Post-Operative Refracted VA 6/12 Or Better In Relation To Complication And Type Of Surgery

Factor	Types Of Cataract Surgery																				
	All Surgeries			Lens Aspiration			ECCE			PE			PE TO ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N	8679	7693	89	100	75	75	3838	3245	85	4410	4111	93	289	236	82	6	4	67	36	22	61
Complication																					
1. Intra-Op																					
Yes	812	630	78	10	3	30	320	239	75	352	293	83	123	92	75	2	2	100	5	1	20
No	7867	7063	90	90	72	80	3518	3006	85	4058	3818	94	166	144	87	4	2	50	31	21	68
2. Post-Op																					
Yes	711	519	73	14	8	57	424	302	71	230	180	78	37	27	73	0	0	0	6	2	33
No	7968	7174	90	86	67	78	3414	2943	86	4180	3931	94	252	209	83	6	4	67	30	20	67

Table 3.4.7: Distribution Of Post-Operative Refracted VA 6/12 Or Better In Relation To Nature Of Surgery And Type Of Surgery

Factor	Types Of Cataract Surgery																				
	All Surgeries			Lens Aspiration			ECCE			PE			PE TO ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N	8679	7693	89	100	75	75	3838	3245	85	4410	4111	93	289	236	82	6	4	67	36	22	61
Nature Of Surgeries																					
Emergency	47	39	83	0	0	0	25	19	76	19	17	89	2	2	100	0	0	0	1	1	100
Elective	8632	7654	89	100	75	75	3813	3226	85	4391	4094	93	287	234	82	6	4	67	35	21	60

Table 3.4.8: Distribution Of Post-Operative Refracted VA 6/12 Or Better In Relation To Anaesthesia And Type Of Surgery

Factor	Types Of Cataract Surgery																				
	All Surgeries			Lens Aspiration			ECCE			PE			PE TO ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N	8679	7693	89	100	75	75	3838	3245	85	4410	4111	93	289	236	82	6	4	67	36	22	61
Anaesthesia																					
1. Anaesthesia																					
General	320	258	81	78	58	74	121	97	80	111	96	86	2	2	100	0	0	0	8	5	63
Local	8359	7435	89	22	17	77	3717	3148	85	4299	4015	93	287	234	82	6	4	67	28	17	61
2. Local																					
Anaesthesia																					
Retrobulbar	1345	1197	89	4	2	50	659	564	86	647	606	94	29	21	72	3	3	100	3	1	33
Peribulbar	1526	1335	87	3	3	100	845	719	85	619	573	93	54	39	72	0	0	0	5	1	20
Subtenon	4283	3792	89	15	12	80	2200	1855	84	1863	1752	94	184	159	86	4	2	50	17	12	71
Subconjunctival	35	32	91	0	0	0	9	7	78	24	23	96	2	2	100	0	0	0	0	0	0
Facialblock	352	311	88	2	0	0	231	200	87	105	100	95	12	10	83	1	1	100	1	0	0
Topical	1642	1488	91	0	0	0	181	145	80	1415	1310	93	38	29	76	0	0	0	8	4	50
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Sedation																					
Any	1962	1715	87	10	7	70	1035	858	83	865	808	93	48	39	81	1	1	100	3	2	67
None	6717	5978	89	90	68	76	2803	2387	85	3545	3303	93	241	197	82	5	3	60	33	20	61

Table 3.4.9: Distribution Of Post-Operative Refracted VA 6/12 Or Better In Relation To Combined Surgery And Type Of Surgery

Factor	Types Of Cataract Surgery																				
	All Surgeries			Lens Aspiration			ECCE			PE			PE TO ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N Combined Surgery	8679	7693	89	100	75	75	3838	3245	85	4410	4111	93	289	236	82	6	4	67	36	22	61
Any	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
None	8679	7693	89	100	75	75	3838	3245	85	4410	4111	93	289	236	82	6	4	67	36	22	61



Table 3.4.10: Distribution Of Post-Operative Refracted VA 6/12 Or Better In Relation To IOL And Type Of Surgery

Factor	Types Of Cataract Surgery																				
	All Surgeries			Lens Aspiration			ECCE			PE			PE TO ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N IOL	8679	7693	89	100	75	75	3838	3245	85	4410	4111	93	289	236	82	6	4	67	36	22	61
1. IOL																					
With IOL	8627	7671	89	98	75	77	3812	3235	85	4395	4103	93	280	232	83	6	4	67	36	22	61
Without IOL	52	22	42	2	0	0	26	10	38	15	8	53	9	4	44	0	0	0	0	0	0
N	8627	7671	89	98	75	77	3812	3235	85	4395	4103	93	280	232	83	6	4	67	36	22	61
2. IOL-Type																					
Foldable	3536	3315	94	43	30	70	110	101	92	3316	3122	94	65	60	92	0	0	0	2	2	100
Non-Foldable	5091	4356	86	55	45	82	3702	3134	85	1079	981	91	215	172	80	6	4	67	34	20	59
3. IOL-Material																					
Pmma	5090	4356	86	55	45	82	3701	3134	85	1079	981	91	215	172	80	6	4	67	34	20	59
Silicone	1149	1079	94	6	6	100	29	28	97	1104	1035	94	9	9	100	0	0	0	1	1	100
Acrylic	2387	2236	94	37	24	65	81	73	90	2212	2087	94	56	51	91	0	0	0	1	1	100
Other	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3.4.11: Distribution Of Post-Operative Refracted VA 6/12 Or Better In Relation To Surgeon Status And Type Of Surgery Without Ocular Co-Morbidity

Factor	Types Of Cataract Surgery																				
	All Surgeries			Lens Aspiration			ECCE			PE			PE TO ECCE			ICCE			Secondary IOL Implant		
	N	No.	% (95% Ci)	N	No.	%	N	No.	% (95% Ci)	N	No.	% (95% Ci)	N	No.	%	N	No.	%	N	No.	%
N	8679	7693	89 (0.88, 0.89)	100	75	75	3838	3245	85 (0.83, 0.86)	4410	4111	93 (0.92, 0.94)	289	236	82	6	4	67	36	22	61
Surgeon Status Specialist	6438	5776	90 (0.89, 0.90)	76	59	78	2065	1746	85 (0.83, 0.86)	4010	3741	93 (0.92, 0.94)	254	208	82	5	3	60	28	19	68
Gazetting Specialist	717	619	86 (0.84, 0.89)	11	7	64	418	353	84 (0.81, 0.88)	257	235	91 (0.87, 0.95)	27	23	85	0	0	0	4	1	25
Medical Officer	1524	1298	85 (0.83, 0.87)	13	9	69	1355	1146	85 (0.83, 0.86)	143	135	94 (0.89, 0.98)	8	5	63	1	1	100	4	2	50

Table 3.4.12: Distribution Of Post-Operative Refracted VA 6/12 Or Better In Relation To Centre And Type Of Surgery

Factor	Types Of Cataract Surgery																				
	All Surgeries			Lens Aspiration			ECCE			PE			PE TO ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
All Centres	8679	7693	89	100	75	75	3838	3245	85	4410	4111	93	289	236	82	6	4	67	36	22	61
Centre A	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
B	441	405	92	7	2	29	234	208	89	192	187	97	7	7	100	0	0	0	1	1	100
C	43	31	72	0	0	0	43	31	72	0	0	0	0	0	0	0	0	0	0	0	0
D	187	157	84	2	2	100	124	99	80	58	53	91	3	3	100	0	0	0	0	0	0
E	166	119	72	4	3	75	152	106	70	10	10	100	0	0	0	0	0	0	0	0	0
F	483	452	94	2	2	100	189	173	92	266	254	95	24	21	88	0	0	0	2	2	100
G	148	132	89	4	2	50	97	90	93	40	35	88	6	4	67	0	0	0	1	1	100
H	379	333	88	4	3	75	117	93	79	241	224	93	13	12	92	0	0	0	4	1	25
I	636	570	90	6	2	33	198	166	84	416	391	94	9	7	78	0	0	0	7	4	57
J	275	257	93	4	4	100	70	62	89	192	182	95	9	9	100	0	0	0	0	0	0
K	675	594	88	5	3	60	347	287	83	307	289	94	15	14	93	1	1	100	0	0	0
L	315	244	77	4	4	100	90	60	67	204	171	84	14	7	50	0	0	0	3	2	67
M	358	335	94	10	7	70	224	206	92	105	105	100	19	17	89	0	0	0	0	0	0
N	144	136	94	4	4	100	138	130	94	0	0	0	0	0	0	2	2	100	0	0	0
O	476	425	89	3	3	100	178	152	85	286	265	93	8	5	63	0	0	0	1	0	0
P	443	369	83	3	3	100	143	102	71	277	253	91	19	11	58	0	0	0	1	0	0
Q	160	147	92	2	2	100	76	71	93	68	63	93	14	11	79	0	0	0	0	0	0
R	171	151	88	0	0	0	163	145	89	1	1	100	7	5	71	0	0	0	0	0	0
S	399	331	83	3	3	100	69	42	61	320	280	88	6	5	83	0	0	0	1	1	100
T	164	146	89	4	4	100	56	45	80	103	96	93	0	0	0	1	1	100	0	0	0

Factor	Types Of Cataract Surgery																				
	All Surgeries			Lens Aspiration			ECCE			PE			PE TO ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
U	429	391	91	9	8	89	187	167	89	219	205	94	11	9	82	0	0	0	3	2	67
V	182	153	84	4	2	50	96	82	85	73	60	82	8	8	100	0	0	0	1	1	100
W	209	200	96	5	4	80	86	81	94	105	103	98	13	12	92	0	0	0	0	0	0
X	88	78	89	0	0	0	61	56	92	22	19	86	5	3	60	0	0	0	0	0	0
Y	32	28	88	0	0	0	23	20	87	8	8	100	1	0	0	0	0	0	0	0	0
Z	514	452	88	4	4	100	275	227	83	195	186	95	38	35	92	2	0	0	0	0	0
Aa	128	113	88	1	1	100	123	110	89	2	2	100	1	0	0	0	0	0	1	0	0
Ab	458	415	91	4	2	50	146	122	84	288	276	96	19	15	79	0	0	0	1	0	0
Ac	308	287	93	0	0	0	66	56	85	221	214	97	14	11	79	0	0	0	7	6	86
Ad	135	118	87	2	1	50	26	21	81	100	91	91	6	5	83	0	0	0	1	0	0
Ae	101	99	98	0	0	0	19	19	100	81	79	98	0	0	0	0	0	0	1	1	100
Af	31	25	81	0	0	0	22	16	73	9	9	100	0	0	0	0	0	0	0	0	0

### 3.5 Post-Operative Refracted VA Improved By One Or More Line Of Snellen Chart

Table 3.5.1: Distribution Of Post-Operative Refracted VA Improved By One Or More Line Of Snellen Chart, At The Last Follow Up

Type Of Surgery	N	Refracted Visual Acuity					
		No Change		Worse		Improved	
		No.	%	No.	%	No.	%
All Surgeries	1105	49	4	28	3	1028	93
Lens	13	0	0	0	0	13	100
Aspiration							
ECCE	320	17	5	7	2	296	93
PE	719	30	4	16	2	673	94
PE To ECCE	46	0	0	3	7	43	93
ICCE	0	0	0	0	0	0	0
Secondary	7	2	29	2	29	3	43
IOL Implant							

Table 3.5.2: Distribution Of Post- Operative Refracted VA Improved By One Or More Line Of Snellen Chart, With And Without Ocular Co-Morbidity At The Last Follow Up

Ocular Co-Morbidity	Refracted VA	Type Of Surgery							
			All Surgeries	Lens Aspiration	ECCE	PE	PE TO ECCE	ICCE	Secondary IOL Implant
Yes	N		616	8	269	306	23	1	9
	No Change	No.	46	0	13	27	3	0	3
		%	7	0	5	9	13	0	33
	Worse	No.	38	0	8	24	4	0	2
		%	6	0	3	8	17	0	22
	Improved	No.	532	8	248	255	16	1	4
	%	86	100	92	83	70	100	44	
No.	N		1105	13	320	719	46	0	7
	No Change	No.	49	0	17	30	0	0	2
		%	4	0	5	4	0	0	29
	Worse	No.	28	0	7	16	3	0	2
		%	3	0	2	2	7	0	29
	Improved	No.	1028	13	296	673	43	0	3
	%	93	100	93	94	93	0	43	

Table 3.5.3: Distribution Of Post- Operative Refracted VA Improved By One Or More Line Of Snellen Chart With Intra-Op Complication And Without Intra-Op Complication, At The Last Follow Up

Intra-Op Complica tion			Refracted VA		Type Of Surgery						
					All Surgeries	Lens Aspiration	ECCE	PE	PE To ECCE	ICCE	Secondary IOL Implant
Yes	N No Change	No.	124	1	23	78	21	0	1		
		%	10	0	4	5	0	0	1		
	Worse	No.	8	0	17	6	0	0	100		
		%	10	0	4	5	1	0	0		
	Improved	No.	8	0	17	6	5	0	0		
		%	104	1	15	68	20	0	0		
			84	100	65	87	95	0	0		
No.	N No Change	No.	981	12	297	641	25	0	6		
		%	39	0	13	25	0	0	1		
	Worse	No.	4	0	4	4	0	0	17		
		%	18	0	3	11	2	0	2		
	Improved	No.	2	0	1	2	8	0	33		
		%	924	12	281	605	23	0	3		
			94	100	95	94	92	0	50		

Table 3.5.4: Distribution Of Post -Operative Refracted VA Improved By One Or More Line Of Snellen Chart With Systemic Co-Morbidity And Without Systemic Co-Morbidity, At The Last Follow Up

Systemic Co- Morbidity			Refracted VA		Type Of Surgery						
					All Surgeries	Lens Aspiration	ECCE	PE	PE TO ECCE	ICCE	Secondary IOL Implant
Yes	N No Change	No.	677	3	207	436	28	0	3		
		%	28	0	9	19	0	0	0		
	Worse	No.	4	0	4	4	0	0	0		
		%	19	0	6	10	2	0	1		
	Improved	No.	3	0	3	2	7	0	33		
		%	630	3	192	407	26	0	2		
			93	100	93	93	93	0	67		
No.	N No Change	No.	428	10	113	283	18	0	4		
		%	21	0	8	11	0	0	2		
	Worse	No.	5	0	7	4	0	0	50		
		%	9	0	1	6	1	0	1		
	Improved	No.	2	0	1	2	6	0	25		
		%	398	10	104	266	17	0	1		
			93	100	92	94	94	0	25		

Table 3.5.5: Distribution Of Post -Operative Refracted VA Improved By One Or More Line Of Snellen Chart At The Last Follow Up In Relation To Surgeon Status And Type Of Surgery Without Ocular Comorbidity

Type Of Surgery	Surgeon Status	N	No Change		Worse		Improved	
			No.	% (95% Ci)	No.	% (95% Ci)	No.	% (95% Ci)
All Surgeries	Specialist	891	37	4 (2.94, 5.68 )	20	2 (1.38, 3.45)	834	94 (91.79, 95.12)
	Gazetting Specialist	103	8	8 (3.41, 14.73)	6	6 (2.17, 12.25)	89	86 (78.25, 92.37)
	Medical Officer	111	4	4 (0.99, 8.97)	2	2 (0.22, 6.36)	105	95 (88.61, 97.99)
Lens Aspiration	Specialist	10	0	0	0	0	10	100
	Gazetting Specialist	3	0	0	0	0	3	100
	Medical Officer	0	0		0		0	
ECCE	Specialist	216	14	6 (3.59, 10.64)	5	2 (0.76, 5.32)	197	91 (86.60, 94.62)
	Gazetting Specialist	23	0	0 (0.00, 14.82)*	1	4 (0.11, 21.95)	22	96 (78.05, 99.89)
	Medical Officer	81	3	4 (0.77, 10.44)	1	1 (0.03, 6.69)	77	95 (87.84, 98.64)
PE	Specialist	624	22	4 (2.22, 5.29)	11	2 (0.88, 3.13)	591	95 (92.65, 96.33)
	Gazetting Specialist	67	7	10 (4.30, 20.35)	5	7 (2.47, 16.56)	55	82 (70.80, 90.39)
	Medical Officer	28	1	4 (0.09, 18.35)	0	0 (0.00, 12.34)*	27	96 (81.65, 99.91)
PE To ECCE	Specialist	36	0	0	3	8	33	92
	Gazetting Specialist	9	0	0	0	0	9	100
	Medical Officer	1	0	0	0	0	1	100
ICCE	Specialist	0	0		0		0	
	Gazetting Specialist	0	0		0		0	
	Medical Officer	0	0		0		0	
Secondary IOL Implant	Specialist	5	1	20	1	20	3	60
	Gazetting Specialist	1	1	100	0	0	0	0
	Medical Officer	1	0	0	1	100	0	0

\*One-Sided, 97.5% Confidence Interval

3.6 Factors Contributing To Post-Operative Refracted Visual Acuity Of Worse Than 6/12

Table 3.6.1: Distribution Of Factors Contributing To Post- Operative Refracted Of Worse Than 6/12

Factor	No.	%
N	986	100
Patients With Any Factor	888	90
Patients With Specific Factor		
1.High Astigmatism	392	40
2.Posterior Capsular Opacity	152	15
3.Cystoid Macular Edema	59	6
4.Endophthalmitis	10	1
5.Corneal Decompensation	19	2
6.Decentered IOL	1	0.1
7.Retinal Detachment	8	1
8.Preexisting Ocular Co-Morbidity	94	10
9.Other	202	20



## Appendix I (Clinical Record Forms)