The 6th Report of the National Eye Database 2012

Included reports on

Cataract Surgery Registry 2002, 2003, 2004, 2007, 2008, 2009, 2010, 2011 and 2012

Retinoblastoma Registry

Editors

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The 6th Report of the National Eye Database 2012

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Disclaimer
There is a potential that data published for previous years in current reports may differ from annual reports published earlier. This is because analysis is based on latest dataset in NED database which may have been updated by source data producers.

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Thank you.

NED Steering Committee Members
April 2014

NED STEERING COMMITTEE MEMBERS 2011

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ABOUT NATIONAL EYE DATABASE

Introduction
The National Eye Database (NED) is an eye health information system supported by MOH. It is a clinical database consisting of six patient registries and a monthly ophthalmology service census. The patient registries are Cataract Surgery Registry, Diabetic Eye Registry, Contact Lens-Related Corneal Ulcer Surveillance, Glaucoma Registry, Retinoblastoma Registry, and Age Related Macular Degeneration Registry. The source data producers are eye care providers, currently from the public. Information collected, both clinical and epidemiological, are very useful in assisting the MOH, Non-Governmental Organizations, private healthcare providers and industry in the planning, evaluation and continuous improvement of eye care services, leading to prevention and control of blindness in the nation.

Vision
An accessible eye health information.

General Objectives of the National Eye Databases

1. To establish and maintain a web based eye health information system on natural history of visual threatening eye diseases, which are of public health importance. The information is useful in the planning and evaluation of eye care service.
2. To determine the effectiveness of treatment, both clinical outcomes and cost, and to identify factors influencing outcomes. This serves the needs of outcome assessment.
3. To provide information necessary to evaluate ophthalmology services through census and key performance indicators, as well as on safety or harm of products and services used in the treatment of a disease. This contributes to continuous quality initiative.
4. To evaluate the accessibility and equity in health care provision. This information enhances accountability.
5. To provide a mean of prompt and wide dissemination of epidemiological and clinical information through web such as real time registries reports and notification of epidemic of contact lens-related corneal ulcer. This is essential for public health advocacy.
6. To stimulate and facilitate research on eye diseases.

Cataract Surgery Registry
The Cataract Surgery Registry (CSR) was initiated in 2002 and collects data pertaining to patients who have had cataract surgery. Data collected include demography, medical history, operative events, post-operative visual outcomes and probable causes for poor outcome. Since 2008, data on posterior capsular rupture, visual outcome and post-operative endophthalmitis were linked to online key performance indicator for monitoring centre performance while data on incidence of posterior capsular rupture and patients with poor visual outcome are linked to online cumulative sum (CUSUM) to monitor competency of individual surgeon. Annual reports for the year 2002, 2003, 2004 and 2007 are available at www.acrm.org.my/ned, under the section of publication.

Specific Objectives

1. To determine the frequency, distribution and practice pattern of cataract surgery in Malaysia.
2. To determine the outcomes and factors influencing outcomes of cataract surgery.
3. To evaluate cataract surgery services based on rate of posterior capsular rupture, post-operative infection, post-operative visual outcome and induced astigmatism.
4. To stimulate and facilitate research on cataract and its management.

Retinoblastoma Registry
Retinoblastoma registry collects data on the pattern of clinical presentation, mode of treatment and outcome of patients with retinoblastoma seen at ophthalmology clinics with paediatric ophthalmology service. The main SDP is Hospital Kuala Lumpur.

Specific Objectives

1. To determine the incidence and distribution of retinoblastoma in different states in Malaysia.
2. To determine the ethnic-specific prevalence of retinoblastoma in Malaysia.
3. To study characteristics of RB patients in terms of clinical presentation and stage of disease based on International Intraocular Retinoblastoma Classification.
4. To evaluate types of treatments and monitor treatment trends.
5. To evaluate treatment outcomes including complications related to treatment.

Monthly Ophthalmology Service Census

Since 2002, Ophthalmology Service of MOH has been collecting annual census from all the hospitals with ophthalmology departments. Data include essential service census and key performance indicators for ophthalmology service. There are 13 sections in the census return, namely out-patients, inpatients, major eye operations, cataract service, diabetic service, glaucoma service, and optometry service, and subspecialty services which include vitreoretinal, corneal, paediatric ophthalmology, oculoplasty, medical retinal, and a public health ophthalmology, and data on training records and prevention of blindness activities. Data are entered monthly by staff at sites via on-line data entry. Heads of ophthalmology department can view their own and other hospitals' real-time reports.

Specific Objectives

1. To evaluate service output in all ophthalmology departments.
2. To study trends in service output and service patterns.
3. To get baseline and norm from services provided by MOH ophthalmology departments.
4. To determine norm and set standards for performance indicators for centres which differ in strength of physical and human resources.

CUSUM-Ophthalmology

Cataract surgery is the most common procedure done in ophthalmology departments. The procedure is quite consistent and outcome is measured by visual acuity. Cataract surgery outcome depends greatly on surgeons' skill. With advancement in technology and intraocular lens implantation, good visual outcome is almost certain among patients without pre-existing ocular co-morbidity. Hence, monitoring and evaluating surgeons' competency, especially trainees' performance, are essential in ensuring standard of care.

Cumulative Sum (CUSUM) software auto-mine data on occurrence of posterior capsular rupture and patients with post-operative vision worse then 6/12 from cataract surgery registry on surgery done by individual surgeon using unique surgeon ID. From 2008, by using individual unique username and password, surgeon can access his/her own CUSUM charts via eCUSUM web page. Consultant ophthalmologists can view their own as well as their trainees' charts. By doing so, monitoring on surgeons' competency in cataract surgery is made most effectively and easily.

Key Performance Indicator

The Ministry of Health (MOH) launched the implementation of Key Performance Indicators (KPIs) in February 2008 with the aim to assess the overall performance of services provided by Clinical Departments in MOH. The MOH Ophthalmology Service has identified eight KPIs which measure clinical performance of core ophthalmology service such as out-patient service, cataract surgery and diabetic eye screening.

From 2008 to 2011, there were 7 KPIs being measured in MOH Ophthalmology Service. However, the Quality Unit of MOH revised these KPIs in January 2012 and has 3 KPIs and 4 performance indicators (PIs). Rate of infectious endophthalmitis following cataract surgery and Percentage of patients with post-operative visual acuity of 6/12 or better within 3 months are both PIs and National Indicator Approach (NIA). Rate of Posterior Capsular Rupture during Cataract Surgery has been removed both from KPI and NIA lists.

MEASUREMENT			INDICATOR	STANDARD
PI 1			Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at specialist clinic	≥ 80% of the patients are seen within ninety (90) minutes
PI 2	KPI 1		Percentage of diabetic patients who were given an appointment for first consultation within 6 weeks	≥ 80% of the patients are given an appointment for First Consultation within 6 weeks
PI 3			Percentage of patients with waiting time of within 16 weeks for cataract surgery	≥ 80% of patients have appointment given for cataract surgery within 16 weeks
PI 4	KPI 2	N|A	Rate of infectious endophthalmitis following cataract surgery (2 cases per 1000 operations)	< 0.2% (2 cases per 1000 operations)
PI 5	KPI 3	N|A	Percentage of patients with post-operative visual acuity of 6/12 or better within 3 months following cataract surgery in patients without ocular co-morbidity (850 cases 1000 operations)	> 85% (900 cases per 1000 operations)
PI 6			Cancellation rate of patients listed for cataract surgery under local Anaesthesia	≤ 10% cancellation
PI 7			Number of mortality/morbidity audits/meetings conducted in the Department (in 6 months)	At least 6 times in 6 months

Note:
PI = Performance Indicator
KPI = Key Performance Indicator
NIA = National Indicator Approach

The NED website also has interactive online registry charting that allows public users to review data captured in cataract surgery registry and adverse incident reporting to notify defect in intraocular lens (IOL) noted during or after cataract surgery by public and private eye care providers, an initiative to promote patient safety.

The new feature for NED launched in 2012 is an e-notification of patients with suspected post-operative infectious endophthalmitis

Methods of the National Eye Database
The National Eye Database is designed as a cohort study. It is an online clinical database hosted at the Association of Clinical Registry Malaysia website at www.acrm.org.my/ned. Its protocol was approved by the Medical Research Ethical Committee of MOH on 2nd September 2008 (reference number NMRR 08-552-1707) and is accessible at the NED website.

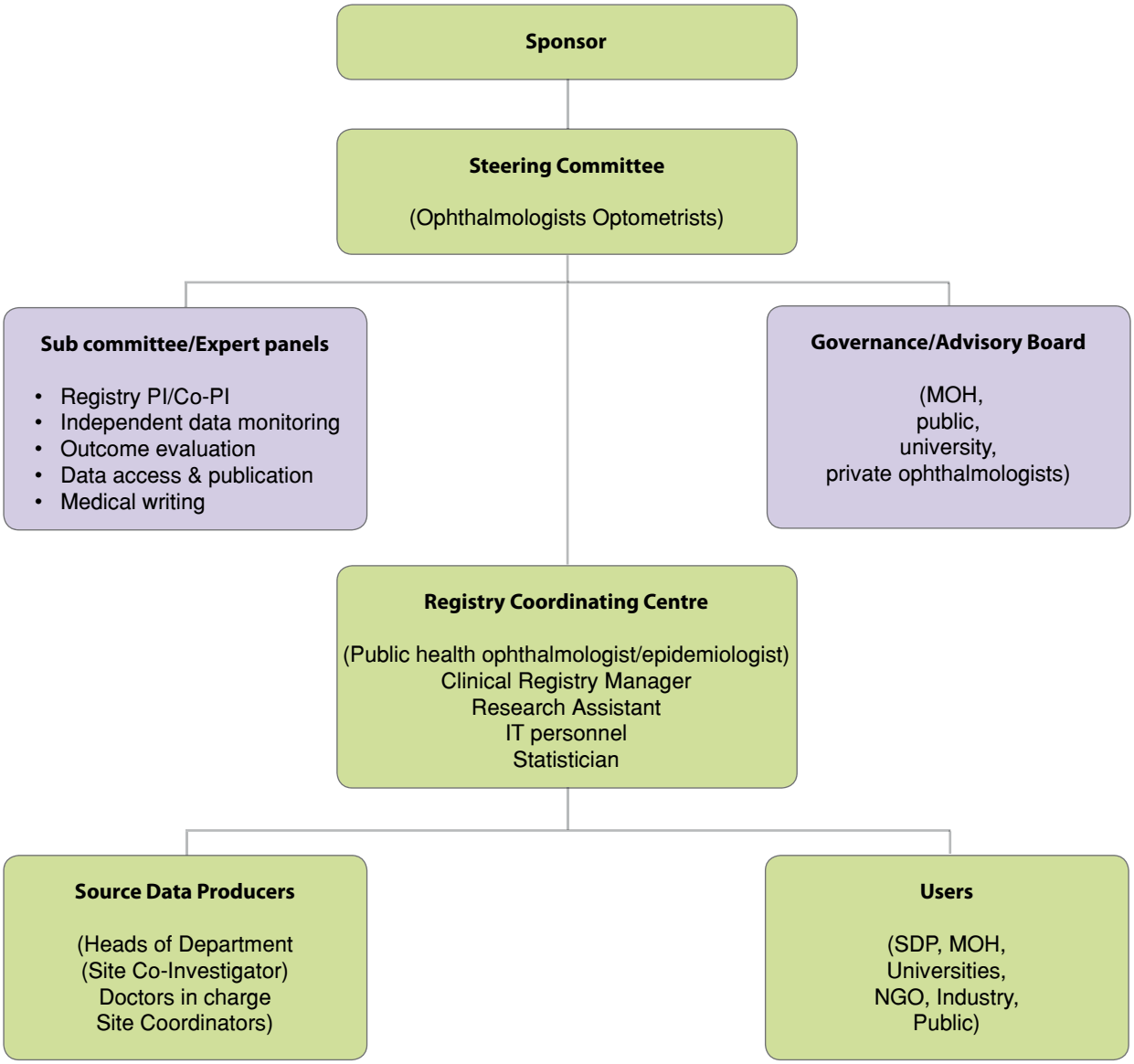
Data collection and data entry are done at SDP sites. Data are collected either using case report forms (CRF) which are later entered into the web application, or are directly entered into the web application during the course of clinical work.

Data management using data query are set in the web application to reduce inconsistency, out-of-range or missing values. Authorised staff at each SDP is given passwords to perform data entry. Individual SDP reports and aggregated reports based on cumulative data of all SDPs are available real-time at NED website. These reports are only accessible by heads of department, doctors-in-charge and site coordinators via authorised password. The web reports are descriptive analysis of data which have been entered. Annual statistical report will be produced based on data collected for a specific year. The statistical reports will be published yearly and distributed to users in MOH divisions and units, all the ophthalmology departments, universities, other relevant public agencies and non-governmental organisations.

The NED has high level of security for protection of its data. Data protection is ensured at all times through strict compliance with regulatory requirements such as authentications of users and web application owners, access control, encryption, audit trail, control of external communication links and access, as well as system backup and disaster recovery.

NED ORGANIZATION

Organisation Chart



NED SOURCE DATA PROVIDERS

List of doctors in charge & site coordinator for 2010

Northern Zone			
No.	**SDP**	**Doctor-in-charge**	**Site Coordinator**
1.	Hospital Kangar	Dr Noram Azian bin Ramli	Roslinda bt Rahman
2.	Hospital Sultanah Bahiyah	Dr Lee Annie	Nur Diana Mohd Zani
3.	Hospital Sungai Petani	Dr Nor'aini Ramlee	Juliana Md Desa
4.	Hospital Pulau Pinang	Dr Ang Ee Ling	Noor Asmah Md Azmi
5.	Hospital Bukit Mertajam	Dr Ng Seok Hui	Marhaini Othman
6.	Hospital Ipoh	Dr Ummi Kalsom	Noraini Harith
7.	Hospital Taiping	Dr Ng Sok Lin	Rohaiza bt Abdul Hamid
8.	Hospital Teluk Intan	Dr Mimi Marina	Adawiyah Ismail
9.	Hospital Sri Manjung	Dr Yushaniza Yaacob	Juhaida bt Zahri

Central Zone			
No.	**SDP**	**Doctor-in-charge**	**Site Coordinator**
10.	Hospital Kuala Lumpur	Dr Rohanah Alias	Intan Khusiah Abd Rahman
11.	Hospital Putrajaya	Dr Salmah Othman	Lily Muhanifa Mustafa
12.	Hospital Selayang	Dr Shelina Oli Mohamed	Nurul Aini Yusoff
13.	Hospital Tengku Ampuan Rahimah	Dr Fiona Chew Lee Min	Najihah Muhammad Sharif
14.	Hospital Serdang	Dr Zaida Mohd Kasim	Yusrina Mohamat Hata
15.	Hospital Sungai Buloh	Dr. Chan U-Teng	Majidah Zainal Abidin
16.	Hospital Ampang	Dr Zalifa Zakiah bt Asnir	Noriah binti Abdullah

Southern Zone			
No	**SDP**	**Doctor in charge**	**Site Coordinator**
17.	Hospital Tuanku Jaafar	Dr Norlelawati Abu	Normalisa Muhammad Som
18.	Hospital Tuanku Ampuan Najihah Kuala Pilah	Dr Khairul Husnaini binti Mohd Khalid	Nazura Selamat
19.	Hospital Melaka	Dr Juliana Jalaluddin	Eryanti Md Omar
20.	Hospital Sultanah Aminah	Dr Kevin Ong	Nurazilah Ismail
21.	Hospital Pakar Sultanah Fatimah	Dr Ngim You Siang	Roziana Sumardi
22.	Hospital Batu Pahat	Dr. Liu Han Seng	Nur Adilah Abdullah
23	Hospital Sultan Ismail	Dr Hooi Siew Tong	Nursalinah bt Adam
24	Hospital Tengku Ampuan Afzan	Dr. Mohamad Aziz Husni	Noor Azhari bin Ahmad

Southern Zone		
No SDP	**Doctor in charge**	**Site Coordinator**
25. Hospital Temerloh	Dr Fatimah Suhaila Sukaimi	Nor Hanim Ahmad Adnan
26. Hospital Kuala Terengganu	Dr Nor Anita Che Omar	Noor Hayati Mohammad
27. Hospital Kota Bharu	Dr Azma Azalina Ahmad Alwi	Rossaidah bt Mustapa
28. Hospital Kuala Krai	Dr. Hj Abdul Mutalib Othman	Farawahida Fakaruddin

East Malaysia Zone –Sarawak		
No SDP	**Doctor-in-charge**	**Site Coordinator**
29. Hospital Umum Sarawak	Dr Mohamad Aziz Salowi	Nazirin bin Arshad
30. Hospital Sibu	Dr Jakiyah Daud	Mohammad Ridzwan Bihem
31. Hospital Bintulu	Dr KM Reddy	Mohd Zharif Mohd Nor
32. Hospital Miri	Dr Chieng Lee Ling	Nur Hafizah Mat Jalil

East Malaysia Zone –Sabah		
No SDP	**Doctor-in-charge**	**Site Coordinator**
33. Hospital Queen Elizabeth	Dr Chin Kelvin	Iramayanah Ambo Mase
34. Hospital Duchess Of Kent	Dr Suriana Suaibun	Norhafizah Abd Razik
35. Hospital Tawau	Dr Ajit Majumder	Arni Rehny Ahmad Rakhli
36. Hospital Keningau	Dr Christina Lee Lai Ling	Hr Shredznear

FOREWORD

National Eye Database was invited to participate in the Fine-Tuning Health Care – a high level conference held in Stockholm, Sweden on 21-22nd May 2013, organized by the Swedish Ministry of Health and Social Affair. The conference was attended by the Health Ministers and Director Generals from all over Europe and several other countries like USA, Canada, Australia, India and China. We were proud that Malaysia was also invited.

The interaction with other participants and visits to the world renowned Karolinska Institute, St Erik's Eye Hospital and round table discussions at the Health Ministry and Social Affair's office the Stockholm Registry Coordinating Centre itself inspired us at how well data were used to manage health care in Sweden. The health care workers at all levels understood that it was essential not only to engage themselves but also the patients and the public to participate in utilizing outcome data for health care services. This usage of quality data has resulted in lower health care costs across all the counties in Sweden.

We were invited to collaborate with the Swedish Cataract Register and invited to become the cataract working group in the International Consortium for Health Outcomes Measurements (ICHOM) because we have a significant large pool of data in Cataract Surgery Registry (CSR). As of 2012, we have registered more than 200,000 cataract surgeries mainly performed by surgeons in the Ministry of Health (MOH) throughout the country. But we would like to appeal for an improved data quality. A large pool of data will be useless if data are missing or inaccurate.

One of the highlights in 2012 was the total number of medical officers performing cataract surgery continued to decrease. This trend is worrying as MOH, as the main service provider may not be giving adequate time for training new cataract surgeons. The total number of patients operated in the same year and the time taken before the second eye was operated also continued to show an upward trend. Similar to previous years, only 1/3 of patients returned for the second eye surgery.

Beginning with NED report 2012, all the SDPs' name will be published. This will facilitate comparisons between hospitals. Direct and clear comparison in the performance of each hospital will hopefully trigger an initiative by the hospitals to improve further by applying the necessary remedial steps for better outcomes.

The Satellite Cataract Services and the Klinik Katarak 1Malaysia (KK1M) have started their services and started feeding data to CSR. Several new SDPs were also added in 2012 onwards. We will continue to monitor data quality and outcome of cataract surgeries especially in these outreach services and publish the results in 2013 report.

Thank you.

NED Advisor	NED Chairperson	NED Co-Chairperson
.....	.....	.....
Dr Elias Hussein Consultant and Head of Service Hospital Selayang	Dr Goh Pik Pin Director, Clinical Research Centre	Dr Mohamad Aziz Salowi Ophthalmologist Hospital Umum Sarawak

ABBREVIATION

ADED	Advanced Diabetic Eye Disease
AMD	Age related Macular Degeneration
CAI	Carbonic Anhydrase Inhibitor
CF	Counting Finger
CLRCU	Contact Lens-Related Corneal Ulcer
CSMO	Clinically Significant Macular Odema
CMO	Cystoid Macular Oedema
CSR	Cataract Surgery Registry
DER	Diabetic Eye Registry
DM	Diabetes Mellitus
DR	Diabetic Retinopathy
ECCE	Extracapsular Cataract Extraction
FU	Follow Up
HM	Hand Movement
HPT	Hypertension
ICCE	Intracapsular Cataract Extraction
IOL	Intraocular Lens
MOH	Ministry Of Health
NED	National Eye Database
NPDR	Non Proliferative Diabetic Retinopathy
NPL	No Perception Of Light
OT	Operating Theatre
PCO	Posterior Capsule Opacification
PCR	Posterior Capsule Rapture
PDR	Proliferative Diabetic Retinopathy
Phaco	Phacoemulsification
PL	Perception Of Light
PI	Principal Investigator
RB	Retinoblastoma
RCC	Registry Coordinating Centre
SD	Standard Division
SDP	Source Data Producers
VA	Visual Acuity
VR	Vitreoretinal Surgery
ZD	Zonular Dialysis

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EXECUTIVE SUMMARY

FroData for Cataract Surgery Registry (CSR) in 2012 were collected from 36 participating centers in the Ministry of Health (MOH). Although the total number of cataract surgery increased, it was not representative of a national data as its portion in the private sector, the Ministry of Defence and the Ministry of Education was unknown. Ascertainment in MOH was encouraging but submission of data by some individual centers was still unsatisfactory. Nevertheless, effort is underway to make data entry or reporting of cataract surgery to CSR compulsory for all cataract surgeons. This will enable us to produce the true Cataract Surgical Rate for the country in future.

The percentage of patients having systemic co-morbidity in particular Hypertension and Diabetes Mellitus showed an increasing trend. This warrants more detailed pre-operative assessment for each patient presenting for cataract surgery. Public awareness also has to be intensified as only one third of patients returned for surgery in the fellow eye and less number operated in the same year.

In contract to the generally acceptable fact among surgeons that daycare is the more cost-effective way to perform cataract surgery, CSR data showed that day care service utilization was poor. This issue has to be addressed adequately by both the healthcare providers and the policy makers to identify barrier to daycare both from the patients' and health care provider's perspectives to ensure maximum utilization of daycare services.

In term of cataract surgery method, phacoemulsification surgery has become the preferred method of performing cataract surgery. It was also shown to be the safest and better method of cataract surgery with lower intra-operative complication and better post-operative outcomes. These results can hopefully be used by the policy makers in allocating adequate budget to support the consumables and the maintenance costs of phacoemulsification machines throughout the countries.

There was an improvement in patients' visual outcome observed over the years but there were obvious variations in individual centre' performance. Clinical audit and monitoring of outcomes particularly in centres with performances below standards is necessary

REPORT SUMMARY

CATARACT SURGERY REGISTRY

1. Stock and Flow

- From the year 2008 to 2012, out of 39 MOH hospitals with resident or visiting ophthalmologist, 36 hospitals participated in CSR.
- The number of SDP increased from 25 SDPs in 2002 to 36 SDPs in 2008 onwards.
- The total number of cataract surgery registered to CSR increased from 12798 in 2002 to 32473 in 2012.
- The CSR ascertainment slightly reduced from 95.4% in 2011 to 94.5% in 2012

2. Characteristics of Patients

- The mean age of patients at the time of cataract surgery was the same at 65 years old from 2002 to 2012. This

age was younger than data published by the Swedish cataract surgery register (74 years old).
- Up to 1/3 of patients presented within the age group of 65-74 years old (38.4% in 2012).
- The proportion of patients with systemic co-morbidity increased from 56.8% in 2002 to 72.4% in 2012.
- There was an increase in the proportion of patients presented for cataract surgery who had hypertension (from 35.4% in 2002 to 57.5% in 2012) and diabetes mellitus (from 28.9% in 2002 to 42.0% in 2012).
- Senile cataract was the commonest cause of primary cataract (98.3 % in 2012).
- Trauma was the commonest cause for secondary cataract (51.5% in 2012).
- The proportion of patients who returned for cataract surgery in the fellow eye remained the same from 2002 to 2012, i.e. only one third (33.6% in 2012).
- Majority of the eyes had no prior ocular surgery (97.0% in 2012).The commonest prior ocular surgery was vitreoretinal surgery (1.1% in 2012).
- One third of the eyes had ocular co-morbidity (40.1% in 2012). The commonest ocular co-morbidity was diabetic retinopathy in any forms (10.7% in 2012).
- About half of the eyes had unaided vision in the category of 2/60-NPL (45.6% in 2012).
- Refraction was not done in more than 2/3 of the eyes (77.5% in 2012).
- Bimodal pattern of pre-operative vision was consistently observed over the years with one peak at the range between 6/18 to 6/36 and another peak at CF-HM.
- In term of the choice of IOL power, majority of surgeons chose target refraction as emmetropia or slightly myopic. The mean target refractive power in 2012 was -0.4D (SD 0.4).

3. Cataract Surgery Practice Patterns
- The number of cataract surgery performed by SDPs varied. In 2012, out of the 36 SDPs,9 performed less than 500 surgeries, 16 performed between 501 to 1000, and 11 performed more than 1000 cataract surgeries a year.
- The number of surgery performed was lower than average in the month of February and September and highest in July.
- Selangor (5 SDPs), Perak (4 SDPS)and Sarawak (4 SDPS), performed higher number of cataract surgeries compared to other state.
- More than 2/3 of the cataract surgery was performed by specialists (85.0% in 2012).
- The percentage of cataract surgery done by medical officers is decreasing
- The median duration taken to do a cataract surgery was 25 min for phaco and 40 min for ECCE in 2012.
- Though there is an increasing trend for day care surgery, from 39.3% in 2002 to 59.1% in 2011, the percentage varied among SDPs. In 2011, 3 SDPs did not perform any cataract surgery under day care, 20 SDPs performed less than 50.0%. Only 10 SDPs performed more than 90.0% of cataract surgery as day care.
- Phaco was the preferred method of cataract surgery and the proportion increased from 39.7% in 2002 to 81.1% in 2012. Percentage of ECCE decreased from 54.0% in 2002 to 14.7% in 2012.
- The preferred IOL material was acrylic and non-foldable type.
- The percentage of phaco converted to ECCE was 1.9% in 2012. It remained the same over the years.
- Among combined surgery, VR surgery was the highest, while filtering surgery and pterygium surgery showed a decreasing trend.
- Majority of cases were done under local anaesthesia (93.1% in 2012). The preferred type of local anesthesia was topical (61.1% in 2012).
- The use of topical anesthesia has increased from 11.7% in 2002 to 61.1% in 2012.
- The use of retrobulbar anesthesia has decreased from 25.9% in 2002 to 2.2% in 2012.
- There is a decrease in the use of oral sedation (33.3% in 2002 to 6.0% in 2012).
- Majority of the patient operated had IOL implantation (98.5% in 2012). Among these patients who had IOL, 95.9% had posterior chamber IOL.

4. Intra-operative Complications
- The percentage of intra-operative complication decreased from 5.8% in 2011 to 5.2% in 2012
- PCR decreases from 3.1% in 2011 to 2.7% in 2012. It showed a decreasing trend over the years.
- Intra-op complication was seen among 48.3% of patients who had phaco converted to ECCE and 42.6% who had ICCE in 2012.
- In 2012, the percentage of intra-operative complication was higher in cataract surgeries performed by MO (8.0%), followed by gazetting specialists (7.9%) as compared to specialist (4.8%). For phaco surgeries, MO (6.2%), gazetting specialists (5.5%) and specialist (3.2%).

5. Cataract Surgery Outcome
- In average, more than 85.0% of patient registered to CSR had cataract surgery outcome data.
- The percentage of patients with post-operative endophthalmitis declined from 0.2% in 2002 (25 patients) to 0.04% in 2012 (13 patients)
- The percentage of patients with unplanned return to OT initially increased over the years, from 0.34% in 2004 to 0.53% in 2009, but it declined in 2010 onwards.

- Iris prolapse showed a decreasing trend but wound dehiscence, high post- operative IOP and IOL related problem demonstrated an increasing trend. IOL related problem demonstrated otherwise
- In eyes without ocular co-morbidity, less than 50.0% of eyes had post-op unaided visual acuity 6/12 or better and the patterns were consistent over the years. With refraction, more than 80.0% achieved post-op vision 6/12 or better (81.0% in 2002, 89.0% in 2003, 90.0% in 2004, 84.0% in 2007, 88.0% in 2008, 90.9% in 2009, 92.0% in 2010, 92.4% in 2011 and 92.6% in 2012). This observation suggested that poor post- op unaided vision was due to refractive error and patients' vision could be improved with glasses.
- Patients who had phaco had better post-op visual outcome when compared to other type of surgeries. 94.2% of phaco patients had refracted vision of 6/12 or better in 2012 as compared to ECCE (84.1%), phaco convert to ECCE (73.6%), lens aspiration (87.9%) and ICCE (65.0%).
- Post-op visual outcome improved over the years. Refracted visual outcome of 6/12 or better among phaco patient improved from 87.0% in 2002 to 94.2% in 2012 and among ECCE patients from 78.0% in 2002 to 84.1% in 2012.
- In all type of surgeries, visual outcome became less favourable when there were intra-operative complications.
- The post-op visual outcomes within 1 week to 3 months was better in eyes with IOL implantation compared to non IOL, in eyes with foldable IOL and IOL made of acrylic.
- The main contributing factor for eyes with post-operative refracted VA worse than 6/12 was pre- existing ocular co-morbidity followed by high astigmatism and posterior capsule opacification.
- When patients with preexisting ocular co-morbidity were excluded from analysis, high astigmatism followed by preexisting ocular co-morbidity (not detected preoperatively) were the major causes of poor visual outcome.
- In 2012, the choice of IOL power was aimed towards targeted refraction of -0.4D. However, post- operative actual refraction was -0.3D for all eyes, -0.6D for phaco eyes, and -0.9D for ECCE eyes. Thus, eyes which had undergone ECCE had more myopic shift than eyes which had phaco.
- In 2012, there was disparity between the targeted and the actual refraction. 29.0% of eyes had a different in target and actual refraction of between 0 and -0.5D, and 22.1% had a different of between 0 to +0.5D.
- When analysed by SDPs, the results were varied. Some SDP did not achieve the difference of actual from target refraction of within +1.0D and -1.0D in all the eyes operated in 2012

RETINOBLASTOMA REGISTRY

CATARACT SURGERY REGISTRY

1. **Stock and Flow**
   - A total of 119 patients registered, of which 11 patients were diagnosed in 2012.

2. **Patients Demography**
   - Mean age at presentation was 2.2 years.
   - Youngest age was 3 weeks and the oldest was 10.2 years.
   - About a third (30.3%) of these patients was in the age group of 13 to 24 months and 26.1% were less than 12 months at presentation.
   - More boys (56.3%) than girls were affected.
   - Majority were of Malay ethnicity (54.6%), followed by Chinese (17.7%) and Indians (8.4%).

3. **Ocular History and Presentation**
   - The most common presentation was leukocoria.
   - Mean duration of disease from onset of symptoms to presentation was 4.5 months with the majority (80.2%) within 1 to 6 months.
   - 43 patients (33.4%) had bilateral disease.
   - 1 patient had positive family history of retinoblastoma.

4. **Investigation and Classification**
   - The presence of calcified mass was detected in 75.9% by CT scan.
   - In patients who underwent MRI, 12.3% showed presence of mass but only 9.3% had calcification.
   - Extraocular extension detected by CT scan in 10.5% of eyes and by MRI in 3.1% of eyes, the majority involved the optic pathway.
   - Two-thirds (61.7%) of the patients presented with Group E Retinoblastoma.

5. **Management**
   - 97.3% of patients had systemic chemotherapy with a mean of 7.3 cycles (maximum 15 chemotherapy cycles).

- 6 patients had subtenon injection of chemotherapy combined with systemic chemotheraphy
- 60 affected eyes out of 76 eyes (78.9%) with unilateral RB were enucleated with 44.7% of these eyes showed histopathological extension outside eyeball.
- Among eyes with bilateral involvement, 41.9% of eyes were enucleated, 5 (5.8%) patients had external beam radiotherapy

CHAPTER 1

CATARACT SURGERY REGISTRY 2012

Contributing Editors

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CHAPTER 1: CATARACT SURGERY 2012

1.1 STOCK AND FLOW

Table 1.1(a): Stock and Flow

Year	2002		2003		2004		2007		2008		2009	
Number of SDP	25*		32*		33*		32		36		36	
Total no. of cataract surgery registered to CSR	12798		16815		18392		18426		21496		24438	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Cataract surgery with visual outcome records	12512	97.7	14683	87.3	6228	33.9	15786	85.7	19063	88.7	20590	84.3

2010		2011		2012	
36		36		36	
28506		30611		32473	
n	**%**	**n**	**%**	**n**	**%**
24521	86.0	27219	88.9	28589	88.0

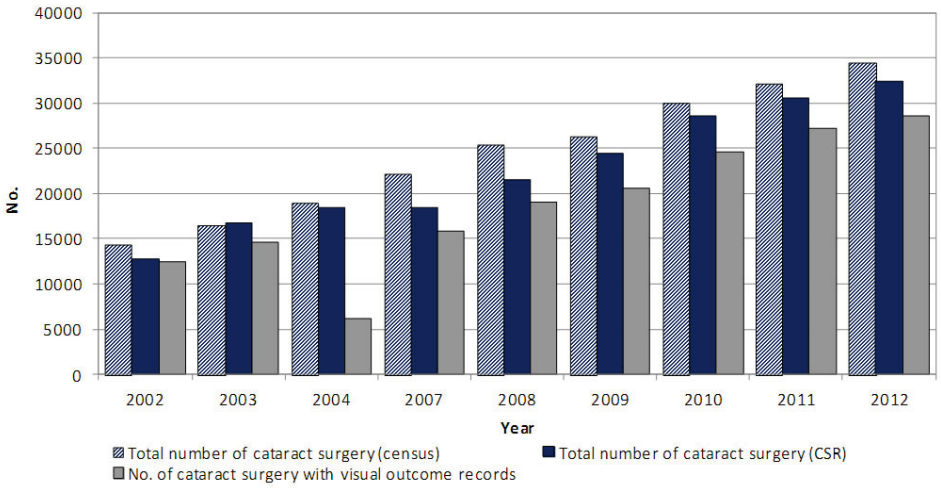
**2002, 2003 and 2004 included private centre and University Hospital*

The CSR ascertainment in 2012 was slightly lower than the year before.

Table 1.1(b): Ascertainment for MOH Hosp 1

Year	2002	2003	2004	2007	2008	2009	2010	2011	2012
Total number of cataract surgery performed at MOH Hospitals (Source: MOH census returns)	14316	16498	18884	22051	25393	26274	29873	32099	34363
Total number of cataract surgery performed at MOH hospitals and registered to CSR	12552	16039	17536	18426	21496	24438	28506	30611	32473
Ascertainment (%)	87.6%	97.2%	92.9%	83.6%	84.6%	93.0%	95.4%	95.4%	94.5%

Figure 1.1(a): Stock and flow



Hospital Keningau, Kuala Krai, Kota Bharu and Pulau Pinang had poor CSR submission.
Hospital Ipoh, Kota Bharu, Kuala Lumpur and Johor Bharu had poor outcome form submission.
Hospital Tawau had post-op refraction data submission.

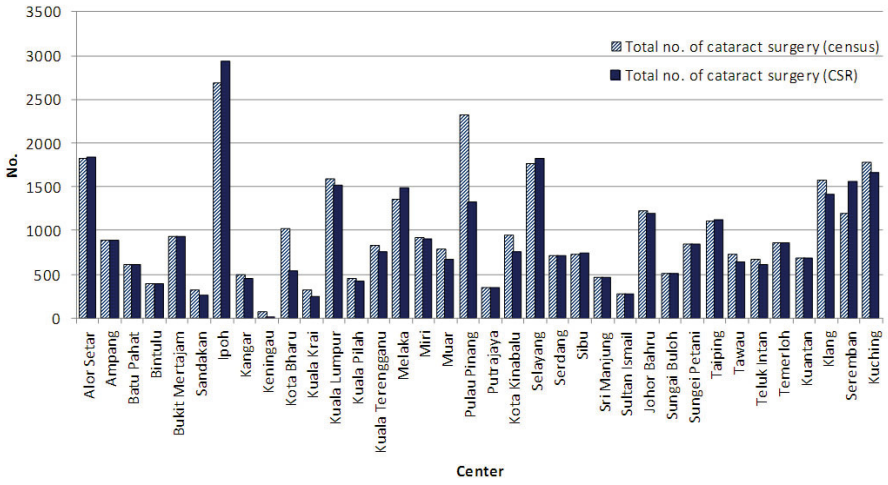
Table 1.1(c): Ascertainment for CSR by SDP in 2012

	Ascertainment								
	Total no. of cataract surgery (based on census) (a)	Total no. of cataract surgery registered to CSR (based on operative record) (b)	Total no. of outcome form submitted (c)	Total no. of outcome form with unaided vision (d)	Total no. of outcome form with refracted vision (e)	% Ascertainment for CSR (b/a*100)	% Ascertainment for Outcome form submitted (c/b*100)	% Ascertainment for Outcome with unaided vision (d/c*100)	% Ascertainment for Outcome with refracted vision (e/c*100)
All Centres	34363	32473	30007	28589	25505	94.5	92.4	95.3	85.0
Alor Setar	1831	1835	1834	1719	1553	100.2	99.9	93.7	84.7
Ampang	896	896	896	819	791	100.0	100.0	91.4	88.3
Batu Pahat	609	608	608	505	513	99.8	100.0	83.1	84.4
Bintulu	402	391	383	350	263	97.3	98.0	91.4	68.7
Bukit Mertajam	943	928	893	786	764	98.4	96.2	88.0	85.6
Ipoh	2683	2932	1942	1884	1612	109.3	66.2	97.0	83.0
Johor Bahru	1225	1195	928	862	852	97.6	77.7	92.9	91.8
Kangar	492	454	436	431	397	92.3	96.0	98.9	91.1
Keningau	71	17	16	16	16	23.9	94.1	100.0	100.0
Klang	1575	1411	1410	1349	908	89.6	99.9	95.7	64.4
Kota Bharu	1019	545	388	384	381	53.5	71.2	99.0	98.2
Kota Kinabalu	947	763	760	752	673	80.6	99.6	98.9	88.6
Kuala Krai	329	247	237	229	194	75.1	96.0	96.6	81.9
Kuala Lumpur	1599	1516	930	896	886	94.8	61.3	96.3	95.3
Kuala Pilah	454	429	422	397	396	94.5	98.4	94.1	93.8
Kuala Terengganu	837	765	761	760	751	91.4	99.5	99.9	98.7
Kuantan	682	684	683	635	528	100.3	99.9	93.0	77.3
Kuching	1777	1657	1657	1537	1214	93.2	100.0	92.8	73.3
Melaka	1356	1488	1488	1377	1238	109.7	100.0	92.5	83.2

('cont.)

Miri	924	901	901	900	890	97.5	100.0	99.9	98.8
Muar	792	665	586	558	549	84.0	88.1	95.2	93.7
Pulau Pinang	2327	1330	1310	1265	1209	57.2	98.5	96.6	92.3
Putrajaya	355	355	355	354	335	100.0	100.0	99.7	94.4
Sandakan	323	265	265	234	220	82.0	100.0	88.3	83.0
Selayang	1771	1829	1829	1776	1544	103.3	100.0	97.1	84.4
Serdang	721	709	709	702	607	98.3	100.0	99.0	85.6
Seremban	1203	1559	1401	1397	1310	129.6	89.9	99.7	93.5
Sibu	727	745	737	675	637	102.5	98.9	91.6	86.4
Sri Manjung	472	466	448	434	421	98.7	96.1	96.9	94.0
Sultan Ismail	279	279	278	271	271	100.0	99.6	97.5	97.5
Sungai Buloh	510	514	514	496	447	100.8	100.0	96.5	87.0
Sungei Petani	845	845	844	823	663	100.0	99.9	97.5	78.6
Taiping	1118	1118	1118	1101	1015	100.0	100.0	98.5	90.8
Tawau	727	648	612	592	210	89.1	94.4	96.7	34.3
Teluk Intan	672	616	569	526	517	91.7	92.4	92.4	90.9
Temerloh	870	868	859	797	730	99.8	99.0	92.8	85.0

Figure 1.1(c): Ascertainment for CSR by SDP in 2012



1.2 CHARACTERISTICS OF PATIENT

1.2.1 Patient Demography

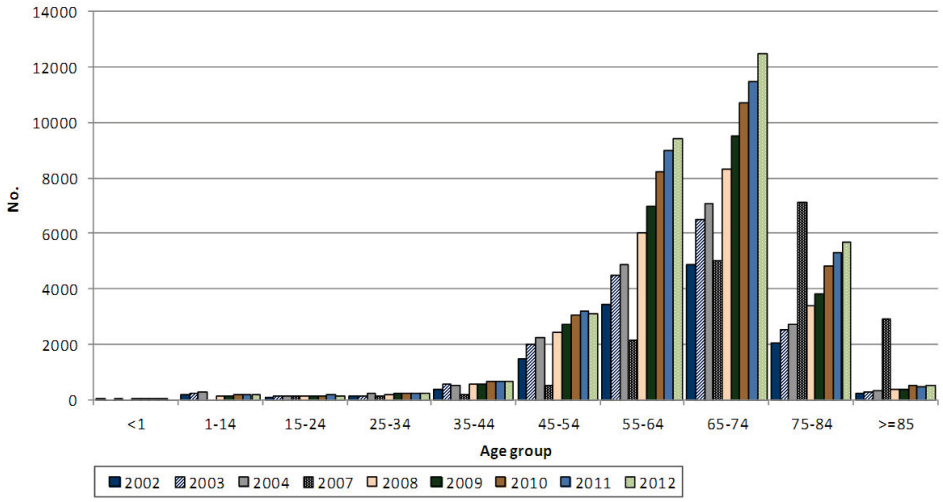
The mean age for patients presented for cataract surgery was 65. A larger percentage of patients presented within the age group of 65-74 years old except for the year 2007 (75-84 years old). There was no marked gender difference over the years.

Table 1.2.1: Age and Gender Distributions, CSR 2002-2012

Year	2002*		2003*		2004*		2007		2008		2009		2010		2011		2012	
Total number of cataract surgery	12798		16815		18392		18426		21496		24438		28506		30611		32473	
Age																		
Mean (years)	64.0		63.7		63.5		64.3		64.6		64.7		65.0		65.0		65	
Median (years)	66		66		66		66		66		66		66		66		66	
Minimum (month)	1.0		1.0		1.0		1.0		1.0		1.2		1.8		2.6		0.8	
Maximum (years)	97		100		104		97		102		99		99		104		99	
% Distribution																		
Age group, years	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**N**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
<1	21	0.2	23	0.1	50	0.3	18	0.1	34	0.2	17	0.1	7	0.0	11	0.0	14	0.0
1-14	171	1.3	202	1.2	266	1.5	50	0.3	116	0.5	148	0.6	170	0.6	169	0.6	192	0.6
15-24	101	0.8	139	0.8	134	0.7	141	0.8	133	0.6	129	0.5	143	0.5	175	0.6	139	0.4
25-34	115	0.9	147	0.9	207	1.1	120	0.7	167	0.8	210	0.9	227	0.8	215	0.7	242	0.8
35-44	376	2.9	575	3.4	526	2.9	157	0.9	539	2.5	557	2.3	655	2.3	632	2.1	670	2.1
45-54	1472	11.5	1974	11.7	2238	12.2	499	2.7	2407	11.2	2697	11.0	3043	10.7	3170	10.4	3077	9.5
55-64	3415	26.7	4496	26.7	4882	26.5	2135	11.6	6037	28.1	6956	28.5	8225	28.9	8987	29.4	9447	29.1
65-74	4880	38.1	6480	38.5	7051	38.3	5031	27.3	8307	38.6	9534	39.0	10720	37.6	11479	37.5	12474	38.4
75-84	2041	16.0	2511	14.9	2722	14.8	7103	38.6	3391	15.8	3802	15.6	4805	16.9	5294	17.3	5707	17.6
>=85	206	1.6	264	1.6	316	1.7	2889	15.7	344	1.6	388	1.6	509	1.8	479	1.6	511	1.6
Missing	NA	-	4	0.0	NA	-	283	1.5	21	0.1	0	0.0	2	0.0	0	0.0	0	0.0
Gender																		
Male	6308	49.3	8397	49.9	9034	49.1	8820	47.9	10295	47.9	11829	48.4	13631	47.8	14696	48.0	15506	47.8
Female	6490	50.7	8418	50.1	9358	50.9	9606	52.1	11168	52.0	12609	51.6	14871	52.2	15915	52.0	16966	52.3
Missing	0	0	0	0	0	0	0	0	33	0.2	0	0	4	0.0	0	0.0	1	0.0

**2002, 2003 and 2004 included private centres and university hospitals*

Figure 1.2.1: Age Distribution, CSR 2002-2012



1.2.2 Medical history

1.2.2.1 Systemic co-morbidity

The common systemic co-morbidity encountered in patients who came for cataract surgery were hypertension, diabetes mellitus, ischemic heart disease and renal failure The overall percentage of such patients showed an increasing trend over the years. The percentages of patients with hypertension and diabetes mellitus were increasing.

Table 1.2.2.1: Distribution of Systemic Co-Morbidity, CSR 2002-2012

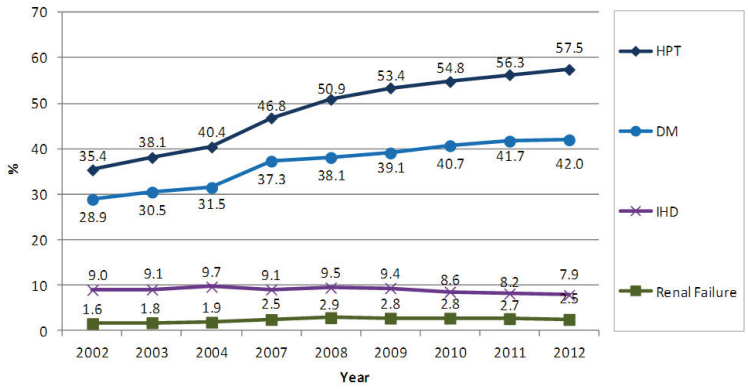
Year	2002	2003	2004	2007	2008	2009	2010	2011	2012
No of patients (N)	**12798**	**16815**	**18392**	**18426**	**21496**	**24438**	**28506**	**30611**	**32473**
Percentage of patients with any systemic co-morbidity	56.8	59.1	59.9	67.5	68.7	71.0	70.6	72.0	72.4

Percentage of patients with specific systemic co-morbidity

	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
1. Hypertension	4529	35.4	6408	38.1	7425	40.4	8630	46.8	10932	50.9	13050	53.4	15630	54.8	17238	56.3	18655	57.5
2. Diabetes Mellitus	3694	28.9	5136	30.5	5800	31.5	6869	37.3	8188	38.1	9556	39.1	11598	40.7	12778	41.7	13635	42.0
3. Ischaemic Heart Disease	1148	9.0	1538	9.1	1782	9.7	1668	9.1	2037	9.5	2294	9.4	2441	8.6	2515	8.2	2565	7.9
4. Renal Failure	211	1.6	303	1.8	351	1.9	461	2.5	624	2.9	679	2.8	804	2.8	814	2.7	822	2.5
5. Cerebrovascular accident	106	0.8	165	1.0	174	0.9	0	0.0	29	0.1	305	1.2	302	1.1	380	1.2	352	1.1
6. COAD/Asthma	669	5.2	907	5.4	955	5.2	798	4.3	955	4.4	1039	4.3	1024	3.6	1088	3.6	1104	3.4
7. Others	935	7.3	2409	7.2	861	4.7	1399	7.6	1974	9.2	2460	10.1	2891	10.1	3538	11.6	3916	12.1

Number or percentage may be more than total or 100% as patients might have more than one systemic co-morbidity

Figure 1.2.2.1: Percentage of Patients with Specific Ocular Co-morbidity, CSR 2002-2012



1.2.2.2 Causes of cataract

Majority of the patients presented with primary cataract. In eyes with primary cataract, senile or age-related cataract was the commonest. In eyes with secondary cataract, trauma was the commonest. This pattern remained unchanged over the years.

Table 1.2.2.2: Causes of Cataract, CSR 2002-2010

Year	**2002**		**2003**		**2004**		**2007**		**2008**		**2009**		**2010**		**2011**		**2012**	
No of patients (N)	**12798**		**16815**		**18392**		**18426**		**21496**		**24438**		**28506**		**30611**		**32473**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Primary cataract	12294	96.1	16161	96.1	17697	96.2	17410	94.4	20329	94.6	23117	94.6	26981	94.7	29050	94.9	30813	94.9
Secondary cataract	499	3.9	654	3.9	695	3.8	557	3.0	530	2.5	587	2.4	660	2.3	764	2.5	608	1.9
Missing value	-	-	-	-	-	-	460	2.5	637	3.0	734	3.0	865	3.0	797	2.6	1052	3.2
Primary Cataract (N)	12294		16161		17697		17410		20329		23117		26981		29050		30813	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Senile/age related	11960	97.3	15623	96.7	17290	97.7	17075	98.1	19995	98.4	22782	98.6	26671	98.9	28736	98.9	30299	98.3
Congenital	130	1.1	175	1.1	173	1.0	129	0.7	124	0.6	124	0.5	44	0.2	34	0.1	57	0.2
Development	155	1.3	317	2.0	209	1.2	169	1.0	156	0.8	166	0.7	236	0.9	249	0.9	419	1.4
Others	49	0.4	46	0.3	25	0.1	37	0.2	54	0.3	45	0.2	30	0.1	31	0.1	38	0.1
Secondary Cataract (N)	499		654		695		557		530		587		660		764		608	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Trauma	325	65.1	399	61	440	63.3	355	63.7	330	62.3	330	56.2	346	52.4	383	50.1	313	51.5
Drug induced	53	10.6	81	12.4	84	12.1	55	9.9	76	14.3	79	13.5	64	9.7	60	7.9	46	7.6
Surgery induced	23	4.6	67	10.2	56	8.1	82	14.7	39	7.4	107	18.2	93	14.1	101	13.2	122	20.1
Others	98	19.6	107	16.4	115	16.5	65	11.7	85	16.0	71	12.1	157	23.8	220	28.8	127	20.9

1.2.2.3 First or Fellow Eye Surgery

Two third of patients were operated for the first time. Only one third of the patients returned for second surgery (for the fellow eye). This pattern remained unchanged since 2002. This was despite the declining percentage of eyes with intra-operative complications during surgery in the previous eye surgery (from 24.4% in 2002 to 2.6% in 2012).

Overall data showed that, the percentage of patients who had fellow eye surgery in the same year showed an initial increasing trend (from 4.5% in 2002 to 11.1% in 2009). But the percentage started to decline thereafter (7.5% in 2010 to 7.8% in 2012). The mean duration between the first and fellow eye showed an increasing trend, from 16 months in 2002 to 41 months in 2012.

Table 1.2.2.3: First or Fellow Eye Surgery, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
No of patients (N)	**12798**		**16815**		**18392**		**18426**		**21496**		**24438**		**28506**		**30611**		**32473**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
First eye surgery	8958	70.0	11851	70.5	12911	70.2	12810	69.5	14610	68.0	16446	67.3	18919	66.4	20466	66.9	21539	66.3
Fellow eye surgery	3840	30.0	4964	29.5	5481	29.8	5559	30.2	6849	31.9	7938	32.5	9441	33.1	10088	33.0	10896	33.6
Missing	NA	-	NA	-	NA	-	57	0.3	37	0.2	54	0.2	146	0.5	57	0.2	38	0.1
Patients who had second surgery in the same year	573	4.5	713	4.2	825	4.5	759	4.1	1135	5.3	2702	11.1	2129	7.5	2246	7.3	2545	7.8
Period of time between first and fellow eye surgery (months)																		
N	2716		3322		3673		4860		5953		7353		9378		10009		10784	
Mean	16.7		16.3		16.9		23.4		22.0		24.4		36.1		39.2		40.9	
SD	18.0		17.1		18.8		24.3		22.8		31.5		43.6		49.3		52.4	
Median	10.3		10.1		10.5		13.3		13.1		12.1		15.1		15.4		14.7	
Patients who had cataract surgery before	3840		4964		5481		5559		6849		7938		9441		10008		10896	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Eyes with intra-operative complications during surgery in the first eye	939	24.4	1179	23.8	1235	22.5	313	5.6	298	4.4	346	4.4	324	3.4	302	3.0	281	2.6

1.2.2.4 Past Ocular Surgery of the Operated Eye

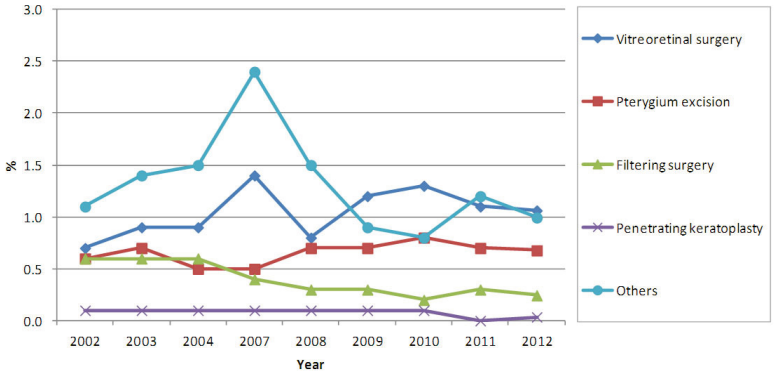
Most eyes to be operated had no prior ocular surgery. The commonest past ocular surgery was vitreoretinal (VR) surgery. The percentage of eye with past history of filtering surgery and penetrating keratoplasty remained low.

Table 1.2.2.4: Past Ocular Surgery of the Operated Eye, CSR 2002-2012

Year	**2002**		**2003**		**2004**		**2007**		**2008**		**2009**		**2010**		**2011**		**2012**	
No. of patients	**12798**		**16815**		**18392**		**18426**		**21496**		**24438**		**28506**		**30611**		**32473**	
No. of eyes with past ocular surgery record (N)	12798		16782		18372		17379		20674		23109		26711		28349		30687	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Patients with no past ocular surgery	12414	97.0	16178	96.4	17711	96.4	16545	95.2	20010	96.8	22387	96.9	25870	96.9	27400	96.7	29770	97.0
Vitreoretinal surgery	8959	0.7	1510	0.9	1653	0.9	261	1.4	161	0.8	267	1.2	352	1.3	325	1.1	326	1.1
Pterygium excision	77	0.6	1177	0.7	92	0.5	869	0.5	140	0.7	164	0.7	21	0.1	11	0.0	208	0.7
Filtering surgery	77	0.6	1007	0.6	1102	0.6	1043	0.4	57	0.3	69	0.3	65	0.2	80	0.3	75	0.2
Penetrating keratoplasty	13	0.1	168	0.1	184	0.1	1738	0.1	14	0.1	18	0.1	212	0.8	207	0.7	11	0.0
Others	1408	1.1	235	1.4	276	1.5	417	2.4	304	1.5	216	0.9	203	0.8	332	1.2	305	1.0

Number or percentage may be more than total or 100% as patients might have more than one past ocular surgery

Figure 1.2.2.4 Percent Distribution of Past Ocular Surgery of the Operated Eye, CSR 2002-2012



1.2.2.5 Preexisting Ocular Co-morbidity

One third of the eyes to be operated had ocular co-morbidities. The commonest was diabetic retinopathy (DR) in any forms then followed by glaucoma. The percentage of eyes with DR appeared to be decreasing from 2010 onwards. The percentage of eyes presented with lens related complications (phacolytic and phacomorphic) appeared to be decreasing.

Table 1.2.2.5: Distribution of Pre-existing Ocular Co-Morbidity, CSR 2002-2012

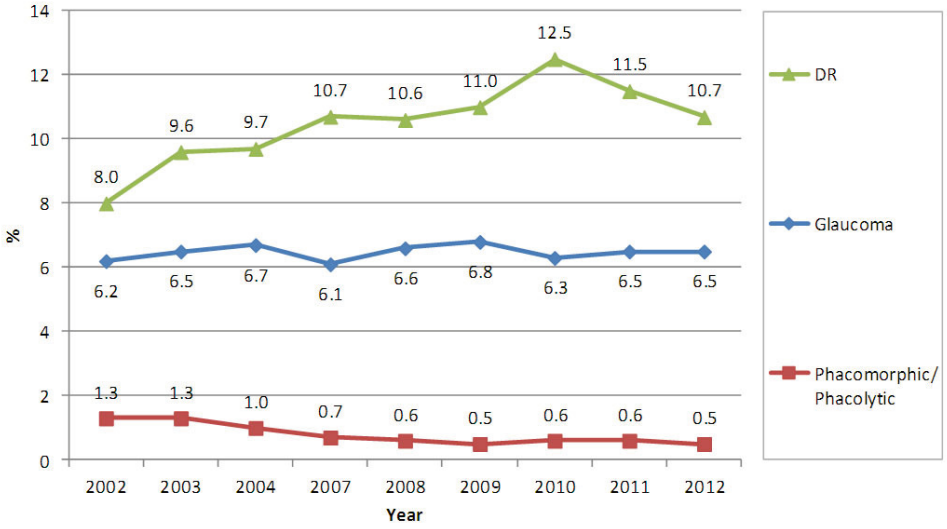
Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
No of patients (N)	**12798**		**16815**		**18392**		**18426**		**21496**		**24438**		**28506**		**30611**		**32473**	
	N	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Patients with any ocular co-morbidity	3691	28.8	6068	36.1	6993	38.0	5973	32.4	7269	33.8	9442	38.6	11977	42.0	12756	41.7	13024	40.1
Patients with specific ocular co-morbidity																		
Anterior segment																		
1. Glaucoma	795	6.2	1096	6.5	1238	6.7	1126	6.1	1408	6.6	1655	6.8	1799	6.3	1976	6.5	2095	6.5
2. Pterygium involving the cornea	342	2.7	393	2.3	349	1.9	288	1.6	319	1.5	345	1.4	387	1.4	405	1.3	405	1.3
3. Pseudoexfoliation	184	1.4	254	1.5	209	1.1	221	1.2	253	1.2	318	1.3	289	1.0	312	1.0	365	1.1
4. Corneal opacity	184	1.4	200	1.2	183	1.0	176	1.0	194	0.9	231	0.9	251	0.9	299	1.0	311	1.0
5. Chronic uveitis	54	0.4	48	0.3	80	0.4	81	0.4	63	0.3	80	0.3	89	0.3	98	0.3	70	0.2
Len related complication																		
1. Phacomorphic	106	0.8	152	0.9	118	0.6	89	0.5	85	0.4	83	0.3	120	0.4	114	0.4	138	0.4
2. Phacolytic	61	0.5	63	0.4	79	0.4	44	0.2	45	0.2	47	0.2	59	0.2	69	0.2	41	0.1
3. Subluxated/Disclosed	87	0.7	110	0.7	86	0.5	101	0.5	89	0.4	83	0.3	95	0.3	119	0.4	120	0.4
Posterior segment																		
1. Diabetic Retinopathy: Non Proliferative	642	5.0	965	5.7	956	5.2	1125	6.1	1273	5.9	916	3.7	996	3.5	1783	5.8	1915	5.9
2. Diabetic Retinopathy: Proliferative	218	1.7	366	2.2	510	2.8	465	2.5	614	2.9	1307	5.3	1973	6.9	1031	3.4	933	2.9
3. Diabetic Retinopathy: CSME*	96	0.8	177	1.1	163	0.9	198	1.1	221	1.0	278	1.1	346	1.2	384	1.3	368	1.1
4. Diabetic Retinopathy: Vitreous haemorrhage	66	0.5	106	0.6	138	0.8	176	1.0	165	0.8	230	0.9	250	0.9	296	1.0	258	0.8
5. ARMD	145	1.1	215	1.3	308	1.7	231	1.3	259	1.2	387	1.6	462	1.6	494	1.6	521	1.6
6. Other macular disease (includes hole or scar)	77	0.6	106	0.6	140	0.8	118	0.6	148	0.7	188	0.8	277	1.0	251	0.8	308	1.0
7. Optic nerve disease, any type	43	0.3	76	0.5	78	0.4	71	0.4	69	0.3	118	0.5	149	0.5	123	0.4	182	0.6
8. Retinal detachment	70	0.5	177	1.1	247	1.3	218	1.2	204	0.9	294	1.2	308	1.1	432	1.4	341	1.1

('cont.)

9. Cannot be assessed	884	6.9	1962	11.7	2290	12.5	1357	7.4	2092	9.7	3139	12.8	4457	15.6	5053	16.5	4914	15.1
Miscellaneous																		
1. Amblyopia	64	0.5	61	0.4	78	0.4	71	0.4	65	0.3	62	0.3	75	0.3	99	0.3	98	0.3
2. Significant previous eye trauma	52	0.4	80	0.5	96	0.5	41	0.2	39	0.2	39	0.2	51	0.2	45	0.2	49	0.1
3. Pre-existing non glaucoma field defect	2	0.0	3	0.0	4	0.0	4	0.0	2	0.0	6	0.0	3	0.0	4	0.0	6	0.0
4. Others	380	3.0	827	4.9	1153	6.3	668	3.6	755	3.5	1053	4.3	1321	4.6	1505	4.9	1729	5.3

**CSME=Clinically Significant Macular Oedema*
Number or percentage may be more than total or 100% as patients might have more than one ocular co-morbidity

Figure 1.2.2.5: Percent Distribution of Eyes with Diabetic Retinopathy, Glaucoma or Lens-induced Glaucoma, CSR 2002-2012



1.2.2.6 Pre-operative Vision

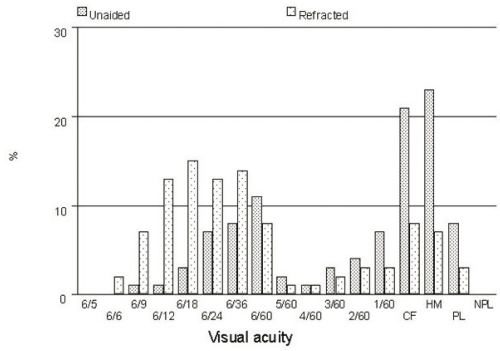
In each year, more than 70% of all patients did not have refraction pre-operatively. The proportion of eyes operated (with unaided vision) in the category of 2/60-NPL appeared to be decreasing but the percentages were still high. The bimodal pattern of pre-operative vision remained the same over the years. The first peak was at 6/18 and the second peak was at CF/HM. There was a low proportion of patients between 5/60 to1/60.

Table 1.2.2.6: Distribution of Pre-Operative Vision, CSR 2002-2012

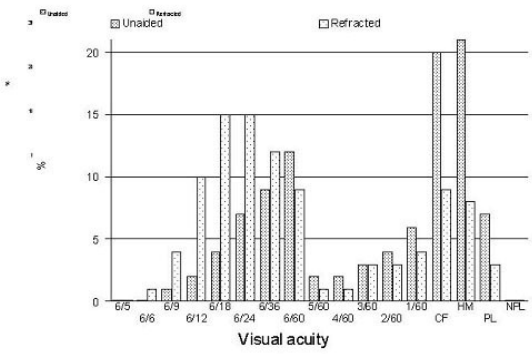
Year		2002		2003		2004		2007		2008		2009		2010		2011		2012	
No. of patients (N)		**12798**		**16815**		**18392**		**18426**		**21496**		**24438**		**28506**		**30611**		**32473**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Patients with unaided VA		12691	99.2	16723	99.4	18222	99.1	18356	99.6	21212	98.7	23796	97.4	27977	98.1	30018	98.1	31833	98.0
Patients with refracted VA		700	5.5	2104	12.6	2319	12.7	5071	27.8	5683	26.4	5150	21.1	7895	27.7	7932	25.9	7315	22.5
Patients with no refraction		12098	94.5	14711	87.5	16073	87.4	13355	72.5	15813	73.6	19288	78.9	20611	72.3	22679	74.1	25158	77.5
6/5-6/12	Unaided	281	2.2	396	2.4	523	2.9	602	3.3	646	3.0	788	3.3	1016	3.6	1133	3.8	1397	4.4
	Refracted	155	22.1	327	15.5	396	17.1	678	13.3	935	16.4	944	18.3	1474	18.7	1712	21.6	1840	25.2
6/18-3/60	Unaided	4465	35.2	6440	38.5	7235	39.7	7734	42.4	9375	44.2	10849	45.6	13073	46.7	14569	48.5	15923	50.0
	Refracted	374	53.4	1198	56.9	1315	56.7	2375	46.9	2892	50.9	2796	54.3	4324	54.8	4536	57.2	4262	58.3
2/60-NPL	Unaided	7945	62.6	9887	59.1	10464	57.4	9920	54.3	11180	52.7	12159	51.1	13888	49.6	14316	47.7	14513	45.6
	Refracted	171	24.4	579	27.5	608	26.2	2018	39.8	1845	32.5	1410	27.4	2097	26.6	1684	21.2	1213	16.6
Unaided VA for patient with no refraction																			
n								13355		15813		19288		20611		22679		25158	
6/5 – 6/12								396	3.0	414	2.6	553	2.9	651	3.2	702	3.1	887	3.5
6/18 – 3/60								5133	38.4	6149	38.9	7828	40.5	8239	40.0	9350	41.2	10948	43.5
2/60 – NPL								7666	57.4	9004	56.9	10412	54.0	11302	54.8	12134	53.5	12777	50.8

Figure 1.2.2.6(a): Distribution of Pre-Operative Vision (Unaided/presenting and refracted), CSR 2002-2012

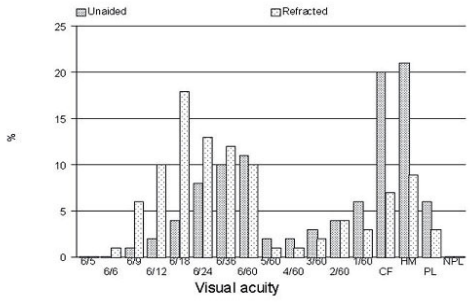
2002



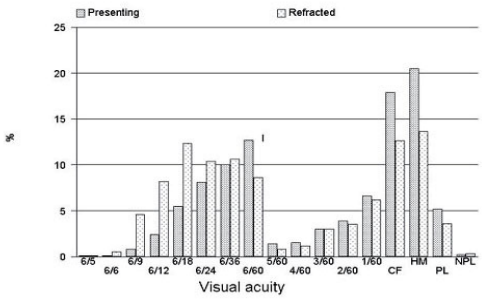
2003



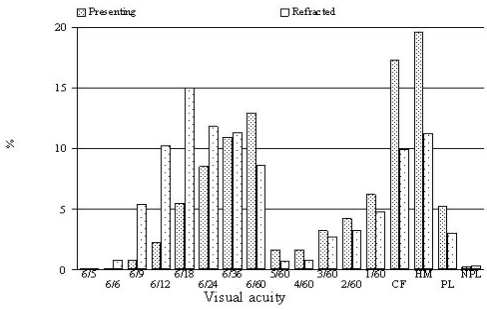
2004



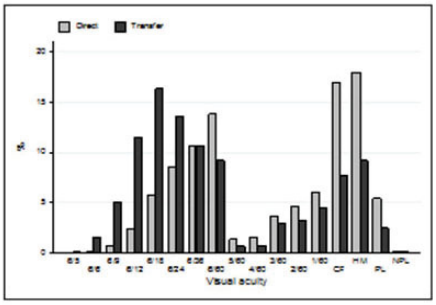
2007



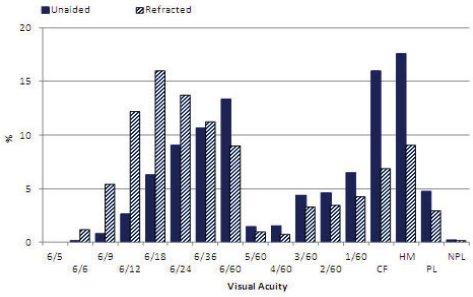
2008



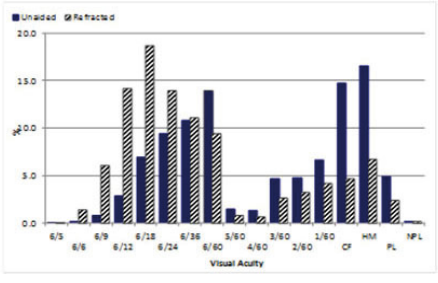
2009



2010



2011



2012

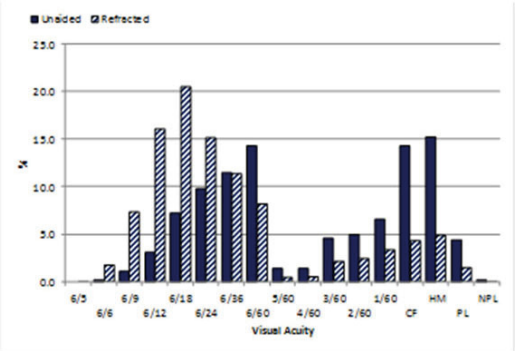


Figure 1.2.2.6(b): Distribution of Pre-Operative Vision (Unaided/presenting), CSR 2002-2012

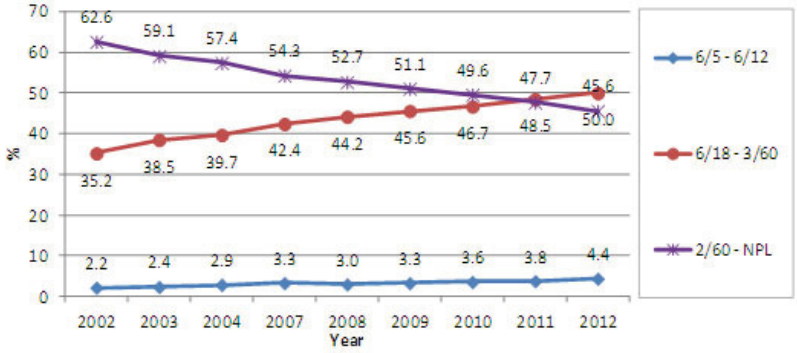
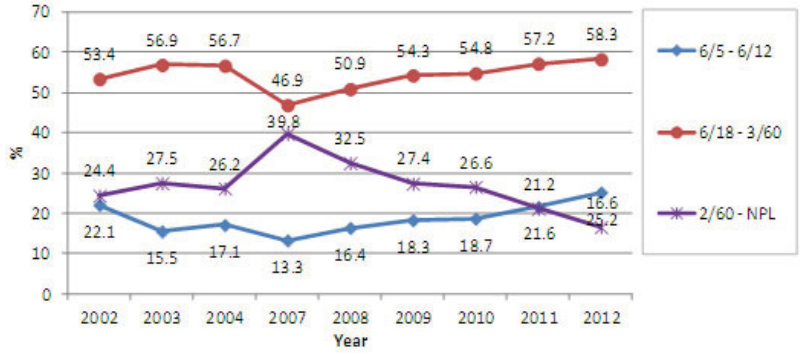


Figure 1.2.2.6(c): Distribution of Pre-Operative Vision (Refracted), CSR 2002-2012



1.2.2.7 Target Refractive Power

The mean target refractive power in 2012 was -0.4D (SD 0.4), with minimum at -8.0D and maximum at +9.0D. The percentage of eyes aimed to have target refraction within (-0.5 to 0 D) increased to 66.9% in 2012. Overall data demonstrated that most surgeons participated in CSR aimed to give patient either emmetropic or slightly myopic refraction post- operatively.

Table 1.2.2.7(a): Distribution of Target Refractive Power, CSR 2007-2011

Year	2007	2008	2009	2010	2011	2012
Operated eye (N)	11876	15083	20279	24524	25885	26059
Mean	-0.5	-0.1	-0.4	-0.4	-0.4	-0.4
SD	0.4	0.4	0.4	0.4	0.3	0.4
Median	-0.5	-0.5	-0.5	-0.4	-0.4	-0.4
Minimum	-9	-9.9	-9.9	-9.1	-9.1	-8
Maximum	5	9.5	5.9	6.0	4.8	9

Table 1.2.2.7(b): Distribution of Target Refractive Power, CSR 2007-2011

Year	2007		2008		2009		2010		2011		2012	
Target refractive power (Dioptres)	**Operated eye N=11876**		**Operated eye N=15083**		**Operated eye N=20279**		**Operated eye N=24524**		**Operated eye N=24524**		**Operated eye N=24524**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
-10-<(-9.5)	0	0	1	0	2	0	0	0	0	0.0	0	0.0
-9.5-<(-9)	2	0	1	0	1	0	2	0	1	0.0	0	0.0
-9-<(-8.5)	0	0	1	0	0	0	0	0	0	0.0	0	0.0
-8.5-<(-8)	1	0	1	0	0	0	0	0	0	0.0	0	0.0
-8-<(-7.5)	2	0	3	0	1	0	1	0	0	0.0	1	0.0
-7.5-<(-7)	1	0	0	0	1	0	1	0	0	0.0	2	0.0
-7-<(-6.5)	3	0	1	0	0	0	1	0	1	0.0	1	0.0
-6.5-<(-5)	1	0	2	0	7	0	4	0	10	0.0	10	0.0
-5-<(-4.5)	3	0	4	0	7	0	3	0	3	0.0	5	0.0
-4.5-<(-4)	1	0	3	0	5	0	10	0	3	0.0	5	0.0
-4-<(-3.5)	7	0.1	8	0.1	11	0.1	5	0	11	0.0	5	0.0
-3.5-<(-3)	6	0.1	7	0	11	0.1	15	0.1	12	0.1	6	0.0
-3-<(-2.5)	12	0.1	22	0.1	18	0.1	29	0.1	15	0.1	15	0.1
-2.5-<(-2)	26	0.2	21	0.1	29	0.1	33	0.1	26	0.1	38	0.2
-2-<(-1.5)	77	0.6	48	0.3	58	0.3	46	0.2	54	0.2	67	0.3
-1.5-<(-1)	414	3.5	373	2.5	260	1.3	292	1.2	201	0.8	226	0.9
-1-<(-0.5)	4299	36.2	6151	40.8	7972	39.3	7590	31.0	7507	29.0	7190	27.6
-0.5-<0	6077	51.2	7480	49.6	10604	52.3	15218	62.1	16913	65.3	17421	66.9
0-<0.5	821	6.9	731	4.8	977	4.8	920	3.8	849	3.3	629	2.4
0.5-<1	91	0.8	158	1	182	0.9	237	1.0	234	0.9	216	0.8
1-<1.5	8	0.1	31	0.2	17	0.1	23	0.1	20	0.1	32	0.1
1.5-<2	5	0	14	0.1	22	0.1	19	0.1	9	0.0	52	0.2
2-<2.5	13	0.1	10	0.1	85	0.4	69	0.3	12	0.1	123	0.5
2.5-<3	1	0	6	0	4	0	3	0	2	0.0	10	0.0
3-<3.5	1	0	2	0	2	0	0	0	1	0.0	1	0.0
3.5-<4	0	0	2	0	0	0	0	0	0	0.0	0	0.0
4-<4.5	2	0	0	0	0	0	0	0	0	0.0	1	0.0

('cont.)

Year	2007		2008		2009		2010		2011		2012	
Target refractive power (Dioptres)	**Operated eye N=11876**		**Operated eye N=15083**		**Operated eye N=20279**		**Operated eye N=24524**		**Operated eye N=24524**		**Operated eye N=24524**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
4.5-<5	1	0	1	0	1	0	1	0	1	0.0	0	0.0
5-<5.5	1	0	0	0	0	0	1	0	0	0.0	0	0.0
5.5-<6	0	0	0	0	2	0	0	0	0	0.0	0	0.0
6-<6.5	0	0	0	0	0	0	1	0	0	0.0	0	0.0
6.5-<7	0	0	0	0	0	0	0	0	0	0.0	0	0.0
7-<7.5	0	0	0	0	0	0	0	0	0	0.0	0	0.0
7.5-<8	0	0	0	0	0	0	0	0	0	0.0	0	0.0
8-<8.5	0	0	0	0	0	0	0	0	0	0.0	1	0.0
8.5-<9	0	0	0	0	0	0	0	0	0	0.0	1	0.0
9-<9.5	0	0	0	0	0	0	0	0	0	0.0	1	0.0
9.5-10	0	0	1	0	0	0	0	0	0	0.0	0	0.0

Values outside the +10D and -10D were excluded from analysis as they would skew the mean.

1.3 CATARACT SURGICAL PRACTICES

1.3.1 Number of Cataract Surgery by SDP

Majority of SDPs performed between 100-1000 cataract surgeries per year.

Table 1.3.1: Range of Cataract Surgery Registered by SDP per year, Census versus CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010	
	Census	**CSR**	**Census**	**CSR**	**Census**	**CSR**	**Census**	**CSR**	**Census**	**CSR**	**Census**	**CSR**	**Census**	**CSR**
No. of SDP	29	25	31	32	32	33	33	32	36	36	36	36	36	36
	Census	**CSR**	**Census**	**CSR**	**Census**	**CSR**	**Census**	**CSR**	**Census**	**CSR**	**Census**	**CSR**	**Census**	**CSR**
<100	4	1	1	5	2	4	1	3	1	1	1	1	1	1
100-500	13	15	11	10	14	15	15	14	15	15	12	15	10	13
501-1000	7	5	15	14	8	9	8	8	11	11	14	12	14	12
>1000	5	4	4	3	8	5	9	7	9	9	9	8	11	10

('cont.)

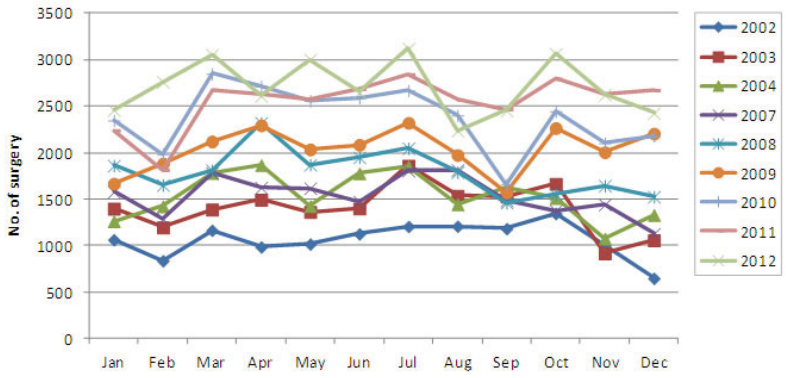
Year	2011		2012	
	Census	**CSR**	**Census**	**CSR**
No. of SDP	36	36	36	36
	Census	**CSR**	**Census**	**CSR**
<100	1	1	1	1
100-500	9	9	8	8
501-1000	16	16	15	16
>1000	10	10	12	11

1.3.2 Number of Cataract Surgery by Month

Table 1.3.2: Number of Cataract Surgery by Month, CSR 2002-2012

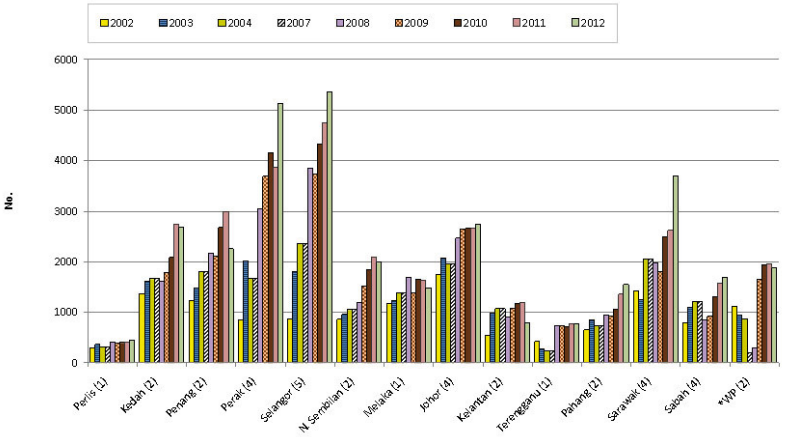
Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
No. of patients (N)	**12798**		**16815**		**18392**		**18426**		**21496**		**24438**		**28506**		**30611**		**32473**	
Month	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
January	1064	8.3	1399	8.3	1265	6.9	1579	8.6	1862	8.7	1668	6.8	2347	8.2	2241	7.3	2460	7.6
February	838	6.5	1197	7.1	1424	7.7	1290	7.0	1653	7.7	1884	7.7	1985	7.0	1815	5.9	2762	8.5
March	1166	9.1	1389	8.3	1782	9.7	1782	9.7	1812	8.4	2122	8.7	2850	10.0	2676	8.7	3055	9.4
April	986	7.7	1495	8.9	1868	10.2	1625	8.8	2321	10.8	2295	9.4	2714	9.5	2634	8.6	2612	8.0
May	1018	8.0	1364	8.1	1426	7.8	1618	8.8	1871	8.7	2036	8.3	2559	9.0	2576	8.4	3004	9.3
June	1127	8.8	1400	8.3	1778	9.7	1476	8.0	1950	9.1	2086	8.5	2591	9.1	2686	8.8	2652	8.2
July	1207	9.4	1862	11.1	1854	10.1	1808	9.8	2049	9.5	2322	9.5	2670	9.4	2845	9.3	3121	9.6
August	1210	9.5	1538	9.1	1447	7.9	1814	9.8	1791	8.3	1975	8.1	2401	8.4	2570	8.4	2237	6.9
September	1184	9.3	1530	9.1	1626	8.8	1486	8.1	1462	6.8	1572	6.4	1659	5.8	2468	8.1	2454	7.6
October	1346	10.5	1666	9.9	1513	8.2	1376	7.5	1552	7.2	2266	9.3	2447	8.6	2794	9.1	3064	9.4
November	1003	7.8	917	5.5	1077	5.9	1443	7.8	1646	7.7	2006	8.2	2102	7.4	2632	8.6	2625	8.1
December	649	5.1	1058	6.3	1332	7.2	1129	6.1	1527	7.1	2206	9.0	2181	7.6	2674	8.7	2427	7.5

Figure 1.3.2: Number of Cataract Surgeries by Month, CSR 2002-2012



1.3.3 Number of Cataract Surgery Registered to CSR by State

Figure 1.3.3: Number of Cataract Surgery Registered to CSR by State, CSR 2002-2012



**Wilayah Persekutuan in 2007 and 2008 for Putrajaya Hospital only.*

1.3.4 Surgeon Status

Specialists performed the highest number of cataract surgery followed by the medical officers (MO) and the gazetting specialists. This trend remained unchanged throughout the years. The percentage of eyes operated by the specialists appeared to be increasing corresponding to the decrease in the percentage operated by the MOs.

Table 1.3.4: Surgeon Status, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
No. of patients (N)	**12798**		**16815**		**18392**		**18426**		**21496**		**24438**		**28506**		**30611**		**32473**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Specialist	8763	68.5	12072	71.8	13165	71.6	14327	77.8	16846	78.4	19400	79.4	24216	84.9	25590	83.6	27684	85.3
Gazetting Specialist	1762	13.7	1510	9.0	1757	9.6	1276	6.9	1399	6.5	2053	8.4	1405	4.9	2487	8.1	2411	7.4
Medical Officer	2273	17.8	3233	19.2	3470	18.8	2690	14.6	2697	12.5	2750	11.3	2871	10.1	2478	8.1	2354	7.3
Missing/NA	0	0	0	0.0	0	0	133	1	554	2.6	235	1.0	14	0.1	56	0.2	24	0.1

Table 1.3.4.1: Surgeon Status for Phaco, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
No. of patients (N)	**5085**		**7674**		**9282**		**11960**		**14781**		**17717**		**21810**		**23872**		**26345**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Specialist	4511	88.7	6957	90.7	8026	86.5	10294	86.1	12458	84.3	15206	85.8	19797	90.8	20963	87.8	23291	88.4
Gazetting Specialist	456	9.0	442	5.8	688	7.4	805	6.7	882	6.0	1422	8.0	929	4.3	1845	7.7	1850	7.0
Medical Officer	118	2.3	275	3.6	568	6.1	780	8.5	1064	7.2	923	5.2	1078	4.9	1050	4.4	1182	4.5
Missing/NA	0	0.0	0	0.0	0	0.0	81	0.7	377	2.6	166	0.9	6	0.0	14	0.1	22	0.1

Table 1.3.4.2: Surgeon Status for ECCE, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
No. of patients (N)	**6914**		**8012**		**7830**		**5524**		**5627**		**5457**		**5363**		**5291**		**4784**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Specialist	3610	52.2	4198	52.4	4106	52.4	3240	58.7	3528	62.7	3133	57.4	3237	60.4	3406	64.4	3231	67.5
Gazetting Specialist	1195	17.3	945	11.8	919	11.7	391	7.1	403	7.2	516	9.5	405	7.6	513	9.7	435	9.1
Medical Officer	2109	30.5	2869	35.8	2805	35.8	1848	33.5	1555	27.6	1754	32.1	1718	32.0	1369	25.9	1116	23.3
Missing/NA	0	0.0	0	0.0	0	0.0	45	0.8	141	2.5	54	1.0	3	0.0	3	0.1	2	0.0

Table 1.3.4(a): Specialist by SDP 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	8763	68.5	12072	71.8	13165	71.6	14327	77.8	16846	78.4	19400	79.4	24216	85.0	25590	83.6	27684	85.3
Alor Setar	540	56.5	579	54.5	892	78.5	334	81.3	765	77.6	846	76.2	1376	90.1	1742	89.8	1,595	86.9
Ampang	-	-	-	-	-	-	4	100.0	200	96.2	421	97.2	491	78.3	620	87.6	809	90.3
Batu Pahat	-	-	597	96.4	510	89.8	511	91.9	500	87.3	336	55.8	290	70.6	410	74.0	262	43.1
Bintulu	-	-	-	-	-	-	-	-	25	83.3	101	81.5	219	84.9	330	99.4	389	99.5
Bukit Mertajam	-	-	518	96.1	638	94.1	620	91.0	434	89.1	715	96.2	782	97.3	744	92.7	879	94.7
Ipoh	226	76.9	486	46.0	355	43.5	1068	68.2	1392	80.8	1460	68.3	1859	84.5	1479	81.0	2,459	83.9
Johor Bahru	368	88.9	651	77.1	646	62.8	1031	66.8	825	60.0	1079	81.9	1097	79.7	770	68.3	1,079	90.3
Kangar	626	58.0	351	96.7	311	98.7	317	97.8	390	97.5	395	99.0	395	98.8	402	99.8	445	98.0
Keningau	-	-	-	-	-	-	-	-	34	100.0	31	100.0	16	21.1	32	61.5	5	29.4
Klang	89	33.2	561	80.3	624	76.7	841	80.8	841	69.1	690	76.3	833	82.7	966	91.0	1,317	93.3
Kota Bharu	213	100.0	281	47.1	410	64.9	680	83.5	583	78.9	804	88.3	858	89.4	862	91.1	485	89.0
Kota Kinabalu	457	55.1	533	75.9	634	71.3	423	79.4	265	75.5	344	79.4	552	88.5	540	78.7	551	72.2
Kuala Krai	-	-	-	-	-	-	99	79.2	168	98.8	169	96.6	211	97.2	230	95.8	226	91.5
Kuala Lumpur	394	93.4	574	66.9	629	83.5	-	-	28	70.0	871	62.0	1359	82.5	1265	78.0	1,387	91.5
Kuala Pilah	-	-	115	68.9	112	77.2	180	84.1	225	79.8	257	88.6	310	96.3	465	96.3	424	98.8
Kuala Terengganu	546	74.1	215	78.5	216	92.3	371	70.4	611	84.2	665	89.5	612	85.7	629	81.7	700	91.5
Kuantan	471	58.8	283	71.6	348	66.9	21	87.5	306	77.5	235	80.2	553	89.9	614	90.3	607	88.7
Kuching	773	76.0	340	50.6	434	48.5	719	71.8	763	75.5	698	78.2	941	78.0	993	87.8	1,375	83.0
Melaka	389	75.0	788	76.6	699	57.5	1112	72.8	1119	66.6	1098	79.2	1342	80.9	1367	83.3	1,392	93.5
Miri	-	-	-	-	214	95.1	12	75.0	356	89.9	404	100.0	576	99.8	501	76.3	513	56.9
Muar	710	62.2	462	76.4	333	91.2	332	94.3	237	70.1	388	71.6	606	98.2	405	58.5	493	74.1
Pulau Pinang	451	94.0	577	61.2	625	55.6	754	68.2	1142	84.2	1024	74.5	1516	80.8	1816	83.1	1,079	81.1
Putrajaya	190	81.5	87	100.0	120	100.0	196	96.6	254	99.2	251	100.0	282	100.0	329	100.0	349	98.3
Sandakan	129	100.0	130	97.7	100	83.3			100	73.0	72	45.6	123	59.1	98	36.2	128	48.3
Selayang	-	-	719	73.4	961	73.3	1221	86.2	1190	83.3	1164	82.1	1414	83.2	1523	81.9	1,465	80.1
Serdang	-	-	-	-	-	-	532	87.9	620	89.1	567	94.8	506	97.3	610	91.6	677	95.5

('cont.)

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Seremban	179	68.8	434	54.7	578	63.8	547	57.2	249	27.7	812	66.1	1147	75.5	1262	78.6	1,109	71.1
Sibu	740	73.3	167	53.9	169	56.3	337	88.0	254	96.6	130	33.6	345	75.8	230	45.5	675	90.6
Sri Manjung	-	-	-	-	-	-	121	79.6	285	81.4	318	97.2	375	96.9	417	99.3	464	99.6
Sultan Ismail	-	-	-	-	-	-	101	94.4	180	100.0	183	98.9	203	78.7	283	100.0	279	100.0
Sungai Buloh	-	-	-	-	-	-	144	98.6	273	85.6	361	93.3	467	99.8	450	100.0	514	100.0
Sungei Petani	264	61.5	535	96.9	524	99.6	488	98.2	626	98.9	683	99.9	546	97.8	731	90.1	740	87.6
Taiping	187	99.5	323	93.4	402	100.0	279	100.0	378	99.7	610	99.7	683	76.8	853	89.5	899	80.4
Tawau	208	53.1	263	100.0	204	99.5	184	91.5	312	98.4	296	99.3	399	99.5	574	99.8	648	100.0
Teluk Intan	233	55.3	569	91.9	270	59.0	504	75.1	511	86.9	539	88.1	642	93.0	397	59.9	439	71.3
Temerloh	-	-	-	-	-	-	244	55.0	405	76.3	382	59.7	290	64.4	651	95.6	827	95.3

Table 1.3.4(b): Gazetting Specialist by SDP 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	1762	13.8	1510	9.0	1757	9.6	1276	6.9	1399	6.5	2053	8.4	1405	4.9	2487	8.1	2411	7.4
Alor Setar	646.7	183	17.2	4	0.4	0	0.0	74	7.5	30	2.7	7	0.5	3	0.2	131	7.1	
Ampang	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	4	0.6	6	0.8	18	2.0
Batu Pahat	-	-	12	1.9	0	0.0	0	0.0	60	10.5	197	32.7	75	18.2	135	24.4	329	54.1
Bintulu	-	-	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bukit Mertajam	-	-	3	0.6	14	2.1	0	0.0	0	0.0	2	0.3	0	0.0	40	5.0	33	3.6
Ipoh	50	17.0	64	6.1	79	9.7	10	0.6	0	0.0	118	5.5	0	0.0	63	3.5	230	7.8
Johor Bahru	1	0.2	56	6.6	143	13.9	273	17.7	232	16.9	136	10.3	202	14.7	320	28.4	82	6.9
Kangar	239	22.2	12	3.3	3	1.0	0	0.0	0	0.0	1	0.3	0	0.0	1	0.2	0	0.0
Keningau	-	-	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Klang	8	3.0	67	9.6	20	2.5	104	10.0	194	15.9	142	15.7	109	10.8	92	8.7	94	6.7
Kota Bharu	0	0.0	107	17.9	55	8.7	41	5.0	42	5.7	2	0.2	2	0.2	4	0.4	6	1.1
Kota Kinabalu	92	11.1	23	3.3	36	4.0	0	0.0	9	2.6	44	10.2	42	6.7	92	13.4	152	19.9

('cont.)

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Kuala Krai	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	10	4.2	21	8.5
Kuala Lumpur	15	3.6	156	18.2	54	7.2	-	-	8	20.0	368	26.2	15	0.9	86	5.3	20	1.3
Kuala Pilah	-	-	10	6.0	3	2.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Kuala Terengganu	123	16.7	22	8.0	9	3.8	97	18.4	35	4.8	9	1.2	28	3.9	93	12.1	8	1.0
Kuantan	260	32.5	48	12.2	83	16.0	0	0.0	27	6.8	17	5.8	1	0.2	1	0.1	0	0.0
Kuching	97	9.5	283	42.1	439	49.1	147	14.7	96	9.5	56	6.3	96	8.0	54	4.8	141	8.5
Melaka	116	22.4	74	7.2	388	31.9	216	14.1	267	15.9	44	3.2	66	4.0	147	9.0	14	0.9
Miri	-	-	-	-	0	0.0	0	0.0	4	1.0	0	0.0	0	0.0	148	22.5	383	42.5
Muar	81	7.1	104	17.2	2	0.5	0	0.0	93	27.5	149	27.5	6	1.0	287	41.5	172	25.9
Pulau Pinang	3	0.6	101	10.7	208	18.5	141	12.8	26	1.9	226	16.4	220	11.7	186	8.5	30	2.3
Putrajaya	27	11.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Sandakan	0	0.0	0	0.0	0	0.0	-	-	1	0.7	1	0.6	0	0.0	55	20.3	17	6.4
Selayang	-	-	53	5.4	98	7.5	47	3.3	34	2.4	118	8.3	24	1.4	3	0.2	60	3.3
Serdang	-	-	-	-	-	-	35	5.8	58	8.3	29	4.8	6	1.2	33	5.0	16	2.3
Seremban	1	0.4	37	4.7	58	6.4	43	4.5	28	3.1	18	1.5	46	3.0	6	0.4	4	0.3
Sibu	132	13.1	0	0.0	1	0.3	1	0.3	0	0.0	194	50.1	92	20.2	254	50.3	68	9.1
Sri Manjung	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.4
Sultan Ismail	-	-	-	-	-	-	0	0.0	0	0.0	2	1.1	55	21.3	0	0.0	0	0.0
Sungai Buloh	-	-	-	-	-	-	0	0.0	46	14.4	9	2.3	0	0.0	0	0.0	0	0.0
Sungei Petani	164	38.2	0	0.0	0	0.0	6	1.2	0	0.0	0	0.0	0	0.0	47	5.8	3	0.4
Taiping	10.5	20	5.8	0	0.0	0	0.0	1	0.3	2	0.3	206	23.2	100	10.5	219	19.6	
Tawau	135	34.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Teluk Intan	110	26.1	4	0.6	48	10.5	0	0.0	0	0.0	0	0.0	4	0.6	221	33.3	133	21.6
Temerloh	-	-	-	-	-	-	115	25.9	64	12.1	139	21.7	99	22.0	0	0.0	25	2.9

1.3.5 Duration of Surgery

Table 1.3.5(a): Duration of Surgery by Types of Cataract Surgery in minutes, CSR 2007-2012

Year	2007		2008		2009*		2010*		2011*		2012*	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Median	IQR	Median	IQR
All eyes	40.2	20.6	38.2	19.6	38.2	20.4	35.5	19.3	30	20-40	30	20-40
Phaco	36.8	19.7	34.1	17.7	33.6	17.7	31.3	16.4	25	20-35	25	19-33
ECCE	45.3	19.7	45.8	19.5	49.1	20.9	47.4	20.2	43	31-60	40	30-55
Phaco ECCE	57.8	20.6	44.8	24.0	59.7	24.2	56.1	21.7	55	40-70	55	40-70
ICCE	57.6	23.7	57.5	23.7	58.1	24.4	57.6	28.3	55	45-71	55	40-71
Lens Aspiration	47.8	27.2	60.0	25.6	46.1	25.9	45.4	28.9	40	30-60	35	25-56

Data entered with extreme values i.e. more than 3 hours and less than 15 minutes were not analyzed as it would skew the data

Table 1.3.5(b): Duration of Surgery by Surgeon Status, CSR 2007-2012

Year		2007		2008		2009		2010		2011		2012	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Median	IQR	Median	IQR
Phaco	Specialist	36.0	19.8	35.4	17.9	32.6	17.3	30.7	16.3	25	20-35	25	20-34
	Gazetting Specialist	40.2	18.0	47.5	20.8	39.8	19.9	36.2	15.8	30	24-40	28	21-37
	Medical Officers	42.2	18.2	49.2	22.8	41.5	17.7	38.2	16.6	30	25-43.5	34	25-45
ECCE	Specialist	40.2	17.6	43.9	69.5	42.6	18.0	42.0	17.3	36	30-50	35	30-48
	Gazetting Specialist	45.9	17.8	54.0	71.5	48.4	19.1	48.6	16.1	46	39-60	45	35-55
	Medical Officers	53.9	20.2	63.0	89.8	60.5	21.4	57.4	22.0	55	45-70	57	45-66

1.3.6 Distribution of Cataract Surgery Performed Under Day Care Setting

The day care cataract surgery percentages were calculated by excluding eyes of children and combined surgeries because surgeries done in these eyes might require general anaesthesia therefore hospital admission.
The total number of eyes (excluding children and combined surgeries) and the total number of eyes operated as day care were increasing corresponding to the increasing numbers of cataract surgery registered to CSR. Although the percentage appeared to be increasing over the years, it varied between SDPs.

Table 1.3.6(a): Distribution of Cataract Surgery Performed Under Day Care Setting, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
Number of SDPs	25*		32*		33*		32		36		36		36		36		36	
Total number of cataract surgery registered to CSR	12798		16815		18392		18426		21496		24438		28506		30611		32473	
Number of surgery excluding children and combined surgery	12445		15981		17336		17402		19835		22517		26514		28398		30144	
	n	%	n	%	n	%	N	%	n	%	n	%	n	%	n	%	n	%
Number and % of day care surgery excluding children and combined surgery	4887	39.3	6089	38.1	6934	40.0	7297	41.9	8449	42.6	10633	47.2	13657	51.5	14842	52.3	17827	59.1

**SDP in 2002, 2003 and 2004 included private centres and university hospitals*

Table 1.3.6(b): Distribution of Cataract Surgery (Excluding Children and Combined Surgery) Performed as Day Care by SDP, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	4887	39.3	6089	38.0	6934	40.0	7297	41.9	8449	42.6	10633	47.2	13657	51.5	14842	52.3	17827	59.1
Alor Setar	218	24.0	262	26.0	30	70.0	91	27.6	74	8.0	3	0.3	186	13.8	206	11.9	265	16.1
Ampang	-	-	-	-	-	-	3	100.0	181	99.5	412	97.4	574	93.6	685	98.8	832	96.4
Batu Pahat	207	98.0	519	85.0	85	15.0	317	62.2	311	56.9	303	52.0	246	61.3	353	65.2	367	61.2
Bintulu	-	-	-	-	-	-	0	0.0	2	7.7	1	0.9	9	3.8	18	6.1	206	60.4
Bukit Mertajam	20	16.0	139	26.0	24	76.0	82	12.4	25	5.5	650	88.8	714	90.8	719	93.5	846	94.3
Ipoh	1	4.0	27	3.0	3	97.0	672	48.2	896	58.1	1267	66.0	1487	75.4	1104	71.5	1894	78.5
Johor Bahru	100	10.0	47	6.0	4	96.0	48	3.2	44	3.3	42	3.5	45	3.7	14	1.4	26	2.5
Kangar	10	4.0	5	2.0	2	98.0	1	0.3	2	0.5	3	0.8	3	0.8	5	1.3	7	1.6
Keningau	-	-	-	-	-	-	0	0.0	1	3.5	3	10.7	0	0.0	0	0.0	0	0.0
Klang	21	3.0	8	1.0	2	98.0	11	1.1	22	1.9	65	7.5	87	9.6	159	17.9	373	28.2
Kota Bharu	14	5.0	26	5.0	8	92.0	8	1.1	17	2.5	124	14.8	294	33.5	220	24.9	102	20.5
Kota Kinabalu	51	11.0	55	8.0	31	69.0	326	67.2	212	64.8	384	97.0	500	98.4	640	97.3	703	97.4
Kuala Krai	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	2	1.0	75	33.3	133	61.6
Kuala Lumpur	926	91.0	708	84.0	69	31.0	0	0.0	35	92.1	725	53.3	684	42.4	486	30.3	351	24.8
Kuala Pilah	1	3.0	2	1.0	44	56.0	61	29.0	49	19.0	10	5.1	14	4.6	17	4.0	87	22.1
Kuala Terengganu	206	54.0	100	41.0	38	62.0	142	29.5	194	28.0	168	24.3	222	34.2	334	47.0	356	50.6
Kuantan	172	42.0	105	27.0	12	88.0	7	30.4	50	14.8	20	7.9	28	5.1	38	5.9	168	26.5
Kuching	578	83.0	544	88.0	87	13.0	863	91.0	893	93.6	809	95.2	1096	95.0	1055	97.1	1547	97.7
Melaka	875	90.0	884	92.0	92	8.0	1420	98.2	1483	95.9	1121	89.3	1425	90.2	1530	95.7	1384	95.5
Miri	-	-	NA	-	92	8.0	15	100.0	385	99.7	397	99.7	568	99.3	640	100.0	868	99.9
Muar	10	2.0	0	0.0	4	96.0	2	0.6	0	0.0	1	0.2	0	0.0	1	0.1	22	3.3
Pulau Pinang	759	69.0	759	82.0	82	18.0	960	93.5	1193	91.9	1232	92.0	1682	94.8	1946	97.1	1262	96.8
Putrajaya	26	63.0	68	79.0	91	9.0	182	95.3	201	81.7	191	76.7	254	90.7	299	92.3	335	96.3
Sandakan	0	0.0	0	0.0	2	98.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	92	35.7
Selayang	NA	NA	733	84.0	88	12.0	1011	90.7	995	78.8	1026	86.8	1219	87.0	1305	91.1	1388	90.4
Serdang	-	-	-	-	-	-	313	55.0	382	57.4	388	67.2	310	60.5	291	46.5	434	62.7

('cont.)

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Seremban	345	44.0	390	53.0	57	43.0	589	70.3	399	69.3	789	85.3	1241	89.4	1433	93.7	1410	96.4
Sibu	0	0.0	0	0.0	0	100.0	0	0.0	1	0.4	1	0.3	2	0.4	3	0.6	394	59.7
Sri Manjung	-	-	-	-	-	-	10	7.0	45	13.1	83	25.9	194	51.2	224	53.8	304	66.7
Sultan Ismail	-	-	-	-	-	-	1	1.0	8	4.6	1	0.5	1	0.4	2	0.7	1	0.4
Sungai Buloh	-	-	-	-	-	-	99	78.0	230	74.4	312	81.0	392	85.4	377	85.9	422	82.9
Sungei Petani	4 8	12.0	130	24.0	3	97.0	5	1.0	2	0.4	3	0.5	59	11.0	377	47.3	291	35.7
Taiping	34	8.0	175	52.0	32	68.0	54	20.5	46	12.7	95	16.4	117	13.9	130	14.3	516	48.5
Tawau	0	0.0	1	0.4	1	99.0	1	0.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Teluk Intan	207	54.0	166	28.0	11	89.0	2	0.3	66	11.5	1	0.2	1	0.1	5	0.8	3	0.5
Temerloh	-	-	-	-	-	-	1	0.2	5	1.0	2	0.3	1	0.2	151	22.3	438	52.4

Figure 1.3.6(a): Distribution of Cataract Surgery Performed as Day Care by SDP, CSR 2012

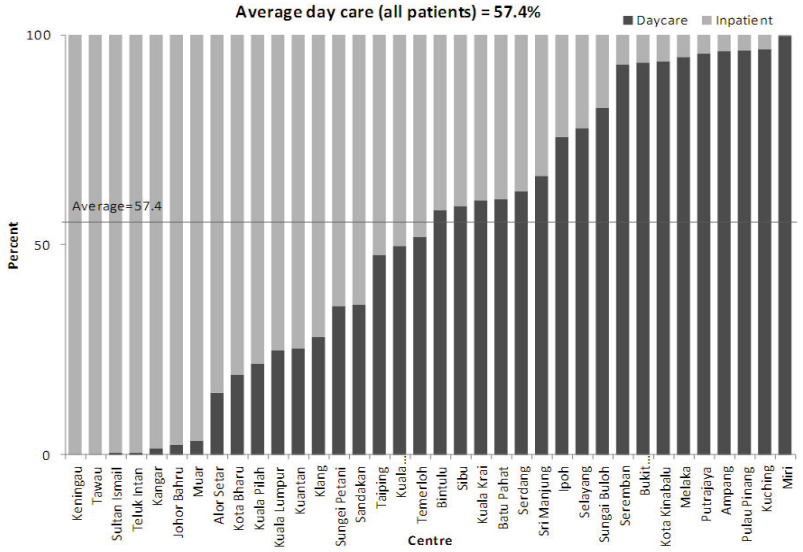


Figure 1.3.6(b): Distribution of Cataract Surgery Performed as Day Care and In-patient by SDP (Excluding Surgery Done in Children and Combined Surgery), CSR 2012

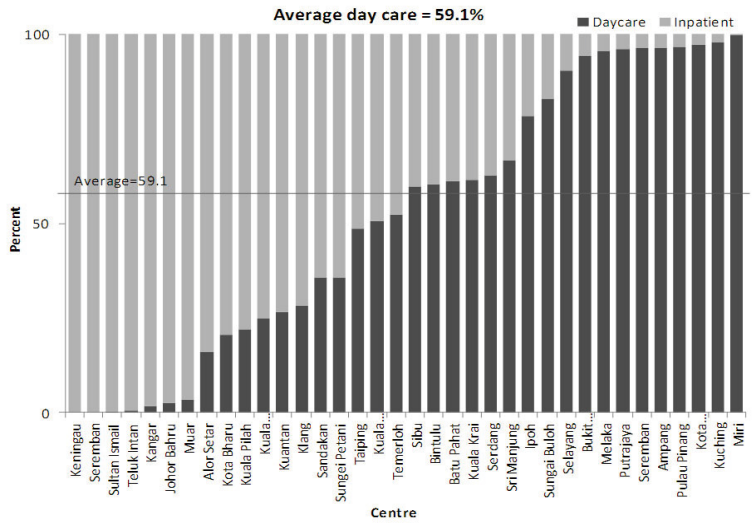
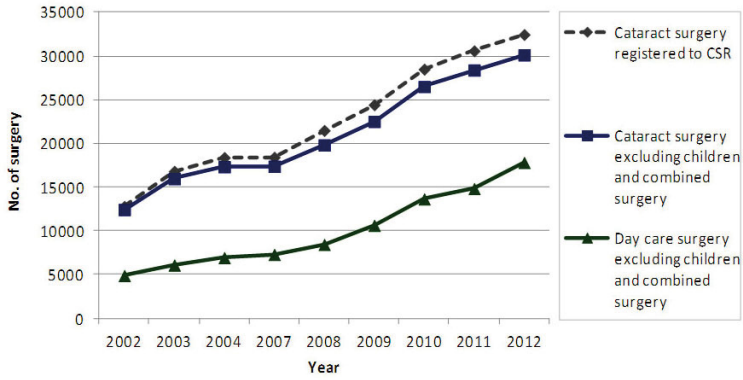


Figure 1.3.6(c): Distribution of Cataract Surgeries Performed as Day Care all SDPs (Excluding Surgery Done in Children and Combined Surgery), CSR 2002-2012



1.3.7 Distribution of Types of Cataract Surgery

There is a shift from ECCE to phaco as the preferred method of performing cataract surgery. The percentage of phaco converted to ECCE, the proxy indicator for competency in performing phaco surgery, remained the same over the years.

Table 1.3.7(a): Distribution of Types of Cataract Surgery, CSR 2002-2012

Year	2002		2003		2004		2007		2008*		2009		2010		2011		2012	
No of patients (N)	12798		16815		18392		18426		21496		24438		28506		30611		32473	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Phaco	5085	39.7	7674	45.6	9282	50.5	11960	65.1	14781	69.1	17717	72.5	21810	76.5	23872	78.0	26345	81.1
ECCE	6914	54.0	8012	47.6	7830	42.6	5524	30.1	5627	26.3	5457	22.3	5363	18.8	5291	17.3	4784	14.7
Lens Aspiration	372	2.9	435	2.6	550	3.0	323	1.8	340	1.6	400	1.6	451	1.6	460	1.5	444	1.4
Phaco converted to ECCE	311	2.4	469	2.8	454	2.5	432	2.4	524	2.4	573	2.3	586	2.1	652	2.1	621	1.9
ICCE	81	0.6	94	0.6	103	0.6	141	0.8	129	0.6	134	0.5	143	0.5	123	0.4	136	0.4

Figure 1.3.7: Distribution of Phacoemulsification, ECCE and Phaco Converted to ECCE, CSR 2002-2012

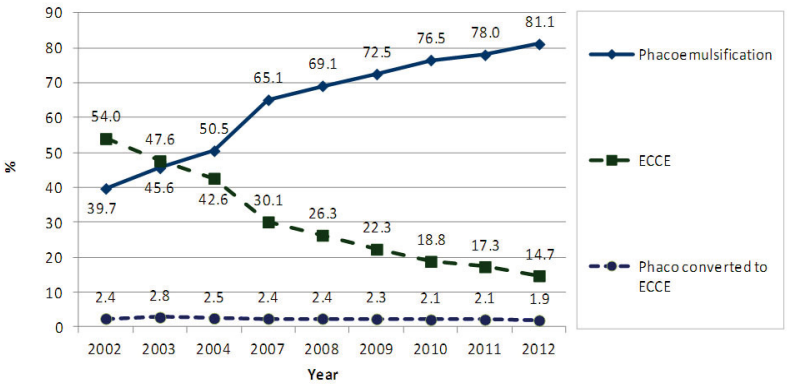


Table 1.3.7(b): Distribution of Types of Cataract Surgery by SDP, CSR 2012

	Type of Cataract Surgery											
	All Surgeries		Phaco		ECCE		Lens Aspiration		Phaco Converted to ECCE		ICCE	
	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	32473	100.0	26345	81.1	4784	14.7	444	1.4	621	1.9	136	0.4
Alor Setar	1,835	100.0	1,451	79.1	294	16.0	42	2.3	35	1.9	5	0.3
Ampang	896	100.0	779	86.9	72	8.0	12	1.3	28	3.1	5	0.6
Batu Pahat	608	100.0	447	73.5	111	18.3	15	2.5	34	5.6	1	0.2
Bintulu	391	100.0	245	62.7	136	34.8	7	1.8	3	0.8	0	0.0
Bukit Mertajam	928	100.0	564	60.8	338	36.4	9	1.0	11	1.2	5	0.5
Ipoh	2,932	100.0	2,596	88.5	250	8.5	13	0.4	29	1.0	9	0.3
Johor Bahru	1,195	100.0	1,069	89.5	69	5.8	21	1.8	24	2.0	7	0.6
Kangar	454	100.0	412	90.7	27	5.9	8	1.8	5	1.1	2	0.4
Keningau	17	100.0	0	0.0	17	100.0	0	0.0	0	0.0	0	0.0
Klang	1,411	100.0	1,224	86.7	146	10.3	12	0.9	7	0.5	12	0.9
Kota Bharu	545	100.0	367	67.3	141	25.9	13	2.4	21	3.9	2	0.4
Kota Kinabalu	763	100.0	529	69.3	163	21.4	38	5.0	16	2.1	10	1.3
Kuala Krai	247	100.0	222	89.9	16	6.5	4	1.6	4	1.6	1	0.4
Kuala Lumpur	1,516	100.0	1,208	79.7	263	17.3	5	0.3	33	2.2	3	0.2
Kuala Pilah	429	100.0	361	84.1	52	12.1	0	0.0	14	3.3	2	0.5
Kuala Terengganu	765	100.0	537	70.2	177	23.1	33	4.3	10	1.3	5	0.7
Kuantan	684	100.0	555	81.1	89	13.0	13	1.9	26	3.8	1	0.1
Kuching	1,657	100.0	1,546	93.3	87	5.3	5	0.3	12	0.7	4	0.2
Melaka	1,488	100.0	1,203	80.8	248	16.7	17	1.1	8	0.5	6	0.4
Miri	901	100.0	849	94.2	28	3.1	13	1.4	1	0.1	3	0.3
Muar	665	100.0	608	91.4	19	2.9	6	0.9	32	4.8	0	0.0
Pulau Pinang	1,330	100.0	1,260	94.7	34	2.6	8	0.6	23	1.7	2	0.2
Putrajaya	355	100.0	271	76.3	48	13.5	11	3.1	23	6.5	2	0.6
Sandakan	265	100.0	104	39.2	148	55.8	3	1.1	5	1.9	3	1.1
Selayang	1,829	100.0	1,625	88.8	75	4.1	51	2.8	45	2.5	7	0.4
Serdang	709	100.0	564	79.5	109	15.4	7	1.0	24	3.4	5	0.7
Seremban	1,559	100.0	1,315	84.3	207	13.3	7	0.4	21	1.3	5	0.3

('cont.)

	Type of Cataract Surgery											
	All Surgeries		Phaco		ECCE		Lens Aspiration		Phaco Converted to ECCE		ICCE	
	n	%	n	%	n	%	n	%	n	%	n	%
Sibu	745	100.0	683	91.7	43	5.8	3	0.4	10	1.3	4	0.5
Sri Manjung	466	100.0	412	88.4	40	8.6	1	0.2	7	1.5	3	0.6
Sultan Ismail	279	100.0	208	74.6	55	19.7	11	3.9	4	1.4	1	0.4
Sungai Buloh	514	100.0	419	81.5	63	12.3	9	1.8	21	4.1	2	0.4
Sungei Petani	845	100.0	604	71.5	204	24.1	10	1.2	11	1.3	7	0.8
Taiping	1,118	100.0	885	79.2	208	18.6	6	0.5	17	1.5	2	0.2
Tawau	648	100.0	1	0.2	634	97.8	5	0.8	5	0.8	1	0.2
Teluk Intan	616	100.0	505	82.0	86	14.0	13	2.1	10	1.6	2	0.3
Temerloh	868	100.0	717	82.6	87	10.0	13	1.5	42	4.8	7	0.8

TTable 1.3.7(c): Distribution of Phacoemulsification by SDP, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	5085	40.0	7674	46.0	9282	50.0	11960	65.1	14781	69.1	17717	72.5	21810	76.5	23872	78.0	26345	81.1
Alor Setar	263	28.0	351	33.0	467	41.0	240	58.4	715	72.9	702	63.2	1147	75.1	1510	77.9	1451	79.1
Ampang	-	-	-	-	-	-	3	75.0	75	36.1	308	71.1	558	89.0	661	93.4	779	86.9
Batu Pahat	-	-	240	39.0	276	49.0	453	81.6	451	79.1	443	73.6	307	74.7	425	76.7	447	73.5
Bintulu	-	-	-	-	-	-	-	-	9	31.0	75	60.5	183	70.9	241	72.6	245	62.7
Bukit Mertajam	-	-	350	65.0	529	78.0	403	59.2	163	33.5	462	62.2	503	62.6	427	53.2	564	60.8
Ipoh	227.0	339	32.0	293	36.0	1117	71.4	1434	83.6	1801	84.3	1913	87.0	1496	81.9	2596	88.5	
Johor Bahru	133	32.0	484	57.0	579	56.0	1418	91.9	1293	94.0	1166	88.5	1274	92.5	986	87.5	1069	89.5
Kangar	496	46.0	16	4.0	35	11.0	91	28.1	303	75.9	367	92.0	342	85.5	375	93.1	412	90.7
Keningau	-	-	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Klang	19	7.0	323	46.0	462	57.0	570	55.0	655	53.8	486	53.8	617	61.3	907	85.5	1224	86.7
Kota Bharu	43	20.0	209	35.0	259	41.0	406	49.9	383	51.8	538	59.1	604	62.9	580	61.3	367	67.3
Kota Kinabalu	169	20.0	406	58.0	630	71.0	346	65.4	260	74.3	331	76.4	481	77.1	534	77.8	529	69.3
Kuala Krai	-	-	-	-	-	-	0	0.0	78	45.9	85	48.6	168	77.4	211	87.9	222	89.9
Kuala Lumpur	157	37.0	440	51.0	387	51.0	NA	NA	25	62.5	925	65.8	1141	69.2	1091	67.3	1208	79.7
Kuala Pilah			2	1.0	1	1.0	24	11.4	58	20.6	73	25.2	149	46.3	376	77.8	361	84.1
Kuala Terengganu	488	66.0	74	27.0	70	30.0	242	46.5	429	59.4	473	63.7	453	63.4	517	67.1	537	70.2
Kuantan	315	39.0	245	62.0	294	57.0	22	91.7	314	80.9	218	74.4	448	72.8	533	78.4	555	81.1
Kuching	593	58.0	377	56.0	389	44.0	680	68.0	702	69.4	654	73.2	966	80.0	996	88.1	1546	93.3
Melaka	255	49.0	630	61.0	742	61.0	1152	75.9	1335	80.3	1111	80.1	1295	78.1	1315	80.1	1203	80.8
Miri	-	-	-	-	-	-	7	46.7	296	74.7	392	97.0	556	96.4	593	90.3	849	94.2
Muar	509	45.0	398	66.0	277	76.0	281	80.1	236	70.7	452	83.4	526	85.3	616	89.0	608	91.4
Pulau Pinang	273	57.0	432	46.0	577	51.0	751	68.1	1116	82.3	1208	87.9	1707	91.0	2077	95.0	1260	94.7
Putrajaya	96	41.0	9	10.0	13	11.0	93	45.8	166	64.8	186	74.1	200	70.9	263	79.9	271	76.3
Sandakan	0	0.0	0	0.0	0	0.0	NA	NA	0	0.0	0	0.0	4	1.9	21	7.7	104	39.2
Selayang	-	-	671	68.0	1031	79.0	1305	92.4	1291	91.0	1255	88.5	1542	90.8	1619	87.1	1625	88.8
Serdang	-	-	-	-	-	-	412	68.1	521	75.0	483	80.8	371	71.3	466	70.0	564	79.5

('cont.)

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Seremban	0	0.0	203	26.0	420	46.0	589	61.9	610	68.9	912	74.2	1249	82.2	1368	85.2	1315	84.3
Sibu	519	51.0	1	0.0	6	2.0	0	0.0	0	0.0	126	32.6	386	84.8	376	74.5	683	91.7
Sri Manjung	-	-	-	-	-	-	14	9.3	111	31.7	203	62.1	314	81.1	344	81.9	412	88.4
Sultan Ismail	-	-	-	-	-	-	64	63.4	114	63.7	131	70.8	172	66.7	189	66.8	208	74.6
Sungai Buloh	-	-	-	-	-	-	121	82.9	271	85.2	272	70.3	346	73.9	371	82.4	419	81.5
Sungei Petani	153	36.0	321	58.0	381	72.0	410	82.5	483	76.4	580	84.8	455	81.5	662	81.6	604	71.5
Taiping	1	1.0	116	34.0	176	44.0	100	35.8	169	44.6	440	71.9	552	62.1	618	64.8	885	79.2
Tawau	205	52.0	1	0.0	14	7.0	0	0.0	3	1.0	0	0.0	0	0.0	0	0.0	1	0.2
Teluk Intan	206	49.0	470	76.0	199	43.0	435	64.8	358	60.9	465	76.0	564	81.7	571	86.1	505	82.0
Temerloh	-	-	-	-	-	-	210	47.3	354	67.0	393	61.4	317	70.4	537	78.9	717	82.6

Table 1.3.7(d): Distribution of ECCE by SDP, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	6914	54.0	8012	48.0	7830	43.0	5524	30.1	5627	26.3	5457	22.3	5363	18.8	5291	17.3	4784	14.7
Alor Setar	649	68.0	664	62.0	603	53.0	160	38.9	247	25.2	349	31.4	310	20.3	349	18.0	294	16.0
Ampang	-	-	-	-	-	-	1	25.0	106	51.0	102	23.6	38	6.1	28	4.0	72	8.0
Batu Pahat	-	-	328	53.0	272	48.0	83	15.0	95	16.7	130	21.6	78	19.0	104	18.8	111	18.3
Bintulu	-	-	-	-	-	-	-	-	19	65.5	38	30.6	70	27.1	83	25.0	136	34.8
Bukit Mertajam	-	-	135	25.0	100	15.0	265	38.9	315	64.7	265	35.7	284	35.3	350	43.6	338	36.4
Ipoh	261	89.0	669	63.0	479	59.0	396	25.3	240	14.0	238	11.1	208	9.5	193	10.6	250	8.5
Johor Bahru	244	59.0	326	39.0	385	37.0	53	3.4	30	2.2	55	4.2	27	2.0	72	6.4	69	5.8
Kangar	513	48.0	335	92.0	262	83.0	223	68.8	86	21.6	18	4.5	46	11.5	19	4.7	27	5.9
Keningau	-	-	-	-	-	-	-	-	33	97.1	28	90.3	72	94.7	51	98.1	17	100.0
Klang	219	82.0	323	46.0	292	36.0	403	38.9	499	41.0	368	40.7	341	33.9	120	11.3	146	10.3
Kota Bharu	162	76.0	323	54.0	304	48.0	337	41.4	302	40.9	302	33.2	280	29.2	287	30.3	141	25.9
Kota Kinabalu	606	73.0	230	33.0	180	20.0	155	29.3	74	21.1	62	14.3	117	18.8	96	14.0	163	21.4

('cont.)

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Kuala Krai	-	-	-	-	-	-	119	95.2	81	47.6	82	46.9	33	15.2	15	6.3	16	6.5
Kuala Lumpur	223	53.0	356	41.0	280	37.0	NA	NA	12	30.0	403	28.7	447	27.1	454	28.0	263	17.3
Kuala Pilah		161	96.0	139	96.0	164	77.7	190	67.6	175	60.3	137	42.5	81	16.8	52	12.1	
Kuala Terengganu	208	28.0	163	59.0	121	52.0	243	46.7	238	33.0	226	30.4	207	29.0	201	26.1	177	23.1
Kuantan	431	54.0	134	34.0	176	34.0	1	4.2	37	9.5	46	15.7	114	18.5	98	14.4	89	13.0
Kuching	356	35.0	229	34.0	403	45.0	276	27.6	263	26.0	186	20.8	181	15.0	101	8.9	87	5.3
Melaka	234	45.0	329	32.0	404	33.0	307	20.2	271	16.3	205	14.8	283	17.1	274	16.7	248	16.7
Miri	-	-	-	-	-	-	7	46.7	95	24.0	10	2.5	15	2.6	48	7.3	28	3.1
Muar	557	49.0	177	29.0	69	19.0	49	14.0	81	24.3	52	9.6	44	7.1	38	5.5	19	2.9
Pulau Pinang	161	34.0	466	49.0	486	43.0	270	24.5	177	13.1	124	9.0	127	6.8	68	3.1	34	2.6
Putrajaya	123	53.0	75	86.0	103	86.0	104	51.2	79	30.9	57	22.7	65	23.0	42	12.8	48	13.5
Sandakan	123	95.0	130	98.0	119	99.0	NA	NA	130	99.2	154	97.5	191	91.8	231	85.2	148	55.8
Selayang	NA	NA	248	25.0	197	15.0	44	3.1	70	4.9	106	7.5	80	4.7	116	6.2	75	4.1
Serdang	-	-	-	-	-	-	151	25.0	133	19.1	79	13.2	113	21.7	156	23.4	109	15.4
Seremban	256	98.0	517	65.0	435	48.0	319	33.5	219	24.7	261	21.2	226	14.9	194	12.1	207	13.3
Sibu	449	44.0	288	93.0	272	91.0	372	97.1	257	97.7	258	66.7	48	10.5	96	19.0	43	5.8
Sri Manjung	-	-	-	-	-	-	134	88.7	233	66.6	122	37.3	71	18.3	65	15.5	40	8.6
Sultan Ismail	-	-	-	-	-	-	32	31.7	61	34.1	49	26.5	72	27.9	83	29.3	55	19.7
Sungai Buloh	-	-	-	-	-	-	8	5.5	25	7.9	88	22.7	89	19.0	54	12.0	63	12.3
Sungei Petani	232	54.0	187	34.0	109	21.0	57	11.5	99	15.7	58	8.5	70	12.5	101	12.5	204	24.1
Taiping	184	98.0	196	57.0	194	48.0	159	57.0	194	51.2	154	25.2	303	34.1	315	33.1	208	18.6
Tawau	176	45.0	252	96.0	176	86.0	196	97.5	305	97.1	292	98.0	380	94.8	557	96.9	634	97.8
Teluk Intan	183	43.0	125	20.0	250	55.0	222	33.1	193	32.8	111	18.1	92	13.3	72	10.9	86	14.0
Temerloh	-	-	-	-	-	-	210	47.3	138	26.1	204	31.9	104	23.1	79	11.6	87	10.0

1.3.8 Distribution of Combined Surgery

Table 1.3.8(a): Distribution of Combined Surgery all SDP, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
No of patients (N)	**12798**		**16815**		**18392**		**18426**		**21496**		**24438**		**28506**		**30611**		**32473**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Any types of combined surgeries	375	2.9	581	3.4	733	4.9	891	4.8	664	3.1	871	3.6	1082	3.8	1194	3.9	1221	3.8
Specific types of combined surgery																		
Pterygium Surgery	86	0.7	120	0.7	147	0.8	135	0.7	94	0.4	100	0.4	99	0.3	133	0.4	111	0.3
Filtering Glaucoma Surgery	148	1.2	210	1.2	235	1.3	131	0.7	142	0.7	132	0.5	121	0.4	64	0.2	71	0.2
Vitreoretinal Surgery	26	0.2	100	0.6	186	1.0	435	2.4	237	1.1	402	1.6	601	2.1	672	2.2	585	1.8
Penetrating Keratoplasty	1	0.007	0	0.0	3	0.02	0	0.0	3	0.0	6	0.0	2	0.0	1	0.0	3	0.0
Others	124	1.0	170	1.0	149	0.8	190	1.0	188	0.9	259	1.1	272	1.0	344	1.1	477	1.5

Figure 1.3.8(a): Distribution of Specific Combined Surgery, CSR 2002-2012

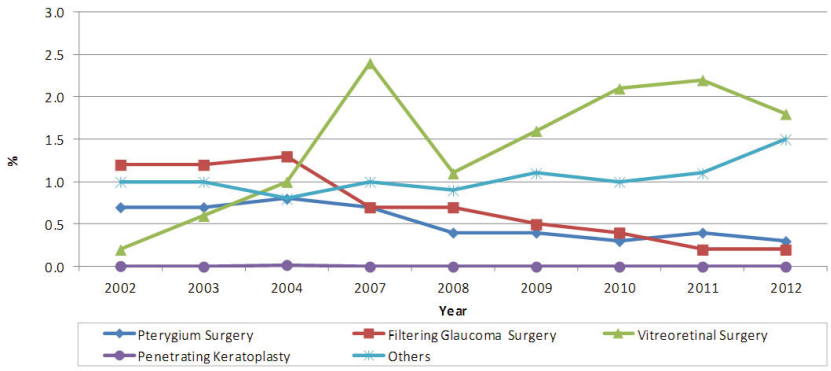


Table 1.3.8(b): Distribution of Combined Surgery by SDP, CSR 2012

		Combined Surgery											
	All Surgeries	Any Combined Surgery		Pterygium Surgery		Filtering Surgery		Vitreo-Retinal Surgery		Penetrating Keratoplasty		Others	
	N	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	32473	1221	3.8	111	0.3	71	0.2	585	1.8	3	0.0	477	1.5
Alor Setar	1835	132	7.2	6	0.3	2	0.1	81	4.4	0	0.0	48	2.6
Ampang	896	16	1.8	0	0.0	9	1.0	0	0.0	0	0.0	7	0.8
Batu Pahat	608	5	0.8	4	0.7	0	0.0	0	0.0	0	0.0	1	0.2
Bintulu	391	40	10.2	21	5.4	6	1.5	0	0.0	0	0.0	14	3.6
Bukit Mertajam	928	16	1.7	2	0.2	4	0.4	0	0.0	0	0.0	10	1.1
Ipoh	2932	153	5.2	2	0.1	19	0.6	115	3.9	0	0.0	18	0.6
Johor Bahru	1195	135	11.3	0	0.0	2	0.2	59	4.9	0	0.0	81	6.8
Kangar	454	2	0.4	1	0.2	1	0.2	0	0.0	0	0.0	0	0.0
Keningau	17	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Klang	1411	13	0.9	1	0.1	0	0.0	6	0.4	0	0.0	7	0.5
Kota Bharu	545	33	6.1	2	0.4	0	0.0	24	4.4	0	0.0	10	1.8
Kota Kinabalu	763	14	1.8	1	0.1	1	0.1	1	0.1	0	0.0	11	1.4
Kuala Krai	247	10	4.0	0	0.0	0	0.0	0	0.0	0	0.0	10	4.0
Kuala Lumpur	1516	6	0.4	0	0.0	0	0.0	1	0.1	1	0.1	4	0.3
Kuala Pilah	429	14	3.3	0	0.0	0	0.0	0	0.0	0	0.0	14	3.3
Kuala Terengganu	765	43	5.6	9	1.2	2	0.3	9	1.2	0	0.0	24	3.1
Kuantan	684	27	3.9	3	0.4	1	0.1	21	3.1	0	0.0	2	0.3
Kuching	1657	53	3.2	7	0.4	0	0.0	41	2.5	1	0.1	3	0.2
Melaka	1488	20	1.3	3	0.2	6	0.4	4	0.3	0	0.0	7	0.5
Miri	901	3	0.3	2	0.2	0	0.0	0	0.0	0	0.0	1	0.1
Muar	665	7	1.1	5	0.8	2	0.3	0	0.0	0	0.0	0	0.0
Pulau Pinang	1330	8	0.6	0	0.0	2	0.2	3	0.2	0	0.0	3	0.2
Putrajaya	355	3	0.8	1	0.3	0	0.0	0	0.0	0	0.0	2	0.6
Sandakan	265	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Selayang	1829	262	14.3	5	0.3	4	0.2	170	9.3	0	0.0	84	4.6
Serdang	709	3	0.4	1	0.1	0	0.0	0	0.0	0	0.0	2	0.3
Seremban	1559	72	4.6	1	0.1	1	0.1	50	3.2	0	0.0	26	1.7
Sibu	745	5	0.7	0	0.0	0	0.0	0	0.0	0	0.0	5	0.7
Sri Manjung	466	5	1.1	1	0.2	2	0.4	0	0.0	1	0.2	1	0.2
Sultan Ismail	279	2	0.7	0	0.0	0	0.0	0	0.0	0	0.0	2	0.7
Sungai Buloh	514	2	0.4	0	0.0	0	0.0	0	0.0	0	0.0	2	0.4
Sungai Petani	845	9	1.1	6	0.7	0	0.0	0	0.0	0	0.0	3	0.4
Taiping	1118	51	4.6	7	0.6	7	0.6	0	0.0	0	0.0	37	3.3
Tawau	648	44	6.8	19	2.9	0	0.0	0	0.0	0	0.0	26	4.0
Teluk Intan	616	4	0.6	0	0.0	0	0.0	0	0.0	0	0.0	4	0.6
Temerloh	868	9	1.0	1	0.1	0	0.0	0	0.0	0	0.0	8	0.9

1.3.9 Anaesthesia in Cataract Surgery

Majority of cataract surgeries were done under local anaesthesia (LA). There was a shift from subtenon to topical anaesthesia as the preferred method of LA. By excluding combined surgeries, even though subtenon or topical anaesthesia were preferred in most centers, retrobulbar or peribulbar were still used in a large percentage of eyes in Hospital Kuantan, Hospital Kuala Lumpur and Hospital Keningau.

The percentage of surgeons using combined, subconjunctival and intracameral LA appeared to be increasing

Most SDPs did not practice giving oral sedation except Hospital Pulau Pinang, Hospital Teluk Intan and Hospital Temerloh.

Table 1.3.9.1(a): Types of Anaesthesia all SDPs, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2010		2011		2012	
No of patients (N)	**12798**		**16815**		**18392**		**18426**		**21496**		**24438**		**28506**		**30611**		**30611**		**32473**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
General Anesthesia	818	6.4	1136	7.0	1379	7.3	1207	6.6	1223	5.7	1578	6.5	1884	6.6	1845	6.0	1845	6.0	2117	6.5
Local Anesthesia	11980	93.6	15679	93.2	17013	92.5	17143	93.4	20188	94.3	22776	93.2	26440	92.8	28634	93.5	28634	93.5	30215	93.1
Type of local anesthesia																				
Topical	1406	11.7	2819	18.0	3978	23.4	4853	28.3	6680	33.1	8382	36.8	13112	49.6	16825	58.8	16825	58.8	18461	61.1
Subtenon	5647	47.1	8076	51.5	9260	54.4	9990	58.3	11014	54.6	11525	50.6	10952	41.4	10512	36.7	10512	36.7	9849	32.6
Peribulbar	2601	21.7	2575	16.4	2940	1.3	1282	7.5	1227	6.1	1244	5.5	881	3.3	440	1.5	440	1.5	279	0.9
Retrobulbar	3100	25.9	2952	18.8	2186	12.8	1031	6.0	1182	5.9	1037	4.6	864	3.3	808	2.8	808	2.8	667	2.2
Intracameral	NA	NA	NA	NA	NA	NA	249	1.5	710	3.5	1596	7.0	2587	9.8	2933	10.2	2933	10.2	3419	11.3
Subconjunctival	28	0.2	141	0.9	139	0.8	232	1.4	251	1.2	437	1.9	898	3.4	771	2.7	771	2.7	1266	4.2
Facial block	1348	11.3	865	5.5	226	1.3	20	0.1	143	0.7	95	0.4	40	0.2	43	0.2	43	0.2	21	0.1
Others	12	0.1	0	0.0	1	0.0	223	1.3	NA	NA	0	0.0	NA	NA	NA	NA	NA	NA	NA	NA
Combined local anaesthesia	1983	16.6	1685	10.7	1678	9.9	497	2.9	537	2.7	1918	8.4	3182	12.0	4038	14.1	4038	14.1	4375	14.5
Types of sedation for patients under local anaesthesia																				
No sedation	7507	62.7	12021	76.7	14031	82.5	9668	56.4*	11234	55.6	12809	56.2	15970	60.4	18646	65.1	18646	65.1	19379	64.1
Oral sedation alone	3995	33.3	3354	21.4	2729	16	2387	13.9	2923	14.5	3532	15.5	3171	12.0	2852	10.0	2852	10.0	1810	6.0
Intravenous alone	108	0.9	91	0.6	144	0.8	72	0.4	37	0.2	35	0.2	22	0.1	27	0.1	27	0.1	36	0.1
Intravenous plus oral	83	0.7	53	0.3	15	0.1	0	0.0	NA	NA	NA	NA	2	0.0	6	0.0	6	0.0	6	0.0
Intramuscular alone	426	3.6	261	1.7	104	0.6	3	0.02	121	0.6	52	0.2	0	0.0	3	0.0	3	0.0	2	0.0

** There was a significant percentage of missing values in sedation for 2007; these missing values may be in 'no sedation' category where data were not entered.*

Table 1.3.9.2(a): Types of Anaesthesia all SDPs and more 50yrs, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
No of patients (N)	**11477**		**15013**		**16411**		**16715**		**19709**		**22496**		**26336**		**28425**		**30228**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
General Anesthesia	324	2.8	538	3.6	644	3.9	628	3.8	681	3.5	950	6.5	1184	4.5	1173	4.1	1412	4.7
Local Anesthesia	11153	97.2	14475	96.4	15767	96.1	16018	95.8	18946	96.1	21468	93.2	24981	94.9	27131	95.5	28689	94.9
Type of local anesthesia																		
Subtenon	5257	47.1	7490	51.7	8618	54.7	9397	58.7	10354	54.7	10861	50.6	10338	41.4	9979	36.8	9340	32.6
Topical	1303	11.7	2577	17.8	3664	23.2	4510	28.2	6274	33.1	7952	37.0	12473	49.9	16003	59.0	17557	61.2
Peribulbar	2395	21.5	2354	16.3	2700	17.1	1224	7.6	1159	6.1	1173	5.5	842	3.4	415	1.5	257	0.9
Retrobulbar	2907	26.1	2742	18.9	2009	12.7	905	5.6	1084	5.7	921	4.3	749	3.0	665	2.5	573	2.0
Intracameral	NA	NA	NA	NA	NA	NA	231	1.4	685	3.6	1527	7.1	2447	9.8	2818	10.4	3287	11.5
Subconjunctival	25	0.2	129	0.9	132	0.8	218	1.4	233	1.2	412	1.9	847	3.4	721	2.7	1200	4.2
Facial block	1262	11.3	806	5.6	210	1.3	20	0.1	134	0.7	86	0.4	39	0.2	40	0.1	20	0.1
Others	1	0.0	0	0.0	1	0.0	0	0.0	NA	NA	0	0.0	NA	NA	NA	NA	NA	NA
Combined local anaesthesia	1841	16.5	1562	10.8	1536	9.7	672	4.2	1219	6.4	1815	8.5	3030	12.1	3830	14.1	4135	14.4
Types of sedation for patients under local anaesthesia																		
No sedation	6991	62.7	11613	80.2	13639	86.5	9027	56.4	10524	55.5	12056	56.2	15019	60.1	17616	64.9	18386	64.1
Oral sedation alone	3718	33.3	3124	21.6	2546	16.1	2264	14.1	2798	14.8	3355	15.6	3055	12.2	2731	10.1	1748	6.1
Intravenous alone	99	0.9	81	0.6	130	0.8	55	0.3	37	0.2	29	0.1	18	0.1	23	0.1	34	0.1
Intravenous plus oral	80	0.7	48	0.3	6	0.0	0	0.0	NA	NA	NA	NA	2	0.0	5	0.0	6	0.0
Intramuscular alone	398	3.6	244	1.7	96	0.6	3	0.0	114	0.6	47	0.2	0	0.0	2	0.0	2	0.0

Figure 1.3.9: Types of Anaesthesia all SDPs, CSR 2002-2012

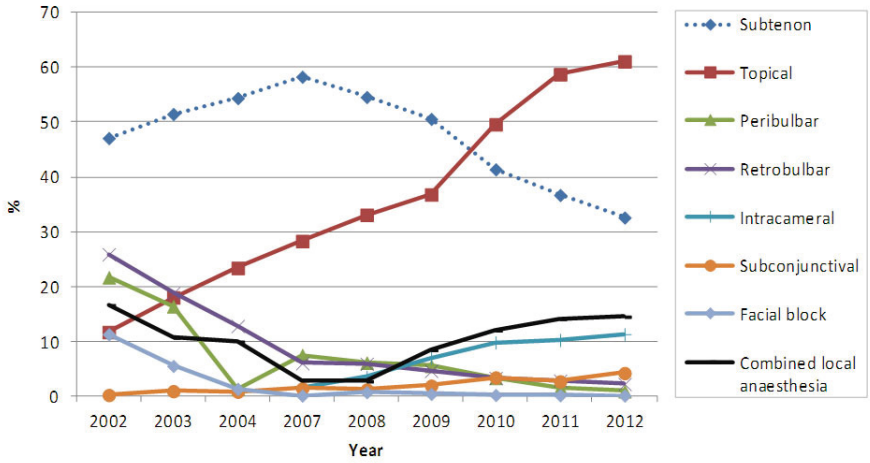


Table 1.3.9.1(b): Types of Anaesthesia by SDPs, CSR 2012

	Types of Anaesthesia				
		General		Local	
	N	n	%	n	%
All Centres	32473	2117	6.5	30215	93.0
Alor Setar	1835	228	12.4	1605	87.5
Ampang	896	22	2.5	871	97.2
Batu Pahat	608	16	2.6	588	96.7
Bintulu	391	8	2.0	382	97.7
Bukit Mertajam	928	26	2.8	899	96.9
Ipoh	2932	268	9.1	2641	90.1
Johor Bahru	1195	54	4.5	1140	95.4
Kangar	454	5	1.1	446	98.2
Keningau	17	0	0.0	17	100.0
Klang	1411	158	11.2	1236	87.6
Kota Bharu	545	34	6.2	507	93.0
Kota Kinabalu	763	49	6.4	714	93.6
Kuala Krai	247	3	1.2	244	98.8
Kuala Lumpur	1516	226	14.9	1285	84.8
Kuala Pilah	429	9	2.1	419	97.7
Kuala Terengganu	765	48	6.3	717	93.7
Kuantan	684	136	19.9	545	79.7
Kuching	1657	44	2.7	1600	96.6
Melaka	1488	62	4.2	1425	95.8
Miri	901	14	1.6	886	98.3
Muar	665	11	1.7	654	98.3
Pulau Pinang	1330	34	2.6	1285	96.6
Putrajaya	355	21	5.9	334	94.1
Sandakan	265	11	4.2	251	94.7
Selayang	1829	68	3.7	1755	96.0
Serdang	709	24	3.4	683	96.3
Seremban	1559	104	6.7	1450	93.0
Sibu	745	3	0.4	741	99.5

('cont.)

	Types of Anaesthesia				
		General		Local	
	N	n	%	n	%
Sri Manjung	466	20	4.3	445	95.5
Sultan Ismail	279	92	33.0	186	66.7
Sungai Buloh	514	81	15.8	433	84.2
Sungai Petani	845	37	4.4	805	95.3
Taiping	1118	140	12.5	977	87.4
Tawau	648	11	1.7	620	95.7
Teluk Intan	616	24	3.9	591	95.9
Temerloh	868	26	3.0	838	96.5

Table 1.3.9.2(b): Types of Anaesthesia by SDPs and 50yr above, CSR 2012

	Types of Anaesthesia				
		General		Local	
	N	n	%	n	%
All Centres	30228	1412	4.7	28689	94.9
Alor Setar	1691	144	8.5	1546	91.4
Ampang	853	10	1.2	840	98.5
Batu Pahat	572	5	0.9	564	98.6
Bintulu	357	0	0.0	356	99.7
Bukit Mertajam	865	13	1.5	849	98.2
Ipoh	2770	210	7.6	2539	91.7
Johor Bahru	1064	26	2.4	1037	97.5
Kangar	427	2	0.5	422	98.8
Keningau	17	0	0.0	17	100.0
Klang	1310	131	10.0	1163	88.8
Kota Bharu	487	13	2.7	470	96.5
Kota Kinabalu	678	14	2.1	664	97.9
Kuala Krai	232	0	0.0	232	100.0
Kuala Lumpur	1421	191	13.4	1226	86.3
Kuala Pilah	412	8	1.9	403	97.8
Kuala Terengganu	688	15	2.2	673	97.8
Kuantan	632	104	16.5	525	83.1
Kuching	1526	21	1.4	1494	97.9
Melaka	1404	43	3.1	1360	96.9
Miri	852	1	0.1	850	99.8
Muar	642	7	1.1	635	98.9
Pulau Pinang	1285	26	2.0	1248	97.1
Putrajaya	327	8	2.4	319	97.6
Sandakan	240	5	2.1	232	96.7
Selayang	1640	11	0.7	1625	99.1
Serdang	655	17	2.6	637	97.3
Seremban	1465	79	5.4	1381	94.3
Sibu	701	0	0.0	700	99.9
Sri Manjung	449	16	3.6	432	96.2
Sultan Ismail	255	73	28.6	181	71.0

('cont.)

	Types of Anaesthesia				
		General		Local	
	N	n	%	n	%
Sungai Buloh	482	65	13.5	417	86.5
Sungai Petani	790	20	2.5	767	97.1
Taiping	1066	116	10.9	949	89.0
Tawau	581	1	0.2	566	97.4
Teluk Intan	583	8	1.4	574	98.5
Temerloh	809	9	1.1	796	98.4

Table 1.3.9.1(c): Types of Local Anaesthesia by SDPs, CSR 2012

	Local Anaesthesia															
	All	Retrobulbar		Peribulbar		Subtenon		Sub-conjunctival		Facial block		Topical		Intracameral		Combined	
	N	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	30215	667	2.2	279	0.9	9849	32.6	1266	4.2	21	0.1	18461	61.1	3419	11.3	4375	14.5
Alor Setar	1605	51	3.2	4	0.2	426	26.5	2	0.1	1	0.1	922	57.4	389	24.2	191	11.9
Ampang	871	0	0.0	0	0.0	58	6.7	0	0.0	0	0.0	807	92.7	821	94.3	806	92.5
Batu Pahat	588	0	0.0	0	0.0	161	27.4	244	41.5	2	0.3	184	31.3	6	1.0	13	2.2
Bintulu	382	0	0.0	0	0.0	382	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bukit Mertajam	899	1	0.1	2	0.2	384	42.7	0	0.0	0	0.0	8	0.9	509	56.6	9	1.0
Ipoh	2641	90	3.4	18	0.7	517	19.6	209	7.9	6	0.2	2167	82.1	1075	40.7	1304	49.4
Johor Bahru	1140	70	6.1	0	0.0	501	43.9	494	43.3	1	0.1	1114	97.7	2	0.2	1039	91.1
Kangar	446	0	0.0	0	0.0	442	99.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Keningau	17	0	0.0	17	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Klang	1236	5	0.4	0	0.0	62	5.0	2	0.2	0	0.0	981	79.4	0	0.0	39	3.2
Kota Bharu	507	0	0.0	1	0.2	495	97.6	0	0.0	0	0.0	8	1.6	0	0.0	4	0.8
Kota Kinabalu	714	2	0.3	1	0.1	142	19.9	13	1.8	0	0.0	624	87.4	2	0.3	68	9.5
Kuala Krai	244	0	0.0	0	0.0	243	99.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

('cont.)

	Local Anaesthesia																
	All	Retrobulbar		Peribulbar		Subtenon		Sub-conjunctival		Facial block		Topical		Intracameral		Combined	
	N	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Kuala Lumpur	1285	30	2.3	189	14.7	601	46.8	12	0.9	3	0.2	163	12.7	198	15.4	60	4.7
Kuala Pilah	419	4	1.0	1	0.2	304	72.6	0	0.0	0	0.0	51	12.2	2	0.5	9	2.1
Kuala Terengganu	717	0	0.0	0	0.0	291	40.6	2	0.3	0	0.0	434	60.5	2	0.3	15	2.1
Kuantan	545	195	35.8	0	0.0	345	63.3	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0
Kuching	1600	3	0.2	18	1.1	86	5.4	1	0.1	3	0.2	1530	95.6	18	1.1	67	4.2
Melaka	1425	0	0.0	0	0.0	128	9.0	1	0.1	0	0.0	1415	99.3	21	1.5	141	9.9
Miri	886	0	0.0	0	0.0	60	6.8	0	0.0	0	0.0	823	92.9	0	0.0	0	0.0
Muar	654	0	0.0	0	0.0	54	8.3	1	0.2	0	0.0	584	89.3	2	0.3	3	0.5
Pulau Pinang	1285	2	0.2	1	0.1	56	4.4	0	0.0	0	0.0	1185	92.2	37	2.9	22	1.7
Putrajaya	334	1	0.3	0	0.0	125	37.4	1	0.3	0	0.0	1	0.3	210	62.9	5	1.5
Sandakan	251	6	2.4	21	8.4	113	45.0	2	0.8	0	0.0	92	36.7	0	0.0	6	2.4
Selayang	1755	206	11.7	1	0.1	323	18.4	3	0.2	1	0.1	1262	71.9	50	2.8	108	6.2
Serdang	683	0	0.0	0	0.0	414	60.6	0	0.0	0	0.0	264	38.7	3	0.4	5	0.7
Seremban	1450	0	0.0	1	0.1	422	29.1	89	6.1	0	0.0	999	68.9	2	0.1	136	9.4
Sibu	741	0	0.0	0	0.0	10	1.3	0	0.0	0	0.0	736	99.3	0	0.0	7	0.9
Sri Manjung	445	0	0.0	0	0.0	32	7.2	0	0.0	0	0.0	418	93.9	0	0.0	6	1.3
Sultan Ismail	186	0	0.0	0	0.0	1	0.5	152	81.7	4	2.2	87	46.8	0	0.0	60	32.3
Sungai Buloh	433	0	0.0	2	0.5	292	67.4	32	7.4	0	0.0	105	24.2	1	0.2	0	0.0
Sungai Petani	805	0	0.0	0	0.0	236	29.3	2	0.2	0	0.0	633	78.6	27	3.4	98	12.2
Taiping	977	0	0.0	0	0.0	356	36.4	0	0.0	0	0.0	626	64.1	0	0.0	5	0.5
Tawau	620	0	0.0	1	0.2	615	99.2	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0
Teluk Intan	591	0	0.0	1	0.2	586	99.2	2	0.3	0	0.0	12	2.0	0	0.0	10	1.7
Temerloh	838	1	0.1	0	0.0	586	69.9	0	0.0	0	0.0	226	27.0	42	5.0	139	16.6

Table 1.3.9.2(c): Types of Local Anaesthesia by SDPs and 50yrs above, CSR 2012

	Local Anaesthesia																
	All	Retrobulbar		Peribulbar		Subtenon		Sub-conjunctival		Facial block		Topical		Intracameral		Combined	
	N	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	28689	573	2.0	257	0.9	9340	32.6	1200	4.2	20	0.1	17557	61.2	3287	11.5	4135	14.4
Alor Setar	1546	41	2.7	3	0.2	418	27.0	2	0.1	1	0.1	888	57.4	377	24.4	184	11.9
Ampang	840	0	0.0	0	0.0	56	6.7	0	0.0	0	0.0	777	92.5	792	94.3	776	92.4
Batu Pahat	564	0	0.0	0	0.0	157	27.8	239	42.4	2	0.4	172	30.5	5	0.9	12	2.1
Bintulu	356	0	0.0	0	0.0	356	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bukit Mertajam	849	1	0.1	2	0.2	358	42.2	0	0.0	0	0.0	8	0.9	484	57.0	8	0.9
Ipoh	2539	73	2.9	18	0.7	500	19.7	202	8.0	6	0.2	2090	82.3	1,038	40.9	1256	49.5
Johor Bahru	1037	47	4.5	0	0.0	468	45.1	454	43.8	0	0.0	1016	98.0	2	0.2	949	91.5
Kangar	422	0	0.0	0	0.0	418	99.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Keningau	17	0	0.0	17	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Klang	1163	5	0.4	0	0.0	58	5.0	1	0.1	0	0.0	922	79.3	0	0.0	34	2.9
Kota Bharu	470	0	0.0	1	0.2	459	97.7	0	0.0	0	0.0	8	1.7	0	0.0	4	0.9
Kota Kinabalu	664	2	0.3	1	0.2	132	19.9	12	1.8	0	0.0	583	87.8	2	0.3	66	9.9
Kuala Krai	232	0	0.0	0	0.0	231	99.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Kuala Lumpur	1226	28	2.3	177	14.4	581	47.4	11	0.9	3	0.2	157	12.8	192	15.7	58	4.7
Kuala Pilah	403	4	1.0	1	0.2	292	72.5	0	0.0	0	0.0	49	12.2	2	0.5	9	2.2
Kuala Terengganu	673	0	0.0	0	0.0	273	40.6	2	0.3	0	0.0	408	60.6	1	0.1	14	2.1
Kuantan	525	190	36.2	0	0.0	330	62.9	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0
Kuching	1494	3	0.2	12	0.8	76	5.1	1	0.1	3	0.2	1429	95.6	16	1.1	54	3.6
Melaka	1360	0	0.0	0	0.0	125	9.2	1	0.1	0	0.0	1350	99.3	16	1.2	133	9.8
Miri	850	0	0.0	0	0.0	56	6.6	0	0.0	0	0.0	791	93.1	0	0.0	0	0.0
Muar	635	0	0.0	0	0.0	51	8.0	1	0.2	0	0.0	568	89.4	2	0.3	3	0.5
Pulau Pinang	1248	2	0.2	1	0.1	53	4.2	0	0.0	0	0.0	1153	92.4	36	2.9	22	1.8
Putrajaya	319	1	0.3	0	0.0	116	36.4	1	0.3	0	0.0	1	0.3	204	63.9	5	1.6
Sandakan	232	6	2.6	18	7.8	107	46.1	2	0.9	0	0.0	84	36.2	0	0.0	5	2.2
Selayang	1625	169	10.4	1	0.1	300	18.5	3	0.2	1	0.1	1185	72.9	46	2.8	98	6.0
Serdang	637	0	0.0	0	0.0	389	61.1	0	0.0	0	0.0	243	38.1	3	0.5	5	0.8

('cont.)

	Local Anaesthesia															
	All	Retrobulbar		Peribulbar		Subtenon		Sub-conjunctival		Facial block		Topical		Intracameral		Combined	
	N	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Seremban	1381	0	0.0	1	0.1	392	28.4	84	6.1	0	0.0	962	69.7	2	0.1	131	9.5
Sibu	700	0	0.0	0	0.0	10	1.4	0	0.0	0	0.0	695	99.3	0	0.0	7	1.0
Sri Manjung	432	0	0.0	0	0.0	31	7.2	0	0.0	0	0.0	406	94.0	0	0.0	6	1.4
Sultan Ismail	181	0	0.0	0	0.0	1	0.6	148	81.8	4	2.2	82	45.3	0	0.0	56	30.9
Sungai Buloh	417	0	0.0	2	0.5	280	67.1	31	7.4	0	0.0	102	24.5	1	0.2	0	0.0
Sungai Petani	767	0	0.0	0	0.0	231	30.1	2	0.3	0	0.0	596	77.7	26	3.4	93	12.1
Taiping	949	0	0.0	0	0.0	349	36.8	0	0.0	0	0.0	605	63.8	0	0.0	5	0.5
Tawau	566	0	0.0	1	0.2	561	99.1	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0
Teluk Intan	574	0	0.0	1	0.2	570	99.3	1	0.2	0	0.0	11	1.9	0	0.0	9	1.6
Temerloh	796	1	0.1	0	0.0	555	69.7	0	0.0	0	0.0	216	27.1	40	5.0	133	16.7

Table 1.3.9.1(d): Types of Local Anaesthesia by SDPs Excluding Combined Surgery, CSR 2012

	Local Anaesthesia															
	All	Retrobulbar		Peribulbar		Subtenon		Sub-conjunctival		Facial block		Topical		Intracameral		Combined	
	N	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	29347	307	1.0	259	0.9	9506	32.4	1247	4.2	21	0.1	18155	61.9	3375	11.5	4152	14.1
Alor Setar	1535	8	0.5	1	0.1	409	26.6	0	0.0	1	0.1	910	59.3	388	25.3	183	11.9
Ampang	855	0	0.0	0	0.0	51	6.0	0	0.0	0	0.0	794	92.9	809	94.6	793	92.7
Batu Pahat	583	0	0.0	0	0.0	158	27.1	242	41.5	2	0.3	184	31.6	6	1.0	13	2.2
Bintulu	343	0	0.0	0	0.0	343	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bukit Mertajam	887	1	0.1	2	0.2	378	42.6	0	0.0	0	0.0	8	0.9	502	56.6	8	0.9
Ipoh	2550	34	1.3	18	0.7	502	19.7	208	8.2	6	0.2	2126	83.4	1060	41.6	1273	49.9
Johor Bahru	1021	7	0.7	0	0.0	454	44.5	482	47.2	1	0.1	999	97.8	1	0.1	921	90.2
Kangar	444	0	0.0	0	0.0	440	99.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Keningau	17	0	0.0	17	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

('cont.)

	Local Anaesthesia																
	All	Retrobulbar		Peribulbar		Subtenon		Sub-conjunctival		Facial block		Topical		Intracameral		Combined	
	N	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Klang	1232	5	0.4	0	0.0	59	4.8	2	0.2	0	0.0	977	79.3	0	0.0	36	2.9
Kota Bharu	494	0	0.0	1	0.2	483	97.8	0	0.0	0	0.0	8	1.6	0	0.0	4	0.8
Kota Kinabalu	704	2	0.3	1	0.1	135	19.2	13	1.8	0	0.0	616	87.5	2	0.3	63	8.9
Kuala Krai	234	0	0.0	0	0.0	233	99.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Kuala Lumpur	1281	29	2.3	189	14.8	600	46.8	12	0.9	3	0.2	163	12.7	197	15.4	60	4.7
Kuala Pilah	406	4	1.0	1	0.2	297	73.2	0	0.0	0	0.0	50	12.3	2	0.5	8	2.0
Kuala Terengganu	687	0	0.0	0	0.0	267	38.9	2	0.3	0	0.0	427	62.2	2	0.3	14	2.0
Kuantan	543	194	35.7	0	0.0	344	63.4	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0
Kuching	1558	0	0.0	4	0.3	79	5.1	1	0.1	3	0.2	1500	96.3	16	1.0	53	3.4
Melaka	1416	0	0.0	0	0.0	123	8.7	0	0.0	0	0.0	1407	99.4	21	1.5	136	9.6
Miri	883	0	0.0	0	0.0	60	6.8	0	0.0	0	0.0	820	92.9	0	0.0	0	0.0
Muar	647	0	0.0	0	0.0	50	7.7	1	0.2	0	0.0	581	89.8	2	0.3	3	0.5
Pulau Pinang	1278	0	0.0	0	0.0	52	4.1	0	0.0	0	0.0	1181	92.4	37	2.9	19	1.5
Putrajaya	332	1	0.3	0	0.0	124	37.3	0	0.0	0	0.0	1	0.3	209	63.0	4	1.2
Sandakan	251	6	2.4	21	8.4	113	45.0	2	0.8	0	0.0	92	36.7	0	0.0	6	2.4
Selayang	1527	15	1.0	0	0.0	300	19.6	3	0.2	1	0.1	1246	81.6	47	3.1	103	6.7
Serdang	680	0	0.0	0	0.0	411	60.4	0	0.0	0	0.0	264	38.8	3	0.4	5	0.7
Seremban	1431	0	0.0	0	0.0	411	28.7	89	6.2	0	0.0	991	69.3	2	0.1	133	9.3
Sibu	736	0	0.0	0	0.0	8	1.1	0	0.0	0	0.0	731	99.3	0	0.0	5	0.7
Sri Manjung	442	0	0.0	0	0.0	31	7.0	0	0.0	0	0.0	415	93.9	0	0.0	5	1.1
Sultan Ismail	186	0	0.0	0	0.0	1	0.5	152	81.7	4	2.2	87	46.8	0	0.0	60	32.3
Sungai Buloh	432	0	0.0	2	0.5	291	67.4	32	7.4	0	0.0	105	24.3	1	0.2	0	0.0
Sungai Petani	798	0	0.0	0	0.0	234	29.3	2	0.3	0	0.0	627	78.6	26	3.3	96	12.0
Taiping	932	0	0.0	0	0.0	324	34.8	0	0.0	0	0.0	610	65.5	0	0.0	2	0.2
Tawau	582	0	0.0	1	0.2	577	99.1	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0
Teluk Intan	590	0	0.0	1	0.2	585	99.2	2	0.3	0	0.0	12	2.0	0	0.0	10	1.7
Temerloh	830	1	0.1	0	0.0	579	69.8	0	0.0	0	0.0	223	26.9	42	5.1	136	16.4

Table 1.3.9.2(d): Types of Local Anaesthesia by SDPs 50yrs above and Excluding Combined Surgery, CSR 2012

		Local Anaesthesia															
	All	Retrobulbar		Peribulbar		Subtenon		Sub-conjunctival		Facial block		Topical		Intracameral		Combined	
	N	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	27943	287	1.0	242	0.9	9023	32.3	1184	4.2	20	0.1	17303	61.9	3247	11.6	3953	14.1
Alor Setar	1488	6	0.4	1	0.1	403	27.1	0	0.0	1	0.1	879	59.1	376	25.3	178	12.0
Ampang	824	0	0.0	0	0.0	49	5.9	0	0.0	0	0.0	764	92.7	780	94.7	763	92.6
Batu Pahat	559	0	0.0	0	0.0	154	27.5	237	42.4	2	0.4	172	30.8	5	0.9	12	2.1
Bintulu	319	0	0.0	0	0.0	319	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bukit Mertajam	837	1	0.1	2	0.2	352	42.1	0	0.0	0	0.0	8	1.0	477	57.0	7	0.8
Ipoh	2461	28	1.1	18	0.7	485	19.7	201	8.2	6	0.2	2053	83.4	1024	41.6	1228	49.9
Johor Bahru	948	4	0.4	0	0.0	429	45.3	445	46.9	0	0.0	930	98.1	1	0.1	860	90.7
Kangar	420	0	0.0	0	0.0	416	99.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Keningau	17	0	0.0	17	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Klang	1159	5	0.4	0	0.0	55	4.7	1	0.1	0	0.0	918	79.2	0	0.0	31	2.7
Kota Bharu	462	0	0.0	1	0.2	451	97.6	0	0.0	0	0.0	8	1.7	0	0.0	4	0.9
Kota Kinabalu	654	2	0.3	1	0.2	125	19.1	12	1.8	0	0.0	575	87.9	2	0.3	61	9.3
Kuala Krai	223	0	0.0	0	0.0	222	99.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Kuala Lumpur	1222	27	2.2	177	14.5	580	47.5	11	0.9	3	0.2	157	12.8	191	15.6	58	4.7
Kuala Pilah	390	4	1.0	1	0.3	285	73.1	0	0.0	0	0.0	48	12.3	2	0.5	8	2.1
Kuala Terengganu	643	0	0.0	0	0.0	249	38.7	2	0.3	0	0.0	401	62.4	1	0.2	13	2.0
Kuantan	523	189	36.1	0	0.0	329	62.9	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0
Kuching	1461	0	0.0	2	0.1	70	4.8	1	0.1	3	0.2	1405	96.2	15	1.0	43	2.9
Melaka	1351	0	0.0	0	0.0	120	8.9	0	0.0	0	0.0	1342	99.3	16	1.2	128	9.5
Miri	848	0	0.0	0	0.0	56	6.6	0	0.0	0	0.0	789	93.0	0	0.0	0	0.0
Muar	628	0	0.0	0	0.0	47	7.5	1	0.2	0	0.0	565	90.0	2	0.3	3	0.5
Pulau Pinang	1242	0	0.0	0	0.0	49	3.9	0	0.0	0	0.0	1150	92.6	36	2.9	19	1.5
Putrajaya	317	1	0.3	0	0.0	115	36.3	0	0.0	0	0.0	1	0.3	203	64.0	4	1.3
Sandakan	232	6	2.6	18	7.8	107	46.1	2	0.9	0	0.0	84	36.2	0	0.0	5	2.2
Selayang	1440	13	0.9	0	0.0	281	19.5	3	0.2	1	0.1	1176	81.7	45	3.1	97	6.7
Serdang	634	0	0.0	0	0.0	386	60.9	0	0.0	0	0.0	243	38.3	3	0.5	5	0.8

('cont.)

	Local Anaesthesia																
	All	Retrobulbar		Peribulbar		Subtenon		Sub-conjunctival		Facial block		Topical		Intracameral		Combined	
	N	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Seremban	1363	0	0.0	0	0.0	382	28.0	84	6.2	0	0.0	954	70.0	2	0.1	128	9.4
Sibu	695	0	0.0	0	0.0	8	1.2	0	0.0	0	0.0	690	99.3	0	0.0	5	0.7
Sri Manjung	429	0	0.0	0	0.0	30	7.0	0	0.0	0	0.0	403	93.9	0	0.0	5	1.2
Sultan Ismail	181	0	0.0	0	0.0	1	0.6	148	81.8	4	2.2	82	45.3	0	0.0	56	30.9
Sungai Buloh	416	0	0.0	2	0.5	279	67.1	31	7.5	0	0.0	102	24.5	1	0.2	0	0.0
Sungai Petani	760	0	0.0	0	0.0	229	30.1	2	0.3	0	0.0	590	77.6	25	3.3	91	12.0
Taiping	907	0	0.0	0	0.0	319	35.2	0	0.0	0	0.0	590	65.0	0	0.0	2	0.2
Tawau	529	0	0.0	1	0.2	524	99.1	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0
Teluk Intan	573	0	0.0	1	0.2	569	99.3	1	0.2	0	0.0	11	1.9	0	0.0	9	1.6
Temerloh	788	1	0.1	0	0.0	548	69.5	0	0.0	0	0.0	213	27.0	40	5.1	130	16.5

Table 1.3.9.1(e): Subtenon Anaesthesia by SDPs, CSR 2002-2012

Years	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	5647	47.0	8076	52.0	9260	54.0	9990	58.3	11014	54.6	11525	50.6	10952	41.4	10512	36.7	9849	32.6
Alor Setar	86	9.0	101	10.0	394	37.0	35	9.5	109	12.1	239	25.3	274	20.7	323	18.8	426	26.5
Ampang	-	-	-	-	-	-	3	75.0	162	78.3	110	27.1	70	11.5	27	3.8	58	6.7
Batu Pahat	-	-	599	99.0	556	99.0	545	99.6	567	99.5	562	94.8	280	69.5	156	29.1	161	27.4
Bintulu	-	-	-	-	-	-	-	-	24	0.0	118	99.2	255	99.6	328	100.0	382	100.0
Bukit Mertajam	-	-	371	73.0	405	66.0	422	69.5	294	64.1	239	32.7	399	50.8	423	54.3	384	42.7
Ipoh	283	99.0	627	68.0	463	64.0	702	47.1	921	56.2	872	43.5	567	27.3	387	23.5	517	19.6
Johor Bahru	3	1.0	40	5.0	197	21.0	1103	74.0	801	60.1	942	74.8	464	35.3	436	41.1	501	43.9
Kangar	604	60.0	344	100.0	294	99.0	313	98.4	389	98.5	383	98.5	383	98.7	397	100.0	442	99.1
Keningau	-	-	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Klang	207	90.0	582	95.0	546	80.0	468	57.1	297	27.3	178	24.1	326	38.5	67	7.2	62	5.0
Kota Bharu	212	100.0	558	99.0	577	99.0	726	99.2	672	99.3	837	98.0	885	97.6	884	99.0	495	97.6

('cont.)

Years	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Kota Kinabalu	83	11.0	184	28.0	112	13.0	195	39.2	81	24.1	82	20.3	115	22.0	91	14.0	142	19.9
Kuala Krai	-	-	-	-	-	-	115	100.0	142	86.6	169	98.8	203	95.8	222	94.9	243	99.6
Kuala Lumpur	201	55.0	488	61.0	480	76.0	NA	NA	27	73.0	620	50.7	800	56.7	829	60.7	601	46.8
Kuala Pilah	-	-	24	15.0	55	39.0	208	99.5	270	97.8	252	89.7	237	79.5	371	79.6	304	72.6
Kuala Terengganu	98	14.0	140	59.0	120	63.0	419	85.2	590	84.8	417	59.7	267	39.8	274	38.1	291	40.6
Kuantan	633	90.0	63	19.0	196	46.0	9	47.4	162	54.9	143	63.8	358	78.9	456	77.2	345	63.3
Kuching	510	53.0	292	46.0	616	73.0	404	42.7	254	26.3	145	17.1	142	12.5	54	4.9	86	5.4
Melaka	507	99.0	400	41.0	531	47.0	443	30.1	463	28.9	376	28.5	310	19.5	211	13.4	128	9.0
Miri	-	-	-	-	2	1.0	1	6.3	352	90.0	187	46.9	90	15.7	161	24.9	60	6.8
Muar	1004	95.0	585	100.0	350	99.0	166	49.7	326	98.5	528	99.2	460	77.7	104	15.8	54	8.3
Pulau Pinang	2	0.0	883	99.0	1036	99.0	967	97.6	687	54.5	474	37.3	328	18.5	76	3.5	56	4.4
Putrajaya	2	1.0	73	95.0	112	100.0	188	98.9	236	99.6	240	99.2	260	100.0	240	80.3	125	37.4
Sandakan	0	0.0	0	0.0			NA	NA	0	0.0	86	57.7	116	61.4	140	55.6	113	45.0
Selayang	-	-	467	49.0	350	28.0	152	11.1	174	12.7	190	13.9	249	15.1	211	11.8	323	18.4
Serdang	-	-	-	-	-	-	522	91.7	375	56.9	396	70.7	375	80.5	432	70.7	414	60.6
Seremban	0	0.0	175	25.0	215	26.0	210	24.1	294	35.4	356	30.7	563	38.3	591	38.5	422	29.1
Sibu	76	8.0	25	9.0	23	8.0	33	9.6	96	38.9	155	40.4	26	5.8	37	7.4	10	1.3
Sri Manjung	-	-	-	-	-	-	136	92.5	133	38.7	28	8.6	35	9.2	47	11.4	32	7.2
Sultan Ismail	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.5
Sungai Buloh	-	-	-	-	-	-	98	80.3	221	90.2	325	99.4	374	91.2	319	79.4	292	67.4
Sungai Petani	344	85.0	1	0.0	193	37.0	472	99.0	591	98.2	646	99.2	235	44.9	180	23.3	236	29.3
Taiping	0	0.0	240	74.0	216	58.0	156	71.2	166	54.2	121	22.4	328	41.4	402	48.4	356	36.4
Tawau	200	54.0	2	1.0	68	34.0	195	100.0	303	98.4	287	99.7	382	99.5	553	100.0	615	99.2
Teluk Intan	47	12.0	184	33.0	249	57.0	190	28.6	406	72.0	397	66.4	386	58.2	472	73.2	586	99.2
Temerloh	-	-	-	-	-	-	390	94.4	429	83.1	425	67.8	410	96.7	611	94.0	586	69.9

Table 1.3.9.2(e): Subtenon Anaesthesia by SDPs and 50yrs, CSR 2002-2012

Years	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	5257	45.8	7490	49.9	8618	52.5	9397	56.2	10354	54.7	10861	50.6	10338	41.4	9979	36.8	9340	32.6
Alor Setar	83	9.4	96	9.9	372	36.3	33	8.8	103	11.9	228	25.8	263	21.0	309	19.0	418	27.0
Ampang	-	-	-	-	-	-	2	66.7	150	77.7	103	26.8	66	11.3	27	4.0	56	6.7
Batu Pahat	-	-	555	97.9	515	98.5	511	99.2	534	99.4	537	94.5	269	70.6	152	29.4	157	27.8
Bintulu	-	-	-	-	-	-	-	-	22	88.0	106	99.1	230	100.0	303	100.0	356	100.0
Bukit Mertajam	-	-	346	69.9	378	61.5	402	65.2	279	64.1	224	32.4	372	50.7	408	54.9	358	42.2
Ipoh	267	97.8	588	61.5	442	59.2	663	46.0	881	55.9	838	43.4	550	27.6	378	23.6	500	19.7
Johor Bahru	3	0.8	33	4.4	179	19.9	1025	72.9	724	59.5	846	74.7	427	35.1	403	41.3	468	45.1
Kangar	550	57.7	328	98.5	280	98.2	298	97.1	363	98.6	365	98.4	365	98.6	383	100.0	418	99.1
Keningau	-	-	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Klang	188	85.5	537	87.7	498	70.3	442	47.4	271	26.7	169	24.1	312	39.2	63	7.3	58	5.0
Kota Bharu	196	99.5	509	97.9	526	97.4	683	95.5	628	99.2	760	98.1	818	97.4	828	99.0	459	97.7
Kota Kinabalu	77	10.1	162	26.6	95	12.3	181	39.2	73	23.7	74	20.2	108	22.3	85	13.9	132	19.9
Kuala Krai	-	-	-	-	-	-	111	96.5	132	86.8	163	98.8	188	95.4	208	94.5	231	99.6
Kuala Lumpur	194	52.4	457	59.5	447	69.6	-	-	27	77.1	594	50.8	759	56.6	796	61.3	581	47.4
Kuala Pilah	-	-	22	14.5	52	38.5	197	98.5	251	98.0	240	89.6	228	79.7	355	79.2	292	72.5
Kuala Terengganu	82	12.7	132	57.1	112	58.0	390	82.5	557	84.7	392	59.7	251	40.1	261	38.1	273	40.6
Kuantan	575	82.9	58	16.9	174	40.3	7	33.3	151	54.5	138	63.3	338	78.6	444	77.5	330	62.9
Kuching	479	51.8	261	45.0	561	72.2	379	42.6	227	25.6	129	16.2	135	12.6	50	4.9	76	5.1
Melaka	474	99.2	370	40.2	501	45.4	428	30.6	455	30.0	363	29.2	303	20.0	210	14.0	125	9.2
Miri	-	-	-	-	2	0.9	1	6.3	330	89.7	176	46.2	85	15.7	151	24.5	56	6.6
Muar	940	92.1	537	98.4	329	98.2	158	48.2	308	98.4	507	99.2	429	77.7	100	15.9	51	8.0
Pulau Pinang	2	0.5	838	96.1	1003	95.1	929	91.5	668	54.6	462	37.4	320	18.7	74	3.6	53	4.2
Putrajaya	1	0.5	67	88.2	105	96.3	178	95.2	226	99.6	231	99.1	255	100.0	224	80.3	116	36.4
Sandakan	0	0.0	0	0.0	0	0.0	-	-	0	0.0	80	58.8	110	61.5	134	55.8	107	46.1
Selayang	-	-	425	50.3	326	28.6	132	10.6	165	13.5	178	14.4	227	15.1	191	11.8	300	18.5
Serdang	-	-	-	-	-	-	485	89.2	358	57.0	380	70.5	354	80.6	407	71.3	389	61.1
Seremban	0	0.0	167	23.8	195	23.5	199	22.7	272	34.6	336	30.7	529	37.9	562	38.2	392	28.4

('cont.)

Years	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sibu	67	7.4	23	8.5	18	7.1	32	9.3	89	39.0	145	40.6	23	5.5	33	7.1	10	1.4
Sri Manjung	-	-	-	-	-	-	128	90.1	123	38.9	27	8.7	34	9.2	44	11.2	31	7.2
Sultan Ismail	-	-	-	-	-	-	4	4.1	0	0.0	0	0.0	0	0.0	0	0.0	1	0.6
Sungai Buloh	-	-	-	-	-	-	91	70.5	207	90.4	306	99.4	346	91.1	294	78.8	280	67.1
Sungai Petani	325	83.5	1	0.2	180	37.0	444	96.3	551	98.2	612	99.2	225	45.5	172	23.4	231	30.1
Taiping	0	0.0	223	69.7	204	56.4	148	58.3	158	53.6	117	22.5	313	41.3	385	48.7	349	36.8
Tawau	197	53.2	1	0.4	56	31.8	169	100.0	275	98.2	258	99.6	334	99.7	500	100.0	561	99.1
Teluk Intan	41	11.1	173	30.7	240	55.4	176	28.2	386	72.0	375	65.6	371	58.2	458	73.0	570	99.3
Temerloh	-	-	-	-	-	-	371	90.5	410	83.5	402	68.4	401	96.6	587	94.1	555	69.7

Table 1.3.9.1(f): Topical Anaesthesia by SDPs, CSR 2002-2012

Years	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	1406	12.0	2819	18.0	3978	23.0	4853	28.3	6680	33.1	8382	36.8	13112	49.6	16825	58.8	18461	61.1
Alor Setar	7	1.0	1	0.0	72	7.0	1	0.3	95	10.6	124	13.1	676	51.2	876	51.0	922	57.4
Ampang	-	-	-	-	-	-	3	75.0	64	30.9	248	61.1	500	81.8	674	95.9	807	92.7
Batu Pahat	-	-	0	0.0	-	-	1	0.2	0	0.0	25	4.2	85	21.1	355	66.2	184	31.3
Bintulu	-	-	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bukit Mertajam	-	-	0	0.0	1	0.0	0	0.0	2	0.4	62	8.5	0	0.0	1	0.1	8	0.9
Ipoh	0	0.0	183	20.0	156	21.0	573	38.5	594	36.2	1137	56.7	1521	73.3	1348	81.7	2167	82.1
Johor Bahru	0	0.0	9	1.0	197	21.0	359	24.1	501	37.6	159	12.6	488	37.1	1034	97.5	1114	97.7
Kangar	33	3.0	0	0.0	-	-	0	0.0	0	0.0	3	0.8	3	0.8	0	0.0	0	0.0
Keningau	-	-	-	-	-	-	-	-	28	93.3	21	91.3	2	2.8	0	0.0	0	0.0
Klang	0	0.0	0	0.0	-	-	210	25.6	566	52.1	427	57.7	480	56.7	751	81.0	981	79.4
Kota Bharu	0	0.0	0	0.0	1	0.0	0	0.0	1	0.1	12	1.4	22	2.4	7	0.8	8	1.6
Kota Kinabalu	0	0.0	237	36.0	416	50.0	242	48.7	221	65.8	265	65.8	416	79.7	582	89.4	624	87.4
Kuala Krai	-	-	-	-	-	-	0	0.0	9	5.5	1	0.6	14	6.6	93	39.7	0	0.0

('cont.)

Years	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Kuala Lumpur	160	44.0	210	26.0	94	15.0	NA	NA	2	5.4	208	17.0	237	16.8	202	14.8	163	12.7
Kuala Pilah	-	-	0	0.0	-	-	0	0.0	1	0.4	0	0.0	9	3.0	38	8.2	51	12.2
Kuala Terengganu	380	54.0	93	39.0	72	38.0	75	15.2	99	14.2	274	39.3	402	59.9	445	61.8	434	60.5
Kuantan	1	0.0	18	5.0	26	6.0	4	21.1	40	13.6	2	0.9	9	2.0	7	1.2	0	0.0
Kuching	453	47.0	481	76.0	788	93.0	528	55.8	733	75.9	714	84.0	1000	88.3	1061	96.5	1530	95.6
Melaka	0	0.0	568	58.0	600	53.0	1075	73.1	1233	76.9	1014	76.9	1572	98.7	1549	98.6	1415	99.3
Miri	-	-	-	-	80	36.0	0	0.0	12	3.1	211	52.9	483	84.3	478	73.9	823	92.9
Muar	10	1.0	0	0.0	1	0.0	160	47.9	4	1.2	1	0.2	130	22.0	547	83.1	584	89.3
Pulau Pinang	92	20.0	4	0.0	-	-	8	0.8	560	44.4	814	64.1	1387	78.4	2002	92.4	1185	92.2
Putrajaya	-	-	0	0.0	-	-	0	0.0	0	0.0	0	0.0	0	0.0	3	1.0	1	0.3
Sandakan	0	0.0	0	0.0	1	1.0	NA	NA	12	9.2	34	22.8	86	45.5	83	32.9	92	36.7
Selayang	-	-	256	27.0	602	47.0	983	71.5	981	71.7	989	72.2	1142	69.4	1255	70.1	1262	71.9
Serdang	-	-	-	-	-	-	33	5.8	247	37.5	151	27.0	88	18.9	164	26.8	264	38.7
Seremban	1	0.0	1	0.0	2	0.0	1	0.1	102	12.3	273	23.5	632	43.0	1059	69.0	999	68.9
Sibu	54	6.0	1	0.0	-	-	0	0.0	0	0.0	173	45.1	347	77.1	450	89.6	736	99.3
Sri Manjung	-	-	-	-	-	-	11	7.5	201	58.4	298	92.0	353	92.9	365	88.8	418	93.9
Sultan Ismail	-	-	-	-	-	-	0	0.0	0	0.0	1	0.8	10	5.7	58	32.0	87	46.8
Sungai Buloh	-	-	-	-	-	-	27	22.1	15	6.1	6	1.8	33	8.0	76	18.9	105	24.2
Sungai Petani	62	15.0	94	17.0	111	21.0	0	0.0	0	0.0	0	0.0	240	45.9	640	82.9	633	78.6
Taiping	1	1.0	84	26.0	157	42.0	63	28.8	102	33.3	213	39.4	466	58.8	431	51.9	626	64.1
Tawau	148	40.0	0	0.0	1	1.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Teluk Intan	4	1.0	386	69.0	219	50.0	469	70.6	152	27.0	287	48.0	258	38.9	152	23.6	12	2.0
Temerloh	-	-	-	-	-	-	27	6.5	103	20.0	234	37.3	21	5.0	39	6.0	226	27.0

Table 1.3.9.2(f): Topical Anaesthesia by SDPs and 50yr, CSR 2002-2012

Years	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	1303	11.4	2577	17.2	3664	22.3	4510	27.0	6274	33.1	7952	37.0	12473	49.9	16003	59.0	17557	61.2
Alor Setar	7	0.8	1	0.1	70	6.8	1	0.3	88	10.1	115	13.0	652	52.0	839	51.5	888	57.4
Ampang	-	-	-	-	-	-	2	66.7	62	32.1	236	61.3	475	81.6	653	96.3	777	92.5
Batu Pahat	-	-	0	0.0	0	0.0	1	0.2	0	0.0	25	4.4	80	21.0	340	65.8	172	30.5
Bintulu	-	-	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bukit Mertajam	-	-	0	0.0	1	0.2	0	0.0	2	0.5	62	9.0	0	0.0	1	0.1	8	0.9
Ipoh	0	0.0	171	17.9	147	19.7	534	37.1	575	36.5	1090	56.5	1455	73.0	1309	81.8	2090	82.3
Johor Bahru	0	0.0	9	1.2	181	20.1	339	24.1	464	38.2	151	13.3	458	37.6	951	97.5	1016	98.0
Kangar	30	3.1	0	0.0	0	0.0	0	0.0	0	0.0	3	0.8	3	0.8	0	0.0	0	0.0
Keningau	-	-	-	-	-	-	-	-	23	92.0	19	90.5	2	3.0	0	0.0	0	0.0
Klang	0	0.0	0	0.0	0	0.0	196	21.0	531	52.3	408	58.2	446	56.0	695	81.0	922	79.3
Kota Bharu	0	0.0	0	0.0	1	0.2	0	0.0	1	0.2	10	1.3	22	2.6	6	0.7	8	1.7
Kota Kinabalu	0	0.0	219	36.0	374	48.6	210	45.5	204	66.2	241	65.8	390	80.4	546	89.5	583	87.8
Kuala Krai	-	-	-	-	-	-	0	0.0	9	5.9	1	0.6	14	7.1	86	39.1	0	0.0
Kuala Lumpur	148	40.0	190	24.7	85	13.2	-	-	1	2.9	198	16.9	223	16.6	189	14.6	157	12.8
Kuala Pilah	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	9	3.1	38	8.5	49	12.2
Kuala Terengganu	347	53.6	84	36.4	67	34.7	68	14.4	94	14.3	259	39.4	373	59.6	423	61.8	408	60.6
Kuantan	1	0.1	18	5.2	23	5.3	4	19.0	37	13.4	2	0.9	9	2.1	5	0.9	0	0.0
Kuching	421	45.5	439	75.7	719	92.5	489	55.0	681	76.8	675	84.7	945	88.2	992	96.4	1429	95.6
Melaka	0	0.0	524	56.9	563	51.0	991	70.8	1151	75.9	951	76.5	1495	98.7	1483	98.5	1350	99.3
Miri	-	-	-	-	75	35.2	0	0.0	12	3.3	204	53.5	457	84.3	457	74.2	791	93.1
Muar	9	0.9	0	0.0	1	0.3	155	47.3	4	1.3	1	0.2	121	21.9	521	83.0	568	89.4
Pulau Pinang	87	20.5	4	0.5	0	0.0	7	0.7	543	44.4	789	63.9	1346	78.6	1931	92.8	1153	92.4
Putrajaya	0	0.0	3	3.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.7	1	0.3
Sandakan	0	0.0	0	0.0	1	0.9	-	-	11	8.9	31	22.8	83	46.4	79	32.9	84	36.2
Selayang	-	-	220	26.0	544	47.8	927	74.5	906	73.9	921	74.3	1080	71.7	1192	73.4	1185	72.9
Serdang	-	-	-	-	-	-	26	4.8	235	37.4	149	27.6	82	18.7	149	26.1	243	38.1
Seremban	1	0.5	1	0.1	1	0.1	1	0.1	97	12.3	255	23.3	602	43.1	1015	69.0	962	69.7
Sibu	53	5.9	1	0.4	0	0.0	0	0.0	0	0.0	163	45.7	328	77.9	419	89.5	695	99.3
Sri Manjung	-	-	-	-	-	-	10	7.0	184	58.2	284	91.6	341	92.7	350	89.1	406	94.0

('cont.)

Years	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sultan Ismail	-	-	-	-	-	-	0	0.0	0	0.0	1	0.9	10	5.8	58	32.2	82	45.3
Sungai Buloh	-	-	-	-	-	-	24	18.6	14	6.1	6	1.9	31	8.2	73	19.6	102	24.5
Sungai Petani	58	14.9	85	17.1	100	20.6	0	0.0	0	0.0	0	0.0	225	45.5	607	82.7	596	77.7
Taiping	1	0.6	82	25.6	147	40.6	61	24.0	102	34.6	205	39.3	447	59.0	409	51.7	605	63.8
Tawau	136	36.8	0	0.0	1	0.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Teluk Intan	4	1.1	354	62.9	206	47.6	440	70.5	146	27.2	279	48.8	248	38.9	148	23.6	11	1.9
Temerloh	-	-	-	-	-	-	24	5.9	97	19.8	217	36.9	21	5.1	37	5.9	216	27.1

Table 1.3.9.1(g): Types of Sedation in Eyes Given Local Anaesthesia by SDPs, CSR 2012

		Types of sedation							
	All Local Anaesthesia	No Sedation		Oral Alone		Intravenous Alone		Intramuscular Alone	
	N	%	n	%	n	%	n	%	n
All Centres	30215	19379	64.1	1810	6.0	36	0.1	2	0.0
Alor Setar	1605	929	57.9	1	0.1	5	0.3	1	0.1
Ampang	871	651	74.7	3	0.3	0	0.0	0	0.0
Batu Pahat	588	513	87.2	1	0.2	0	0.0	0	0.0
Bintulu	382	352	92.1	0	0.0	0	0.0	0	0.0
Bukit Mertajam	899	321	35.7	107	11.9	10	1.1	0	0.0
Ipoh	2641	1106	41.9	2	0.1	3	0.1	0	0.0
Johor Bahru	1140	1119	98.2	0	0.0	0	0.0	0	0.0
Kangar	446	27	6.1	0	0.0	0	0.0	0	0.0
Keningau	17	2	11.8	0	0.0	0	0.0	0	0.0
Klang	1236	690	55.8	0	0.0	1	0.1	0	0.0
Kota Bharu	507	469	92.5	0	0.0	0	0.0	0	0.0
Kota Kinabalu	714	712	99.7	0	0.0	0	0.0	0	0.0
Kuala Krai	244	106	43.4	0	0.0	0	0.0	0	0.0
Kuala Lumpur	1285	461	35.9	15	1.2	0	0.0	0	0.0
Kuala Pilah	419	102	24.3	96	22.9	1	0.2	0	0.0
Kuala Terengganu	717	673	93.9	23	3.2	12	1.7	0	0.0
Kuantan	545	541	99.3	0	0.0	0	0.0	0	0.0
Kuching	1600	1496	93.5	1	0.1	0	0.0	0	0.0
Melaka	1425	1390	97.5	0	0.0	0	0.0	0	0.0
Miri	886	700	79.0	0	0.0	0	0.0	0	0.0
Muar	654	635	97.1	0	0.0	0	0.0	0	0.0
Pulau Pinang	1285	340	26.5	662	51.5	2	0.2	0	0.0
Putrajaya	334	321	96.1	4	1.2	0	0.0	1	0.3
Sandakan	251	36	14.3	0	0.0	0	0.0	0	0.0
Selayang	1755	1243	70.8	1	0.1	0	0.0	0	0.0
Serdang	683	657	96.2	0	0.0	0	0.0	0	0.0
Seremban	1450	680	46.9	2	0.1	0	0.0	0	0.0
Sibu	741	5	0.7	1	0.1	0	0.0	0	0.0
Sri Manjung	445	437	98.2	1	0.2	0	0.0	0	0.0
Sultan Ismail	186	86	46.2	0	0.0	0	0.0	0	0.0
Sungai Buloh	433	419	96.8	0	0.0	0	0.0	0	0.0
Sungai Petani	805	594	73.8	11	1.4	0	0.0	0	0.0
Taiping	977	974	99.7	0	0.0	0	0.0	0	0.0
Tawau	620	290	46.8	0	0.0	0	0.0	0	0.0
Teluk Intan	591	177	29.9	353	59.7	0	0.0	0	0.0
Temerloh	838	125	14.9	526	62.8	2	0.2	0	0.0

Number or percentage may be more than total or 100% as patient might have more than one type of local Anaesthesia

Table 1.3.9.2(g): Types of Sedation in Eyes Given Local Anaesthesia and age 50yrs above by SDPs, CSR 2012

		Types of sedation							
	All Local Anaesthesia	No Sedation		Oral Alone		Intravenous Alone		Intramuscular Alone	
	N	%	n	%	n	%	n	%	n
All Centres	28689	18386	64.1	1748	6.1	34	0.1	2	0.0
Alor Setar	1546	905	58.5	1	0.1	4	0.3	1	0.1
Ampang	840	626	74.5	3	0.4	0	0.0	0	0.0
Batu Pahat	564	492	87.2	0	0.0	0	0.0	0	0.0
Bintulu	356	328	92.1	0	0.0	0	0.0	0	0.0
Bukit Mertajam	849	303	35.7	102	12.0	10	1.2	0	0.0
Ipoh	2539	1063	41.9	2	0.1	3	0.1	0	0.0
Johor Bahru	1037	1018	98.2	0	0.0	0	0.0	0	0.0
Kangar	422	27	6.4	0	0.0	0	0.0	0	0.0
Keningau	17	2	11.8	0	0.0	0	0.0	0	0.0
Klang	1163	648	55.7	0	0.0	1	0.1	0	0.0
Kota Bharu	470	436	92.8	0	0.0	0	0.0	0	0.0
Kota Kinabalu	664	662	99.7	0	0.0	0	0.0	0	0.0
Kuala Krai	232	98	42.2	0	0.0	0	0.0	0	0.0
Kuala Lumpur	1226	445	36.3	14	1.1	0	0.0	0	0.0
Kuala Pilah	403	102	25.3	92	22.8	1	0.2	0	0.0
Kuala Terengganu	673	632	93.9	21	3.1	11	1.6	0	0.0
Kuantan	525	521	99.2	0	0.0	0	0.0	0	0.0
Kuching	1494	1395	93.4	1	0.1	0	0.0	0	0.0
Melaka	1360	1327	97.6	0	0.0	0	0.0	0	0.0
Miri	850	674	79.3	0	0.0	0	0.0	0	0.0
Muar	635	616	97.0	0	0.0	0	0.0	0	0.0
Pulau Pinang	1248	328	26.3	648	51.9	2	0.2	0	0.0
Putrajaya	319	307	96.2	3	0.9	0	0.0	1	0.3
Sandakan	232	32	13.8	0	0.0	0	0.0	0	0.0
Selayang	1625	1159	71.3	1	0.1	0	0.0	0	0.0
Serdang	637	613	96.2	0	0.0	0	0.0	0	0.0
Seremban	1381	647	46.9	2	0.1	0	0.0	0	0.0
Sibu	700	5	0.7	1	0.1	0	0.0	0	0.0
Sri Manjung	432	424	98.1	1	0.2	0	0.0	0	0.0
Sultan Ismail	181	84	46.4	0	0.0	0	0.0	0	0.0
Sungai Buloh	417	404	96.9	0	0.0	0	0.0	0	0.0
Sungai Petani	767	566	73.8	11	1.4	0	0.0	0	0.0
Taiping	949	946	99.7	0	0.0	0	0.0	0	0.0
Tawau	566	264	46.6	0	0.0	0	0.0	0	0.0
Teluk Intan	574	171	29.8	342	59.6	0	0.0	0	0.0
Temerloh	796	116	14.6	503	63.2	2	0.3	0	0.0

Table 1.3.9.1(h): Oral Sedation Alone by SDPs, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	3995	33.0	3354	21.0	2729	16.0	2387	13.9	2923	14.5	3532	15.5	3171	12.0	2852	10.0	1810	6.0
Alor Setar	450	50.0	601	61.0	106	10.0	4	1.1	9	1.0	23	2.4	4	0.3	0	0.0	1	0.1
Ampang	-	-	-	-	-	-	0	0.0	0	0.0	1	0.2	3	0.5	0	0.0	3	0.3
Batu Pahat	-	-	1	0.0	5	1.0	0	0.0	1	0.2	3	0.5	1	0.2	1	0.2	1	0.2
Bintulu	-	-	-	-	-	-	-	-	7	24.1	29	24.4	32	12.5	4	1.2	0	0.0
Bukit Mertajam	-	-	0	0.0	2	0.0	204	33.6	356	77.6	466	63.8	308	39.2	185	23.7	107	12.0
Ipoh	119	41.0	90	10.0	126	17.0	7	0.5	6	0.4	9	0.4	13	0.6	11	0.7	2	0.1
Johor Bahru	362	93.0	677	85.0	529	56.0	188	12.6	212	15.9	57	4.5	4	0.3	0	0.0	0	0.0
Kangar	194	19.0	202	59.0	202	68.0	4	1.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Keningau	-	-	-	-	-	-	-	-	1	3.3	0	0.0	1	1.4	2	4.5	0	0.0
Klang	92	40.0	2	0.0	3	0.0	1	0.1	2	0.2	0	0.0	0	0.0	0	0.0	0	0.0
Kota Bharu	2	1.0	7	1.0	30	5.0	5	0.7	5	0.7	15	1.8	5	0.6	1	0.1	0	0.0
Kota Kinabalu	620	79.0	1	0.0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	5	0.8	0	0.0
Kuala Krai	-	-	-	-	-	-	3	2.6	11	6.7	0	0.0	0	0.0	0	0.0	0	0.0
Kuala Lumpur	4	1.0	32	4.0	10	2.0	NA	NA	0	0.0	1	0.1	1	0.1	2	0.1	15	1.2
Kuala Pilah	-	-	5	3.0	24	17.0	99	47.4	97	35.1	205	73.0	77	25.8	211	45.3	96	23.0
Kuala Terengganu	2	0.0	9	4.0	-	-	16	3.3	2	0.3	72	10.3	104	15.5	15	2.1	23	3.3
Kuantan	193	27.0	9	2.0	7	2.0	0	0.0	0	0.0	0	0.0	2	0.4	5	0.8	0	0.0
Kuching	1	0.0	1	0.0	6	1.0	0	0.0	0	0.0	2	0.2	1	0.1	0	0.0	1	0.1
Melaka	3	1.0	3	0.0	6	1.0	0	0.0	2	0.1	7	0.5	0	0.0	0	0.0	0	0.0
Miri	-	-	-	-	14	6.0	0	0.0	0	0.0	0	0.0	1	0.2	3	0.5	0	0.0
Muar	653	61.0	1	0.0	7	2.0	4	1.2	0	0.0	0	0.0	4	0.7	0	0.0	0	0.0
Pulau Pinang	4	1.0	555	62.0	638	61.0	847	85.5	1124	89.2	1018	80.2	1339	75.6	1382	63.8	662	51.6
Putrajaya	0	0.0	0	0.0	-	-	0	0.0	1	0.4	0	0.0	0	0.0	0	0.0	4	1.2
Sandakan	0	0.0	0	0.0	-	-	-	-	0	0.0	0	0.0	1	0.5	0	0.0	0	0.0
Selayang	-	-	19	2.0	10	1.0	13	0.9	2	0.1	10	0.7	13	0.8	6	0.3	1	0.1
Serdang	-	-	-	-	-	-	2	0.4	0	0.0	0	0.0	3	0.6	0	0.0	0	0.0
Seremban	211	90.0	552	78.0	338	41.0	3	0.3	5	0.6	14	1.2	2	0.1	4	0.3	2	0.1
Sibu	894	95.0	30	11.0	98	36.0	323	94.2	57	23.1	141	36.7	39	8.7	24	4.8	1	0.1
Sri Manjung	-	-	-	-	-	-	3	2.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2

('cont.)

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sultan Ismail	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Sungai Buloh	-	-	-	-	-	-	1	0.8	1	0.4	4	1.2	0	0.0	1	0.2	0	0.0
Sungai Petani	0	0.0	344	63.0	173	33.0	253	53.0	487	80.9	578	88.8	443	84.7	281	36.4	11	1.4
Taiping	173	97.0	1	0.0	1	0.0	7	3.2	20	6.5	0	0.0	0	0.0	1	0.1	0	0.0
Tawau	0	0.0	24	9.0	27	14.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Teluk Intan	7	2.0	0	0.0	-	-	0	0.0	158	28.0	366	61.2	356	53.7	95	14.7	353	59.7
Temerloh	-	-	-	-	-	-	400	96.9	357	69.2	511	81.5	414	97.6	613	94.3	526	63.1

Table 1.3.9.2(h): Oral Sedation Alone and Age 50yr Above by SDPs, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	3718	32.4	3124	20.8	2546	15.5	2264	13.5	2798	14.8	3355	15.6	3055	12.2	2731	10.1	1748	6.1
Alor Setar	429	48.4	562	58.1	103	10.1	4	1.1	9	1.0	23	2.6	4	0.3	0	0.0	1	0.1
Ampang	-	-	-	-	-	-	0	0.0	0	0.0	1	0.3	3	0.5	0	0.0	3	0.4
Batu Pahat	-	-	1	0.2	5	1.0	0	0.0	0	0.0	2	0.4	1	0.3	1	0.2	0	0.0
Bintulu	-	-	-	-	-	-	-	-	7	28.0	25	23.4	31	13.5	4	1.3	0	0.0
Bukit Mertajam	-	-	0	0.0	1	0.2	198	32.1	340	78.2	437	63.2	284	38.7	174	23.4	102	12.0
Ipoh	116	42.5	82	8.6	120	16.1	6	0.4	6	0.4	9	0.5	13	0.7	9	0.6	2	0.1
Johor Bahru	332	92.5	631	83.5	486	53.9	173	12.3	200	16.4	52	4.6	4	0.3	0	0.0	0	0.0
Kangar	177	18.6	194	58.3	192	67.4	3	1.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Keningau	-	-	-	-	-	-	-	-	1	4.0	0	0.0	1	1.5	2	4.9	0	0.0
Klang	83	37.7	2	0.3	3	0.4	1	0.1	2	0.2	0	0.0	0	0.0	0	0.0	0	0.0
Kota Bharu	2	1.0	5	1.0	22	4.1	5	0.7	4	0.6	14	1.8	5	0.6	1	0.1	0	0.0
Kota Kinabalu	586	76.7	1	0.2	2	0.3	0	0.0	0	0.0	0	0.0	0	0.0	5	0.8	0	0.0
Kuala Krai	-	-	-	-	-	-	3	2.6	11	7.2	0	0.0	0	0.0	0	0.0	0	0.0
Kuala Lumpur	3	0.8	27	3.5	9	1.4	-	-	0	0.0	1	0.1	1	0.1	2	0.2	14	1.1
Kuala Pilah	-	-	4	2.6	24	17.8	95	47.5	92	35.9	194	72.4	75	26.2	200	44.6	92	22.8
Kuala Terengganu	2	0.3	9	3.9	0	0.0	16	3.4	2	0.3	65	9.9	98	15.7	14	2.0	21	3.1
Kuantan	174	25.1	8	2.3	7	1.6	0	0.0	0	0.0	0	0.0	2	0.5	5	0.9	0	0.0

('cont.)

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Kuching	1	0.1	1	0.2	6	0.8	0	0.0	0	0.0	2	0.3	1	0.1	0	0.0	1	0.1
Melaka	3	0.6	2	0.2	5	0.5	0	0.0	2	0.1	7	0.6	0	0.0	0	0.0	0	0.0
Miri	-	-	-	-	13	6.1	0	0.0	0	0.0	0	0.0	1	0.2	3	0.5	0	0.0
Muar	614	60.1	1	0.2	7	2.1	4	1.2	0	0.0	0	0.0	4	0.7	0	0.0	0	0.0
Pulau Pinang	4	0.9	532	61.0	612	58.0	809	79.7	1092	89.2	992	80.4	1300	75.9	1331	64.0	648	51.9
Putrajaya	0	0.0	0	0.0	0	0.0	0	0.0	1	0.4	0	0.0	0	0.0	0	0.0	3	0.9
Sandakan	0	0.0	0	0.0	0	0.0	-	-	0	0.0	0	0.0	1	0.6	0	0.0	0	0.0
Selayang	-	-	16	1.9	9	0.8	9	0.7	2	0.2	9	0.7	12	0.8	5	0.3	1	0.1
Serdang	-	-	-	-	-	-	2	0.4	0	0.0	0	0.0	3	0.7	0	0.0	0	0.0
Seremban	192	86.9	511	72.8	318	38.4	2	0.2	5	0.6	13	1.2	2	0.1	3	0.2	2	0.1
Sibu	831	92.2	29	10.7	92	36.4	307	89.0	53	23.2	131	36.7	36	8.6	23	4.9	1	0.1
Sri Manjung	-	-	-	-	-	-	3	2.1	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2
Sultan Ismail	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Sungai Buloh	-	-	-	-	-	-	1	0.8	1	0.4	4	1.3	0	0.0	1	0.3	0	0.0
Sungai Petani	0	0.0	307	61.9	160	32.9	237	51.4	456	81.3	546	88.5	421	85.1	265	36.1	11	1.4
Taiping	153	94.4	1	0.3	1	0.3	7	2.8	19	6.4	0	0.0	0	0.0	1	0.1	0	0.0
Tawau	0	0.0	17	7.6	21	11.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Teluk Intan	6	1.6	0	0.0	0	0.0	0	0.0	153	28.5	346	60.5	347	54.5	92	14.7	342	59.6
Temerloh	-	-	-	-	-	-	379	92.4	340	69.2	482	82.0	405	97.6	590	94.6	503	63.2

Table 1.3.9.1(i): Intravenous Sedation Alone by SDPs, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	108	1.0	91	1.0	144	1.0	72	0.4	37	0.2	35	0.2	22	0.1	27	0.1	36	0.1
Alor Setar	21	2.0	9	1.0	42	4.0	1	0.3	1	0.1	0	0.0	1	0.1	0	0.0	5	0.3
Ampang	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0
Batu Pahat	-	-	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bintulu	-	-	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bukit Mertajam	-	-	0	0.0	-	-	2	0.3	0	0.0	2	0.3	3	0.4	0	0.0	10	1.3
Ipoh	0	0.0	43	5.0	22	3.0	6	0.4	8	0.5	6	0.3	1	0.0	4	0.2	3	0.1
Johor Bahru	0	0.0	1	0.0	-	-	0	0.0	0	0.0	4	0.3	0	0.0	0	0.0	0	0.0
Kangar	12	1.0	0	0.0	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Keningau	-	-	-	-	-	-	-	-	0	0.0	0	0.0	3	4.2	6	13.6	0	0.0
Klang	3	1.0	0	0.0	7	1.0	11	1.3	3	0.3	2	0.3	0	0.0	0	0.0	1	0.1
Kota Bharu	0	0.0	0	0.0	-	-	5	0.7	2	0.3	6	0.7	2	0.2	0	0.0	0	0.0
Kota Kinabalu	4	1.0	0	0.0	-	-	0	0.0	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0
Kuala Krai	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	1	0.4	0	0.0
Kuala Lumpur	1	0.0	2	0.0	1	0.0	NA	NA	0	0.0	1	0.1	0	0.0	1	0.1	0	0.0
Kuala Pilah	-	-	0	0.0	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.3
Kuala Terengganu	2	0.0	6	3.0	7	4.0	7	1.4	14	2.0	7	1.0	5	0.7	13	1.8	12	1.7
Kuantan	1	0.0	0	0.0	-	-	0	0.0	0	0.0	0	0.0	2	0.4	0	0.0	0	0.0
Kuching	0	0.0	1	0.0	6	1.0	0	0.0	0	0.0	0	0.0	1	0.1	0	0.0	0	0.0
Melaka	0	0.0	1	0.0	-	-	1	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Miri	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Muar	3	0.0	0	0.0	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Pulau Pinang	0	0.0	4	0.0	7	1.0	3	0.3	4	0.3	0	0.0	0	0.0	0	0.0	2	0.3
Putrajaya	1	0.0	0	0.0	-	-	0	0.0	0	0.0	2	0.8	0	0.0	0	0.0	0	0.0
Sandakan	55	47.0	1	1.0	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Selayang	-	-	8	1.0	33	3.0	33	2.4	0	0.0	3	0.2	0	0.0	0	0.0	0	0.0
Serdang	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Seremban	0	0.0	1	0.0	6	1.0	1	0.1	1	0.1	1	0.1	0	0.0	0	0.0	0	0.0
Sibu	2	0.0	2	1.0	2	1.0	1	0.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Sri Manjung	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2	0	0.0

('cont.)

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sultan Ismail	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Sungai Buloh	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Sungai Petani	0	0.0	2	0.0	-	-	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Taiping	0	0.0	0	0.0	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Tawau	1	0.0	0	0.0	-	-	0	0.0	1	0.3	0	0.0	0	0.0	0	0.0	0	0.0
Teluk Intan	1	0.0	0	0.0	1	0.0	0	0.0	1	0.2	0	0.0	2	0.3	0	0.0	0	0.0
Temerloh	-	-	-	-	-	-	0	0.0	2	0.4	1	0.2	0	0.0	1	0.2	2	0.6

Table 1.3.9.2(i): Intravenous Sedation Alone and Age 50yr above by SDPs, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centres	99	0.9	81	0.5	130	0.8	55	0.3	37	0.2	29	0.1	18	0.1	23	0.1	34	0.1
Alor Setar	19	2.1	9	0.9	42	4.1	0	0.0	1	0.1	0	0.0	1	0.1	0	0.0	4	0.3
Ampang	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0
Batu Pahat	-	-	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bintulu	-	-	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bukit Mertajam	-	-	0	0.0	0	0.0	2	0.3	0	0.0	2	0.3	2	0.3	0	0.0	10	1.2
Ipoh	0	0.0	42	4.4	22	2.9	4	0.3	8	0.5	6	0.3	1	0.1	3	0.2	3	0.1
Johor Bahru	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	0.3	0	0.0	0	0.0	0	0.0
Kangar	11	1.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Keningau	-	-	-	-	-	-	-	-	0	0.0	0	0.0	3	4.5	5	12.2	0	0.0
Klang	3	1.4	0	0.0	6	0.8	9	1.0	3	0.3	2	0.3	0	0.0	0	0.0	1	0.1
Kota Bharu	0	0.0	0	0.0	0	0.0	5	0.7	2	0.3	5	0.6	1	0.1	0	0.0	0	0.0
Kota Kinabalu	4	0.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0
Kuala Krai	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Kuala Lumpur	1	0.3	2	0.3	1	0.2	-	-	0	0.0	1	0.1	0	0.0	1	0.1	0	0.0
Kuala Pilah	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2
Kuala Terengganu	2	0.3	6	2.6	7	3.6	5	1.1	14	2.1	4	0.6	5	0.8	12	1.8	11	1.6
Kuantan	1	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.5	0	0.0	0	0.0

('cont.)

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Kuching	1	0.1	4	0.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Melaka	0	0.0	1	0.1	0	0.0	1	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Miri	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Muar	1	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Pulau Pinang	0	0.0	4	0.5	7	0.7	3	0.3	4	0.3	0	0.0	0	0.0	0	0.0	2	0.2
Putrajaya	1	0.5	0	0.0	0	0.0	0	0.0	0	0.0	2	0.9	0	0.0	0	0.0	0	0.0
Sandakan	52	44.8	1	0.8	0	0.0	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Selayang	-	-	6	0.7	25	2.2	23	1.8	0	0.0	3	0.2	0	0.0	0	0.0	0	0.0
Serdang	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Seremban	0	0.0	0	0.0	5	0.6	1	0.1	1	0.1	1	0.1	0	0.0	0	0.0	0	0.0
Sibu	2	0.2	0	0.0	1	0.4	1	0.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Sri Manjung	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	1	0.3	0	0.0
Sultan Ismail	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Sungai Buloh	-	-	-	-	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Sungai Petani	0	0.0	2	0.4	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Taiping	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Tawau	1	0.3	0	0.0	0	0.0	0	0.0	1	0.4	0	0.0	0	0.0	0	0.0	0	0.0
Teluk Intan	0	0.0	0	0.0	1	0.2	0	0.0	1	0.2	0	0.0	1	0.2	0	0.0	0	0.0
Temerloh	-	-	-	-	-	-	0	0.0	2	0.4	0	0.0	0	0.0	1	0.2	2	0.3

1.3.10 Intraocular Lens Implantation

In 2012 the percentage of eyes with IOL implantation was 98.5%. Out of this proportion, 95.9% had posterior chamber IOL.

The material and type of IOL used demonstrated a shift from PMMA to Acrylic and from non-foldable to foldable. This pattern was consistent with the shift from ECCE to Phaco as the preferred method of cataract surgery.

Table 1.3.10(a): Intraocular Lens Implantation, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
No of patients (N)	12798		16815		18392		18426		21496		24438		28506		30611		32473	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
With IOL	12472	97.5	16396	97.5	17944	97.6	17873	97.0	21115	98.2	23982	98.1	27980	98.1	30061	98.2	31991	98.5
Without IOL	326	2.5	419	2.5	448	2.4	553	3.0	375	1.7	423	1.7	502	1.8	487	1.6	419	1.3
Not Available	-		-		-		-		6	0.0	33	0.1	24	0.1	63	0.2	63	0.2
IOL Placement																		
No of IOL	12472		16396		17944		17873		21115		23982		27980		30061		31991	
PCIOL	12074	96.8	15957	97.3	17410	97	17350	97.1	20342	96.3	23032	96	26932	96.3	28963	96.3	30683	95.9
ACIOL	386	3.1	404	2.5	497	2.8	482	2.7	454	2.2	570	2.4	543	1.9	573	1.9	575	1.8
Scleral Fixated IOL	11	0.1	34	0.2	34	0.2	35	0.2	36	0.2	21	0.1	20	0.1	21	0.1	15	0.0
Others		0.0		0.0	2	0.0	6	0.0	14	0.1	22	0.1	21	0.1	44	0.1	53	0.2
Not Available/ missing	1	0.0	1	0.0	1	0.0	-		269	1.3	337	1.4	464	1.7	460	1.5	665	2.1
Materials of IOL																		
No of IOL	12472		16396		17944		17873		21115		23982		27980		30061		31991	
1. Acrylic	1641	13.2	4418	26.9	7105	39.6	11955	66.9	15382	72.8	19160	79.9	24270	86.7	26917	89.5	28861	90.2
2. PMMA	9161	73.5	10203	62.2	9758	54.4	5547	31.0	5300	25.1	4313	18.0	3259	11.6	2603	8.7	2295	7.2
3. Silicone	1670	13.4	1776	10.8	1078	6.0	97	0.5	113	0.5	137	0.6	75	0.3	110	0.4	117	0.4
4. Others	0	0.0	4	0.0	12	0.1	74	0.4	19	0.1	58	0.2	32	0.1	37	0.1	84	0.3
Not Available/missing	-		1	0.0	-		200	1.1	301	1.4	314	1.3	344	1.2	394	1.3	634	2.0
Types of IOL																		
No of IOL	12472		16396		17944		17873		21115		23982		27980		30061		31991	
1. Foldable	3311	26.5	6195	37.8	8186	45.6	11972	67.0	15320	72.6	19093	79.6	24036	85.9	26553	88.3	29107	91.0
2. Non-foldable	9161	73.5	10201	62.2	9757	54.4	5590	31.3	5316	25.2	4280	17.8	3231	11.5	2694	9.0	2345	7.3
Not Available/missing	-		-		1	0.0	311	1.7	479	2.3	609	2.5	713	2.5	814	2.7	539	1.7

Figure 1.3.10: Intraocular Lens Implantation, CSR 2002-2012

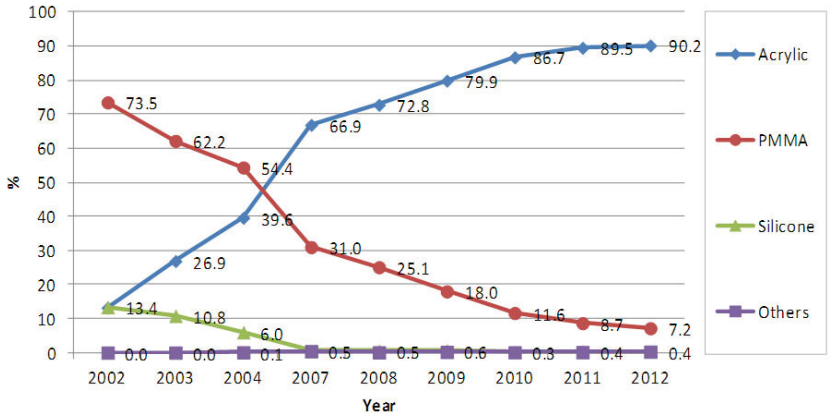


Table 1.3.10(b): Distribution of IOL Placement by SDP, CSR 2012

		Cataract Surgery With IOL					
		Posterior Chamber IOL		Anterior Chamber IOL		Scleral Fixated IOL	
	N	%	n	%	n	%	n
All Centres	31991	30683	95.9	575	1.8	15	0.0
Alor Setar	1777	1709	96.2	25	1.4	0	0.0
Ampang	886	854	96.4	23	2.6	0	0.0
Batu Pahat	597	577	96.6	16	2.7	0	0.0
Bintulu	387	361	93.3	15	3.9	0	0.0
Bukit Mertajam	919	889	96.7	9	1.0	0	0.0
Ipoh	2852	2805	98.4	28	1.0	0	0.0
Johor Bahru	1188	1139	95.9	31	2.6	3	0.3
Kangar	451	423	93.8	17	3.8	0	0.0
Keningau	17	17	100.0	0	0.0	0	0.0
Klang	1398	1305	93.3	25	1.8	1	0.1
Kota Bharu	543	533	98.2	2	0.4	0	0.0
Kota Kinabalu	745	717	96.2	26	3.5	0	0.0
Kuala Krai	240	227	94.6	7	2.9	0	0.0
Kuala Lumpur	1506	1333	88.5	10	0.7	0	0.0
Kuala Pilah	428	415	97.0	11	2.6	0	0.0
Kuala Terengganu	736	715	97.1	17	2.3	0	0.0
Kuantan	681	659	96.8	8	1.2	0	0.0
Kuching	1638	1594	97.3	15	0.9	4	0.2
Melaka	1475	1444	97.9	6	0.4	2	0.1
Miri	899	889	98.9	3	0.3	2	0.2
Muar	660	630	95.5	13	2.0	0	0.0
Pulau Pinang	1317	1266	96.1	8	0.6	1	0.1
Putrajaya	350	337	96.3	10	2.9	0	0.0
Sandakan	261	249	95.4	9	3.4	0	0.0
Selayang	1772	1669	94.2	66	3.7	0	0.0
Serdang	703	682	97.0	12	1.7	0	0.0
Seremban	1540	1410	91.6	25	1.6	2	0.1
Sibu	741	731	98.7	9	1.2	0	0.0
Sri Manjung	456	447	98.0	9	2.0	0	0.0
Sultan Ismail	275	271	98.5	3	1.1	0	0.0

('cont.)

	Cataract Surgery With IOL						
		Posterior Chamber IOL		Anterior Chamber IOL		Scleral Fixated IOL	
	N	%	n	%	n	%	n
Sungai Buloh	509	497	97.6	7	1.4	0	0.0
Sungai Petani	826	778	94.2	26	3.1	0	0.0
Taiping	1111	1082	97.4	25	2.3	0	0.0
Tawau	636	621	97.6	11	1.7	0	0.0
Teluk Intan	614	592	96.4	20	3.3	0	0.0
Temerloh	857	816	95.2	28	3.3	0	0.0

1.4 INTRA-OPERATIVE COMPLICATIONS

1.4.1 Intra-operative Complications by Years

The percentage of intra-operative complications deceased to 5.2% in 2012. The occurrences of PCR decreased to 2.7%. The more serious complications such as drop nucleus and suprachoroidal haemorrhage were not frequent and the trend remained unchanged.

Table 1.4.1(a): Distribution of Type of Intra-operative Complications, CSR 2002-2012

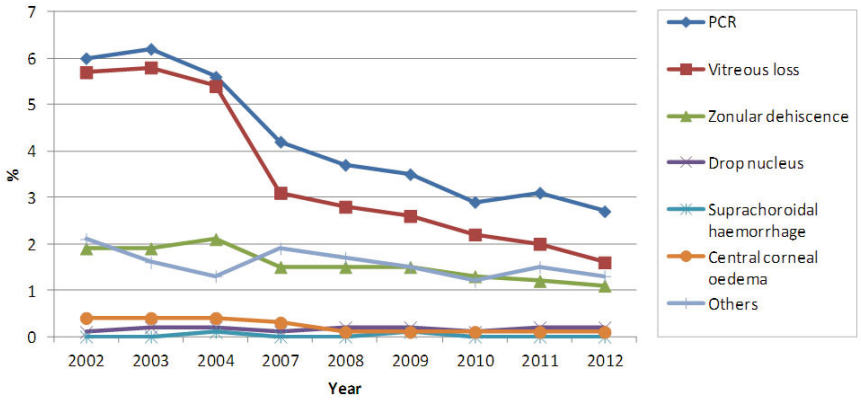
Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
No. of patients (N)	12798		16815		18391		18380		21496		24438		28506		30611		32473	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Patient with intra-op complication	1328	10.4	1673	9.9	1730	9.4	1999	10.9	1636	7.6	1645	6.7	1610	5.6	1787	5.8	1702	5.2
Types of complications																		
PCR	773	6.0	1036	6.2	1025	5.6	764	4.2	798	3.7	858	3.5	840	2.9	936	3.1	870	2.7
Vitreous loss	734	5.7	979	5.8	994	5.4	569	3.1	608	2.8	642	2.6	639	2.2	611	2.0	529	1.6
Zonular dehiscence	246	1.9	327	1.9	380	2.1	275	1.5	322	1.5	372	1.5	377	1.3	362	1.2	359	1.1
Drop nucleus	13	0.1	27	0.2	34	0.2	21	0.1	33	0.2	40	0.2	38	0.1	58	0.2	56	0.2
Suprachoroidal haemorrhage	5	0.0	8	0.0	10	0.1	9	0.0	10	0.0	13	0.1	9	0.0	8	0.0	8	0.0
Central corneal oedema	56	0.4	73	0.4	78	0.4	58	0.3	27	0.1	22	0.1	26	0.1	36	0.1	30	0.1
Others	274	2.1	266	1.6	235	1.3	350	1.9	361	1.7	373	1.5	338	1.2	449	1.5	439	1.3

Table 1.4.1(b): Distribution of Type of Intra-operative Complications – Posterior Capsule Rupture, CSR 2002-2012

Year	2002*		2003*		2004*		2007*		2008		2009		2010		2011		2012	
No. of patients (N)	12798		16815		18391		18380		21496		24438		28506		30611		32473	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Patient with intra-op complication	1328	10.4	1673	9.9	1730	9.4	1999	10.9	1636	7.6	1645	6.7	1610	5.6	1787	5.8	1702	5.2
Types of complications																		
PCR and Others	773	6.0	1036	6.2	1025	5.6	764	4.2	798	3.7	858	3.5	840	2.9	936	3.1	870	2.7
PCR Only									347	1.6	403	1.6	402	1.4	485	1.6	481	1.5

**Data from 2002-2007 could not be analyzed due to improper organized old data.*

Figure 1.4.1: Distribution of Specific Type of Intra-operative Complications, CSR 2002-2012



1.4.2 Intra-operative Complication by Type of Surgery

Similar to previous years, phacoemulsification demonstrated the lowest rate of intra-operative complication in 2012. It was followed by ECCE and lens aspiration. The percentage of intra-operative complications in Phaco, ECCE and lens aspiration showed improvement over the years.

Table 1.4.2(a): Intra-operative Complications by Types of Cataract Surgery, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009			2010			2011			2012		
	n	%	n	%	n	%	n	%	n	%	N	n	%	N	n	%	N	n	%	N	n	%
Phaco	438	8.6	667	8.7	747	8.0	969	8.1	753	5.1	17717	787	4.4	21810	798	3.7	23872	927	3.9	26345	930	3.5
ECCE	684	9.9	697	8.7	680	8.7	691	12.5	532	9.5	5457	460	8.4	5363	442	8.2	5291	404	7.6	4784	359	7.5
Lens Aspiration	51	13.7	50	11.5	58	10.5	51	15.8	31	9.1	400	38	9.5	451	34	7.5	460	29	6.3	444	26	5.9
ICCE	27	33.3	39	41.5	50	48.5	63	44.7	60	46.5	134	64	47.8	143	64	44.8	123	53	43.1	136	58	42.6
Phaco → ECCE	128	41.2	206	43.9	177	39.0	225	52.1	240	45.8	573	276	48.2	586	249	42.5	652	316	48.5	621	300	48.3
Others	-	-	14	10.7	18	10.5	-	-	16	25.8	74	8	10.8	104	20	19.2	132	21	15.9	110	27	24.5
Missing	-	-	-	-	-	-	9	20.0	4	12.1	83	12	14.5	49	3	6.1	81	37	45.7	33	2	6.1

Figure1.4.2: Intra-operative Complications by Types of Cataract Surgery, CSR 2002-2012

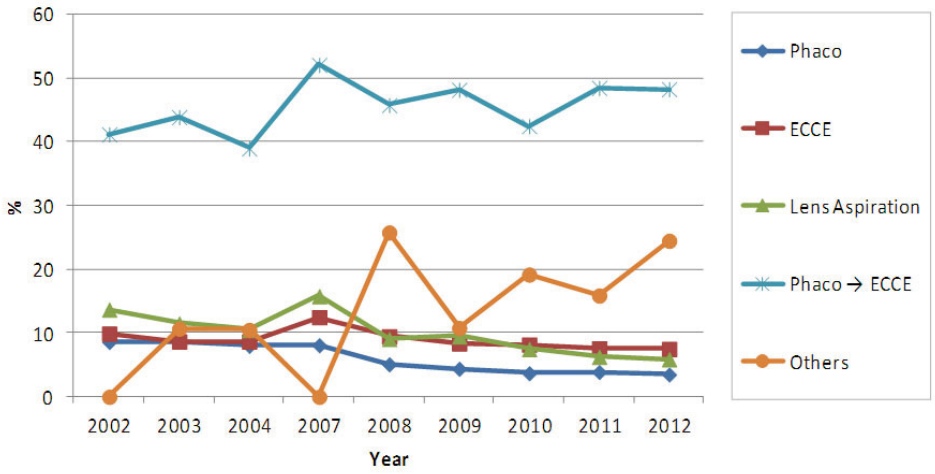


Table 1.4.2(b): Distribution of Types of Intra-operative Complications by Specific Types of Cataract Surgery, CSR 2012

	All Surgeries		Phaco		ECCE		Lens Aspiration		ICCE		Phaco converted to ECCE		Others	
No. of patients (N)	12798		16815		18391		18380		21496		24438		28506	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Any intra-op complication	1702	5.2	930	3.5	359	7.5	26	5.9	58	42.6	300	48.3	27	24.5
Posterior capsule rupture	870	2.7	538	2.0	145	3.0	13	2.9	6	4.4	161	25.9	6	5.5
Vitreous loss	529	1.6	226	0.9	120	2.5	5	1.1	37	27.2	131	21.1	10	9.1
Zonular dehiscene	359	1.1	144	0.5	92	1.9	1	0.2	23	16.9	90	14.5	9	8.2
Drop nucleus	56	0.2	39	0.1	2	0.0	1	0.2	1	0.7	9	1.4	4	3.6
Suprachoroidal haemorrhage	8	0.0	4	0.0	1	0.0	0	0.0	1	0.7	2	0.3	0	0.0
Central corneal oedema	30	0.1	19	0.1	7	0.1	0	0.0	0	0.0	4	0.6	0	0.0
Others	439	1.3	223	0.8	118	2.5	14	3.2	14	10.3	58	9.3	11	10.0

Table 1.4.2(c): Distribution of Types of Intra-operative Complications by SDP, CSR 2012

Hospital	No. of patients (N)	Any intra-op complication		PCR		Vitreous loss		Zonular Dehiscence		Drop nucleus		Suprachoroidal Haemorrhage		Central Corneal Edema		Others	
	N	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centre	32473	1702	5.2	870	2.7	529	1.6	359	1.1	56	0.2	8	0.0	30	0.1	439	1.3
Alor Setar	1835	76	4.1	46	2.5	14	0.8	11	0.6	5	0.3	0	0.0	1	0.1	28	1.5
Ampang	896	59	6.6	40	4.5	24	2.7	9	1.0	2	0.2	0	0.0	0	0.0	2	0.2
Batu Pahat	608	73	12.0	42	6.9	20	3.3	17	2.8	2	0.3	0	0.0	4	0.7	10	1.6
Bintulu	391	11	2.8	7	1.8	2	0.5	2	0.5	0	0.0	0	0.0	0	0.0	2	0.5
Bukit Mertajam	928	60	6.5	31	3.3	7	0.8	5	0.5	2	0.2	1	0.1	0	0.0	24	2.6
Ipoh	2932	128	4.4	65	2.2	19	0.6	34	1.2	5	0.2	0	0.0	1	0.0	23	0.8
Johor Bahru	1195	55	4.6	32	2.7	27	2.3	22	1.8	3	0.3	0	0.0	0	0.0	1	0.1
Kangar	454	18	4.0	13	2.9	0	0.0	3	0.7	0	0.0	0	0.0	1	0.2	1	0.2
Keningau	17	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Klang	1411	25	1.8	6	0.4	1	0.1	0	0.0	0	0.0	0	0.0	0	0.0	19	1.3
Kota Bharu	545	28	5.1	13	2.4	2	0.4	5	0.9	0	0.0	1	0.2	8	1.5	5	0.9
Kota Kinabalu	763	67	8.8	38	5.0	21	2.8	23	3.0	2	0.3	2	0.3	0	0.0	8	1.0
Kuala Krai	247	23	9.3	12	4.9	3	1.2	11	4.5	0	0.0	0	0.0	0	0.0	0	0.0
Kuala Lumpur	1516	37	2.4	24	1.6	18	1.2	11	0.7	0	0.0	0	0.0	1	0.1	3	0.2
Kuala Pilah	429	19	4.4	8	1.9	7	1.6	3	0.7	0	0.0	0	0.0	0	0.0	7	1.6
Kuala Terengganu	765	65	8.5	20	2.6	15	2.0	19	2.5	1	0.1	0	0.0	1	0.1	23	3.0
Kuantan	684	20	2.9	7	1.0	4	0.6	3	0.4	1	0.1	0	0.0	1	0.1	8	1.2
Kuching	1657	56	3.4	45	2.7	12	0.7	0	0.0	4	0.2	2	0.1	0	0.0	6	0.4
Melaka	1488	70	4.7	52	3.5	31	2.1	7	0.5	2	0.1	0	0.0	0	0.0	7	0.5
Miri	901	6	0.7	1	0.1	2	0.2	0	0.0	0	0.0	0	0.0	1	0.1	3	0.3
Muar	665	28	4.2	26	3.9	16	2.4	2	0.3	1	0.2	0	0.0	0	0.0	1	0.2
Pulau Pinang	1330	49	3.7	26	2.0	12	0.9	8	0.6	4	0.3	0	0.0	1	0.1	18	1.4
Putrajaya	355	16	4.5	4	1.1	12	3.4	8	2.3	1	0.3	0	0.0	0	0.0	2	0.6
Sandakan	265	20	7.5	4	1.5	10	3.8	8	3.0	0	0.0	0	0.0	0	0.0	6	2.3
Selayang	1829	142	7.8	83	4.5	63	3.4	34	1.9	10	0.5	0	0.0	0	0.0	19	1.0
Serdang	709	37	5.2	20	2.8	10	1.4	11	1.6	0	0.0	0	0.0	0	0.0	9	1.3
Seremban	1559	112	7.2	67	4.3	56	3.6	18	1.2	3	0.2	1	0.1	4	0.3	27	1.7
Sibu	745	21	2.8	11	1.5	5	0.7	4	0.5	0	0.0	0	0.0	0	0.0	9	1.2

('cont.)

Hospital	No. of patients (N)	Any intra-op complication		PCR		Vitreous loss		Zonular Dehiscence		Drop nucleus		Suprachoroidal Haemorrhage		Central Corneal Edema		Others	
Sri Manjung	466	29	6.2	9	1.9	7	1.5	6	1.3	3	0.6	0	0.0	4	0.9	4	0.9
Sultan Ismail	279	9	3.2	8	2.9	2	0.7	1	0.4	0	0.0	0	0.0	0	0.0	1	0.4
Sungai Buloh	514	19	3.7	14	2.7	14	2.7	2	0.4	0	0.0	0	0.0	0	0.0	2	0.4
Sungai Petani	845	58	6.9	19	2.2	26	3.1	22	2.6	0	0.0	1	0.1	0	0.0	17	2.0
Taiping	1118	59	5.3	32	2.9	30	2.7	20	1.8	3	0.3	0	0.0	0	0.0	8	0.7
Tawau	648	17	2.6	9	1.4	6	0.9	4	0.6	1	0.2	0	0.0	0	0.0	5	0.8
Teluk Intan	616	26	4.2	15	2.4	12	1.9	7	1.1	1	0.2	0	0.0	0	0.0	2	0.3
Temerloh	868	164	18.9	21	2.4	19	2.2	19	2.2	0	0.0	0	0.0	2	0.2	129	14.9

Table 1.4.2(d): Distribution of Types of Intra-operative Complications in "Phaco Converted to ECCE" by SDP, CSR 2012

Hospital	No. of patients (N)	Any intra-op complication		PCR		Vitreous loss		Zonular Dehiscence		Drop nucleus		Suprachoroidal Haemorrhage		Central Corneal Edema		Others	
	N	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Centre	621	300	48.3	161	25.9	131	21.1	90	14.5	9	1.4	2	0.3	4	0.6	58	9.3
Alor Setar	35	16	45.7	10	28.6	3	8.6	2	5.7	1	2.9	0	0.0	0	0.0	7	20.0
Ampang	28	14	50.0	8	28.6	6	21.4	4	14.3	0	0.0	0	0.0	0	0.0	0	0.0
Batu Pahat	34	20	58.8	13	38.2	8	23.5	5	14.7	0	0.0	0	0.0	1	2.9	2	5.9
Bintulu	3	1	33.3	0	0.0	0	0.0	1	33.3	0	0.0	0	0.0	0	0.0	0	0.0
Bukit Mertajam	11	10	90.9	7	63.6	2	18.2	1	9.1	0	0.0	1	9.1	0	0.0	2	18.2
Ipoh	29	12	41.4	1	3.4	3	10.3	6	20.7	1	3.4	0	0.0	0	0.0	2	6.9
Johor Bahru	24	14	58.3	10	41.7	8	33.3	4	16.7	0	0.0	0	0.0	0	0.0	0	0.0
Kangar	5	1	20.0	0	0.0	0	0.0	1	20.0	0	0.0	0	0.0	0	0.0	0	0.0
Keningau	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Klang	7	2	28.6	1	14.3	1	14.3	0	0.0	0	0.0	0	0.0	0	0.0	1	14.3
Kota Bharu	21	3	14.3	0	0.0	0	0.0	1	4.8	0	0.0	0	0.0	1	4.8	1	4.8
Kota Kinabalu	16	11	68.8	6	37.5	5	31.3	7	43.8	0	0.0	1	6.3	0	0.0	1	6.3
Kuala Krai	4	1	25.0	0	0.0	0	0.0	1	25.0	0	0.0	0	0.0	0	0.0	0	0.0
Kuala Lumpur	33	8	24.2	6	18.2	5	15.2	4	12.1	0	0.0	0	0.0	0	0.0	0	0.0

Hospital	No. of patients (N)	Any intra-op complication		PCR		Vitreous loss		Zonular Dehiscence		Drop nucleus		Suprachoroidal Haemorrhage		Central Corneal Edema		Others	
Kuala Pilah	14	6	42.9	3	21.4	3	21.4	1	7.1	0	0.0	0	0.0	0	0.0	2	14.3
Kuala Terengganu	10	5	50.0	3	30.0	3	30.0	2	20.0	0	0.0	0	0.0	0	0.0	0	0.0
Kuantan	26	6	23.1	4	15.4	2	7.7	0	0.0	0	0.0	0	0.0	0	0.0	3	11.5
Kuching	12	4	33.3	3	25.0	2	16.7	0	0.0	0	0.0	0	0.0	0	0.0	1	8.3
Melaka	8	4	50.0	3	37.5	2	25.0	1	12.5	0	0.0	0	0.0	0	0.0	0	0.0
Miri	1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Muar	32	14	43.8	13	40.6	7	21.9	1	3.1	1	3.1	0	0.0	0	0.0	0	0.0
Pulau Pinang	23	13	56.5	7	30.4	5	21.7	1	4.3	1	4.3	0	0.0	1	4.3	5	21.7
Putrajaya	23	6	26.1	1	4.3	6	26.1	4	17.4	1	4.3	0	0.0	0	0.0	0	0.0
Sandakan	5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Selayang	45	22	48.9	10	22.2	13	28.9	10	22.2	2	4.4	0	0.0	0	0.0	2	4.4
Serdang	24	14	58.3	6	25.0	5	20.8	7	29.2	0	0.0	0	0.0	0	0.0	4	16.7
Seremban	21	14	66.7	11	52.4	11	52.4	2	9.5	0	0.0	0	0.0	0	0.0	3	14.3
Sibu	10	3	30.0	2	20.0	1	10.0	1	10.0	0	0.0	0	0.0	0	0.0	0	0.0
Sri Manjung	7	2	28.6	0	0.0	0	0.0	1	14.3	0	0.0	0	0.0	1	14.3	0	0.0
Sultan Ismail	4	1	25.0	1	25.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Sungai Buloh	21	6	28.6	4	19.0	5	23.8	1	4.8	0	0.0	0	0.0	0	0.0	1	4.8
Sungai Petani	11	7	63.6	2	18.2	4	36.4	3	27.3	0	0.0	0	0.0	0	0.0	1	9.1
Taiping	17	14	82.4	11	64.7	9	52.9	3	17.6	1	5.9	0	0.0	0	0.0	0	0.0
Tawau	5	2	40.0	2	40.0	0	0.0	1	20.0	1	20.0	0	0.0	0	0.0	0	0.0
Teluk Intan	10	5	50.0	2	20.0	3	30.0	2	20.0	0	0.0	0	0.0	0	0.0	0	0.0
Temerloh	42	39	92.9	11	26.2	9	21.4	12	28.6	0	0.0	0	0.0	0	0.0	20	47.6

1.4.3 Intra-operative Complications by Combined Surgery

The intra-operative complications were higher in combined surgery when compared to cataract surgery performed alone. PCR and vitreous loss remained the commonest complications encountered.

Table 1.4.3(a): Distribution of Intra-operative Complications by Any Combined Surgery, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
Number of combined surgery (N)	375		581		733		891		664		871		1082		1194		1221	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Any intra-operative complication	64	17.1	105	18.1	120	16.4	131	14.7	89	10.0	113	13.0	121	11.2	222	18.6	240	19.7
Types of complications																		
PCR	35	9.3	60	10.3	77	10.5	56	6.3	54	6.1	62	7.1	61	5.6	140	11.7	146	12.0
Vitreous loss	46	12.3	66	11.4	72	9.8	41	4.6	40	4.5	51	5.9	53	4.9	101	8.5	123	10.1
Zonular dehiscence	18	4.8	22	3.8	23	3.1	21	2.4	15	1.7	21	2.4	28	2.6	49	4.1	61	5.0
Drop nucleus	3	0.8	5	0.9	5	0.7	4	0.4	3	0.3	8	0.9	10	0.9	20	1.7	16	1.3
Suprachoroidal haemorrhage	0	0.0	0	0.0	4	0.5	0	0.0	0.0	0.0	4	0.5	1	0.1	2	0.2	2	0.2
Central corneal oedema	1	0.3	10	1.7	4	0.5	7	0.8	3	0.3	1	0.1	2	0.2	0	0.0	2	0.2
Others	12	3.2	18	3.1	16	2.2	30	3.4	14	1.6	21	2.4	24	2.2	29	2.4	38	3.1

Table 1.4.3(b): Distribution of Intra-operative Complications by Specific Combined Surgery, CSR 2012

	All Surgeries		Any Combined Surgery		Pterygium Surgery		Filtering Surgery		Vitreo-Retinal Surgery		Penetrating Keratoplasty		Others	
No. of patients (N)	32473		1221		111		71		585		3		477	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Any intra-op complication	1702	5.2	240	19.7	7	6.3	3	4.2	45	7.7	0	0.0	189	39.6
Posterior capsule rupture	870	2.7	146	12.0	4	3.6	2	2.8	23	3.9	0	0.0	119	24.9
Vitreous loss	529	1.6	123	10.1	3	2.7	1	1.4	8	1.4	0	0.0	111	23.3
Zonular dehiscene	359	1.1	61	5.0	2	1.8	0	0.0	6	1.0	0	0.0	53	11.1
Drop nucleus	56	0.2	16	1.3	0	0.0	0	0.0	7	1.2	0	0.0	10	2.1
Suprachoroidal haemorrhage	8	0.0	2	0.2	0	0.0	0	0.0	1	0.2	0	0.0	1	0.2
Central corneal oedema	30	0.1	2	0.2	1	0.9	0	0.0	0	0.0	0	0.0	1	0.2
Others	439	1.4	38	3.1	0	0.0	0	0.0	15	2.6	0	0.0	25	5.2

Table 1.4.3(c): Distribution of Intra-operative Complications when Combined with Filtering Surgery, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
N	148		210		235		131		142		132		121		64		71	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Any intra-op complication	20	14.0	18	9.0	24	10.0	24	18.3	9	6.3	16	12.1	8	6.6	5	7.8	3	4.2
Posterior capsule rupture	2	1.0	3	1.0	3	1.0	9	6.9	3	2.1	4	3.0	3	2.5	1	1.6	2	2.8
Vitreous loss	11	7.0	7	3.0	14	6.0	7	5.3	5	3.5	7	5.3	2	1.7	3	4.7	1	1.4
Zonular dehiscence	3	2.0	1	0.0	1	0.0	4	3.1	3	2.1	5	3.8	1	0.8	3	4.7	0	0.0
Drop nucleus	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Suprachoroidal haemorrhage	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	2	1.5	0	0.0	0	0.0	0	0.0
Central corneal oedema	0	0.0	3	1.0	1	0.0	3	2.3	2	1.4	0	0.0	0	0.0	0	0.0	0	0.0
Others	6	3.0	4	2.0	4	2.0	5	3.8	1	0.7	3	2.3	3	2.5	0	0.0	0	0.0

Table 1.4.3(d): Distribution of Intra-operative Complications when Combined with VR Surgery, CSR 2002-2012

Year	2002		2003		2004		2007		2008		2009		2010		2011		2012	
N	26		100		186		435		237		402		601		672		585	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Any intra-op complication	9	35.0	24	24.0	25	13.0	45	10.3	21	8.9	32	8.0	35	5.8	69	10.3	45	7.7
Posterior capsule rupture	0	0.0	4	4.0	11	6.0	18	4.1	17	7.2	18	4.5	22	3.7	41	6.1	23	3.9
Vitreous loss	5	19.0	12	12.0	8	5.0	11	2.5	6	2.5	5	1.2	9	1.5	10	1.5	8	1.4
Zonular dehiscence	0	0.0	2	2.0	3	2.0	6	1.4	1	0.4	2	0.5	5	0.8	13	1.9	6	1.0
Drop nucleus	1	4.0	2	2.0	3	2.0	3	0.7	2	0.8	6	1.5	6	1.0	15	2.2	7	1.2
Suprachoroidal haemorrhage	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.5	0	0.0	2	0.3	1	0.2
Central corneal oedema	0	0.0	2	2.0	1	1.0	3	0.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Others	3	12.0	4	4.0	2	1.0	12	2.8	3	1.3	5	1.2	4	0.7	10	1.5	15	2.6

1.4.4 Intra-operative Complications by Types of Local Anaesthesia

The highest percentage of intra-operative complication occurred in eyes operated using retrobulbar, peribulbar and subtenon anaesthesia. However, for subtenon anesthesia and subconjunctival anaesthesia the higher percentages in these eyes could also be due to the occurrence of complication prompting the use of subtenon injection as additional anaesthesia.

Table 1.4.4: Intra-operative Complications by Types of Local Anaesthesia, CSR 2012

	All Local Anaesthesia		Retrobulbar		Peribulbar		Subtenon		Sub-Conjunctival		Facial Block		Topical		Intracameral	
N	30215		667		279		9849		1266		21		18461		3419	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Any intra-op complication	1564	5.2	33	4.9	16	5.7	817	8.3	63	5.0	0	0.0	766	4.1	149	4.4
Posterior capsule rupture	808	2.7	16	2.4	13	4.7	364	3.7	40	3.2	0	0.0	435	2.4	89	2.6
Vitreous loss	490	1.6	4	0.6	5	1.8	276	2.8	21	1.7	0	0.0	242	1.3	48	1.4
Zonular dehiscence	337	1.1	7	1.0	0	0.0	197	2.0	15	1.2	0	0.0	169	0.9	24	0.7
Drop nucleus	51	0.2	4	0.6	0	0.0	20	0.2	1	0.1	0	0.0	33	0.2	5	0.1
Suprachoroidal haemorrhage	7	0.0	0	0.0	0	0.0	3	0.0	0	0.0	0	0.0	4	0.0	1	0.0
Central corneal oedema	29	0.1	0	0.0	0	0.0	18	0.2	2	0.2	0	0.0	8	0.0	1	0.0
Others	396	1.3	8	1.2	4	1.4	244	2.5	4	0.3	0	0.0	152	0.8	29	0.8

Number or percentage may be more than total or 100% as patient might have more than one intra-operative complication

1.4.5 Intra-operative Complications by Surgeon Status

Intra-operative complications were highest in surgeries performed by the MOs. The complications were mainly PCR and vitreous loss.

Table 1.4.5(a)(i): Percentage of Intra-operative Complications by Surgeon Status, CSR 2003-2012
(i) Specialist

Year	2003		2004		2007		2008*		2009		2010		2011		2012	
N	12072		13165		14327		16846		19400		24219		25590		27684	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Any intra-operative complication	1144	9.5	1170	8.9	1485	10.4	1144	6.8	1218	6.3	1248	5.2	1368	5.3	1323	4.8
PCR	199	2.7	180	1.4	546	3.8	538	3.2	610	3.1	649	2.7	706	2.8	642	2.3
Vitreous loss	520	4.3	515	3.9	405	2.8	417	2.5	474	2.4	473	2.0	438	1.7	382	1.4
Zonular dehiscence	151	1.3	163	1.2	204	1.4	232	1.4	293	1.5	300	1.2	285	1.1	282	1.0
Drop nucleus	22	0.2	28	0.2	20	0.1	24	0.1	30	0.2	33	0.1	49	0.2	43	0.2
Suprachoroidal haemorrhage	6	0.1	8	0.1	5	0.0	3	0.0	10	0.1	6	0.0	7	0.0	7	0.0
Central corneal oedema	42	0.4	40	0.3	50	0.4	19	0.1	13	0.1	19	0.1	33	0.1	23	0.1
Others	171	1.4	158	1.2	261	1.8	279	1.7	289	1.5	254	1.0	347	1.4	371	1.3

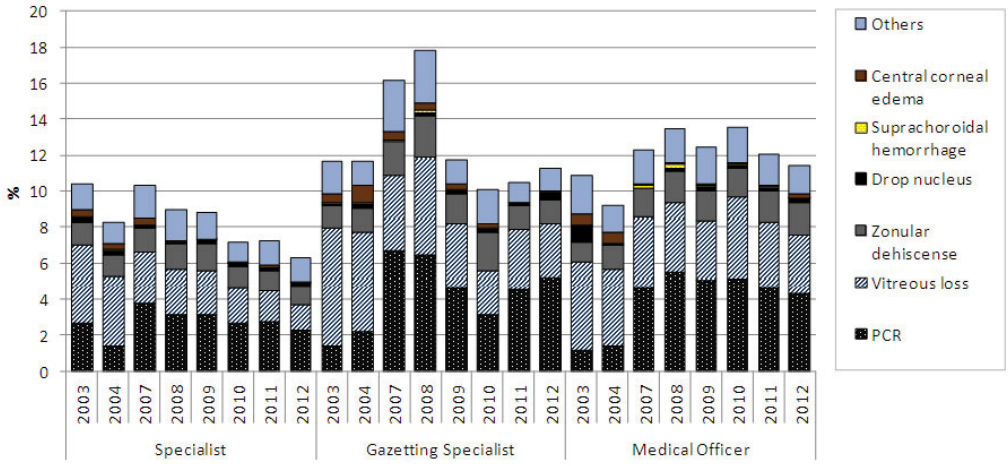
(ii) Gazetting Specialist

Year	2003		2004		2007		2008*		2009		2010		2011		2012	
N	1510		1757		1276		1399		2053		1405		2487		2411	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Any intra-operative complication	185	12.3	222	12.6	175	13.7	167	11.9	171	8.3	98	7.0	182	7.3	190	7.9
PCR	21	1.4	38	2.2	85	6.7	91	6.5	96	4.7	44	3.1	113	4.5	125	5.2
Vitreous loss	99	6.6	97	5.5	54	4.2	76	5.4	73	3.6	35	2.5	84	3.4	72	3.0
Zonular dehiscence	18	1.2	25	1.4	24	1.9	32	2.3	33	1.6	30	2.1	33	1.3	34	1.4
Drop nucleus	2	0.1	4	0.2	0	0.0	3	0.2	3	0.1	2	0.1	4	0.2	8	0.3
Suprachoroidal haemorrhage	2	0.1	1	0.1	1	0.1	1	0.1	2	0.1	1	0.1	0	0.0	0	0.0
Central corneal oedema	7	0.5	16	0.9	5	0.4	5	0.4	7	0.3	3	0.2	0	0.0	2	0.1
Others	27	1.8	25	1.4	37	2.9	37	2.9	28	1.4	27	1.9	27	1.1	31	1.3

(iii) Medical Officer

Year	2003		2004		2007		2008*		2009		2010		2011		2012	
N	3233		3470		2690		2697		2750		2871		2478		2354	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Any intra-operative complication	344	10.6	338	9.7	330	12.3	264	9.8	242	8.8	263	9.2	202	8.2	189	8.0
PCR	40	1.2	47	1.4	126	4.7	148	5.5	139	5.1	147	5.1	116	4.7	103	4.4
Vitreous loss	157	4.9	148	4.3	105	3.9	105	3.9	92	3.3	131	4.6	89	3.6	75	3.2
Zonular dehiscence	34	1.1	46	1.3	43	1.6	46	1.7	45	1.6	47	1.6	43	1.7	43	1.8
Drop nucleus	3	0.9	2	0.1	1	0.0	4	0.2	7	0.3	3	0.1	5	0.2	5	0.2
Suprachoroidal haemorrhage	0	-	1	0.0	3	0.1	4	0.2	1	0.0	2	0.1	1	0.0	1	0.0
Central corneal oedema	24	0.7	22	0.6	2	0.1	3	0.1	2	0.1	4	0.1	3	0.1	5	0.2
Others	68	2.1	52	1.5	51	1.9	51	1.9	56	2.0	56	2.0	42	1.7	37	1.6

Figure 1.4.5 (i): Percentage Distribution of Intra-operative Complications by Surgeon Status, CSR 2003-2012



When only eyes with phaco were analysed, MO showed the highest percentage of surgeries with PCR.

Table 1.4.5(a)(ii): Percentage of Intra-operative Complications by Surgeon Status for Phacoemulsification, CSR 2009-2012

(i) Specialist

Year	2009		2010		2011		2012	
N	15206		19797		20963		23291	
	n	%	n	%	n	%	n	%
Any intra-operative complication	627	4.1	680	3.4	780	3.7	755	3.2
PCR	354	2.3	408	2.1	453	2.2	413	1.8
Vitreous loss	201	1.3	211	1.1	202	1.0	168	0.7
Zonular dehiscence	118	0.8	113	0.6	116	0.6	121	0.5
Drop nucleus	24	0.2	26	0.1	37	0.2	29	0.1
Suprachoroidal haemorrhage	3	0.0	3	0.0	1	0.0	4	0.0
Central corneal oedema	10	0.1	13	0.1	24	0.1	14	0.1
Others	153	1.0	136	0.7	195	0.9	201	0.9

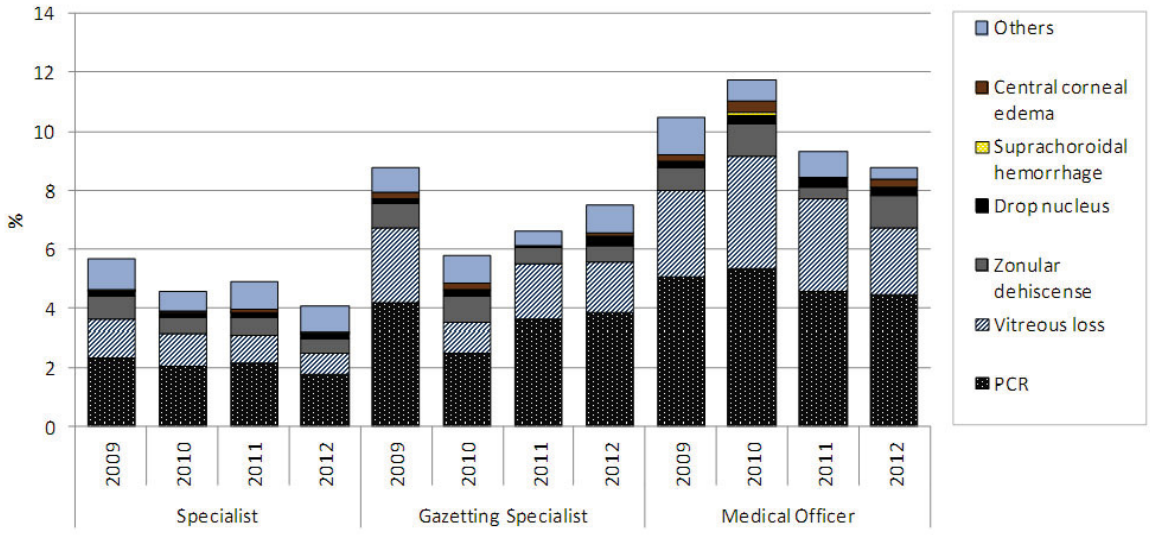
(ii) Gazetting Specialist

Year	2009		2010		2011		2012	
N	1422		929		1845		1850	
	n	%	n	%	n	%	n	%
Any intra-operative complication	86	6.0	39	4.2	86	4.7	102	5.5
PCR	60	4.2	23	2.5	67	3.6	72	3.9
Vitreous loss	36	2.5	10	1.1	35	1.9	31	1.7
Zonular dehiscence	12	0.8	8	0.9	10	0.5	10	0.5
Drop nucleus	2	0.1	2	0.2	1	0.1	7	0.4
Suprachoroidal haemorrhage	0	0.0	0	0.0	0	0.0	0	0.0
Central corneal oedema	3	0.2	2	0.2	0	0.0	2	0.1
Others	12	0.8	9	1.0	9	0.5	17	0.9

(iii) Medical Officer

Year	2009		2010		2011		2012	
N	923		1078		1050		1182	
	n	%	n	%	n	%	n	%
Any intra-operative complication	64	6.9	79	7.3	61	5.8	73	6.2
PCR	47	5.1	58	5.4	48	4.6	53	4.5
Vitreous loss	27	2.9	41	3.8	33	3.1	27	2.3
Zonular dehiscence	7	0.8	12	1.1	4	0.4	13	1.1
Drop nucleus	2	0.2	3	0.3	4	0.4	3	0.3
Suprachoroidal haemorrhage	0	0.0	1	0.1	0	0.0	0	0.0
Central corneal oedema	2	0.2	4	0.4	0	0.0	3	0.3
Others	12	1.3	8	0.7	9	0.9	5	0.4

Figure 1.4.5 (ii): Percentage Distribution of Intra-operative Complications by Surgeon Status, CSR 2009-2012



1.4.6 PCR

PCR among SDPs varied. Hospital Batu Pahat had the highest PCR among all the SDPs in 2012.

Table 1.4.6 (i): PCR by SDP, CSR 2007-2012

Hospital	2007			2008			2009			2010			2011			2012		
	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%
Alor Setar	652	10	1.5	986	29	2.9	1110	22	2.0	1527	25	1.6	1939	46	2.4	1835	46	2.5
Ampang	33	0	0.0	208	3	1.4	433	14	3.2	627	32	5.1	708	27	3.8	896	40	4.5
Batu Pahat	550	20	3.6	573	14	2.4	602	26	4.3	411	15	3.6	554	30	5.4	608	42	6.9
Bintulu	0	0	0	30	1	3.3	124	10	8.1	258	7	2.7	332	8	2.4	391	7	1.8
Bukit Mertajam	697	18	2.6	487	8	1.6	743	16	2.2	804	22	2.7	803	26	3.2	928	31	3.3
Ipoh	1556	77	4.9	1723	59	3.4	2137	48	2.2	2199	32	1.5	1826	56	3.1	2932	65	2.2
Johor Bahru	1520	28	1.8	1376	28	2.0	1318	57	4.3	1377	30	2.2	1127	29	2.6	1195	32	2.7
Kangar	318	8	2.5	400	3	0.8	399	11	2.8	400	13	3.3	403	15	3.7	454	13	2.9
Keningau	0	0	0.0	34	1	2.9	31	1	3.2	76	1	1.3	52	0	0.0	17	0	0.0
Klang	1040	40	3.8	1217	34	2.8	904	27	3.0	1007	26	2.6	1061	20	1.9	1411	6	0.4
Kota Bharu	807	38	4.7	739	33	4.5	911	33	3.6	960	31	3.2	946	40	4.2	545	13	2.4
Kota Kinabalu	565	20	3.5	351	3	0.9	433	16	3.7	624	24	3.8	686	46	6.7	763	38	5.0
Kuala Krai	125	2	1.6	170	7	4.1	175	4	2.3	217	3	1.4	240	11	4.6	247	12	4.9
Kuala Lumpur	0	0	0	40	3	7.5	1405	35	2.5	1648	46	2.8	1622	19	1.2	1516	24	1.6
Kuala Pilah	201	4	2.0	282	11	3.9	290	7	2.4	322	8	2.5	483	10	2.1	429	8	1.9
Kuala Terengganu	525	34	6.5	726	35	4.8	743	35	4.7	714	28	3.9	770	34	4.4	765	20	2.6
Kuantan	25	1	4.0	395	20	5.1	293	5	1.7	615	5	0.8	680	20	2.9	684	7	1.0
Kuching	998	33	3.3	1011	38	3.8	893	38	4.3	1207	45	3.7	1131	35	3.1	1657	45	2.7
Melaka	1518	87	5.7	1681	106	6.3	1387	84	6.1	1659	76	4.6	1642	61	3.7	1488	52	3.5
Miri	18	2	11.1	396	7	1.8	404	5	1.2	577	8	1.4	657	4	0.6	901	1	0.1
Muar	349	4	1.1	338	14	4.1	542	29	5.4	617	15	2.4	692	20	2.9	665	26	3.9
Pulau Pinang	1102	92	8.3	1357	77	5.7	1374	46	3.3	1876	62	3.3	2186	42	1.9	1330	26	2.0
Putrajaya	199	8	4.0	256	8	3.1	251	9	3.6	282	8	2.8	329	11	3.3	355	4	1.1
Sandakan	0	0	0.0	137	3	2.2	158	3	1.9	208	13	6.3	271	8	3.0	265	4	1.5
Selayang	1400	47	3.4	1429	56	3.9	1418	42	3.0	1699	71	4.2	1859	100	5.4	1829	83	4.5
Serdang	697	43	6.2	696	36	5.2	598	32	5.4	520	17	3.3	666	28	4.2	709	20	2.8
Seremban	954	40	4.2	898	40	4.5	1229	79	6.4	1519	48	3.2	1605	34	2.1	1559	67	4.3

('cont.)

Hospital	2007			2008			2009			2010			2011			2012		
	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%
Sibu	380	10	2.6	263	9	3.4	387	6	1.6	455	12	2.6	505	10	2.0	745	11	1.5
Sri Manjung	152	10	6.6	350	11	3.1	327	7	2.1	387	6	1.6	420	10	2.4	466	9	1.9
Sultan Ismail	100	3	3.0	180	9	5.0	185	2	1.1	258	10	3.9	283	7	2.5	279	8	2.9
Sungai Buloh	165	9	5.5	319	14	4.4	387	19	4.9	468	22	4.7	450	13	2.9	514	14	2.7
Sungai Petani	497	23	4.6	633	14	2.2	684	9	1.3	558	8	1.4	811	35	4.3	845	19	2.2
Taiping	278	7	2.5	379	10	2.6	612	22	3.6	889	19	2.1	953	24	2.5	1118	32	2.9
Tawau	189	5	2.6	317	10	3.2	298	9	3.0	401	15	3.7	575	16	2.8	648	9	1.4
Teluk Intan	668	19	2.8	588	16	2.7	612	22	3.6	690	27	3.9	663	10	1.5	616	15	2.4
Temerloh	443	27	6.1	531	28	5.3	640	28	4.4	450	10	2.2	681	31	4.6	868	21	2.4

Table 1.4.6 (ii): PCR in Phacoemulsification by SDP by surgeon status, CSR 2012.

(N=total no. of cases of phaco; n=no. of cases of PCR in phaco)

Hospital	Phaco 2012			Specialist			Gazetting Specialist			Medical Officer		
	N	n	%	N	n	%	N	n	%	N	n	%
Alor Setar	1451	29	2.0	1346	24	1.8	97	5	5.2	8	0	0.0
Ampang	779	28	3.6	704	20	2.8	17	2	11.8	58	6	10.3
Batu Pahat	447	26	5.8	220	4	1.8	227	22	9.7	0	0	0.0
Bintulu	245	3	1.2	245	3	1.2	0	0	0.0	0	0	0.0
Bukit Mertajam	564	13	2.3	535	10	1.9	29	3	10.3	0	0	0.0
Ipoh	2596	57	2.2	2243	53	2.4	207	4	1.9	125	0	0.0
Johor Bahru	1069	12	1.1	995	11	1.1	57	0	0.0	17	1	5.9
Kangar	412	10	2.4	412	10	2.4	0	0	0.0	0	0	0.0
Keningau	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Klang	1224	1	0.1	1176	0	0.0	48	1	2.1	0	0	0.0
Kota Bharu	367	12	3.3	357	11	3.1	1	0	0.0	9	1	11.1
Kota Kinabalu	529	27	5.1	402	16	4.0	118	9	7.6	9	2	22.2
Kuala Krai	222	9	4.1	208	7	3.4	14	2	14.3	0	0	0.0
Kuala Lumpur	1208	17	1.4	1163	17	1.5	15	0	0.0	29	0	0.0

('cont.)

Hospital	Phaco 2012			Specialist			Gazetting Specialist			Medical Officer		
	N	n	%	N	n	%	N	n	%	N	n	%
Kuala Pilah	361	3	0.8	361	3	0.8	0	0	0.0	0	0	0.0
Kuala Terengganu	537	9	1.7	528	9	1.7	5	0	0.0	4	0	0.0
Kuantan	555	3	0.5	517	3	0.6	0	0	0.0	38	0	0.0
Kuching	1546	41	2.7	1310	29	2.2	134	5	3.7	102	7	6.9
Melaka	1203	40	3.3	1164	35	3.0	10	1	10.0	29	4	13.8
Miri	849	1	0.1	487	1	0.2	360	0	0.0	2	0	0.0
Muar	608	10	1.6	460	5	1.1	148	5	3.4	0	0	0.0
Pulau Pinang	1260	13	1.0	1029	7	0.7	29	0	0.0	202	6	3.0
Putrajaya	271	2	0.7	271	2	0.7	0	0	0.0	0	0	0.0
Sandakan	104	0	0.0	103	0	0.0	0	0	0.0	1	0	0.0
Selayang	1625	66	4.1	1333	53	4.0	52	1	1.9	240	12	5.0
Serdang	564	12	2.1	549	9	1.6	14	3	21.4	1	0	0.0
Seremban	1315	37	2.8	1008	23	2.3	1	0	0.0	306	14	4.6
Sibu	683	6	0.9	621	5	0.8	62	1	1.6	0	0	0.0
Sri Manjung	412	7	1.7	410	7	1.7	2	0	0.0	0	0	0.0
Sultan Ismail	208	4	1.9	208	4	1.9	0	0	0.0	0	0	0.0
Sungai Buloh	419	8	1.9	419	8	1.9	0	0	0.0	0	0	0.0
Sungai Petani	604	6	1.0	602	6	1.0	1	0	0.0	1	0	0.0
Taiping	885	12	1.4	812	10	1.2	73	2	2.7	0	0	0.0
Tawau	1	1	100.0	1	1	100.0	0	0	0.0	0	0	0.0
Teluk Intan	505	10	2.0	396	4	1.0	108	6	5.6	1	0	0.0
Temerloh	717	3	0.4	696	3	0.4	21	0	0.0	0	0	0.0

**No. of total phaco (N) and by surgeon status is not tally as there is some missing value in surgeon status.*

Figure 1.4.6(a): PCR by SDP, CSR 2012-Bar Chart (National standard set at <3.0%)

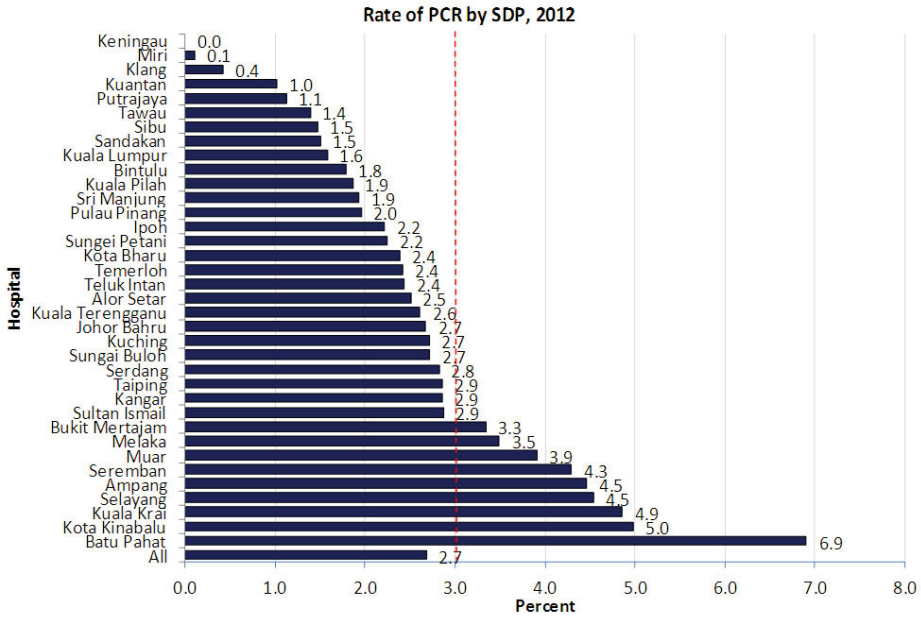
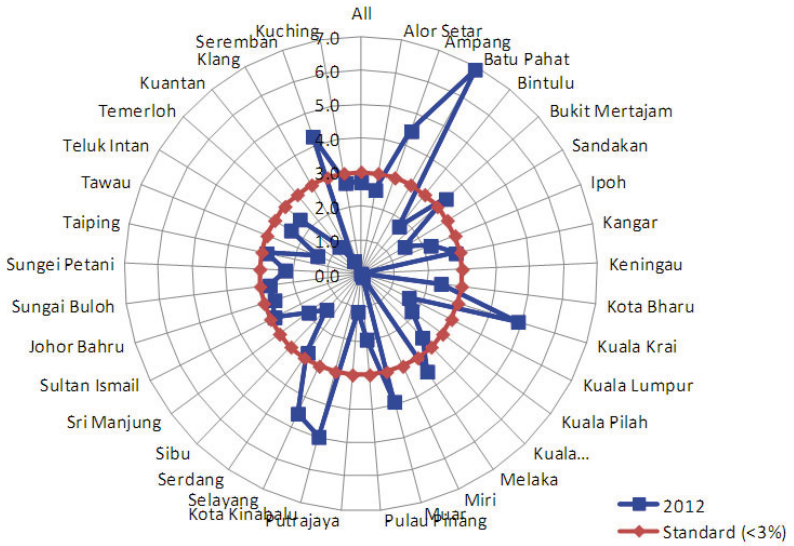


Figure 1.4.6(b): PCR by SDP, CSR 2012-Radar Chart (National standard set at <3.0%)



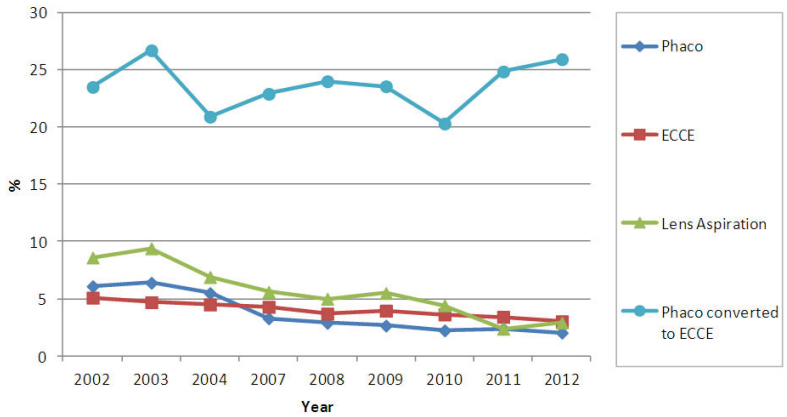
1.4.7 PCR by Type of Cataract Surgery

From the year 2002-2004, the percentage of PCR for phaco was higher than ECCE. From 2007 onwards, it demonstrated otherwise. In general, both the PCR percentages for phaco and ECCE were in downward trend over the years.

Table 1.4.7: PCR by Type of Cataract Surgery, CSR 2002-2012

Year	2002			2003			2004			2007			2008			2009			2010			2011			2012		
No. of patients	12798			16815			18391			18380			21496			24438			28506			30611			32473		
Total PCR	773			1036			1013			764			790			858			840			936			870		
	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%
Phaco	5085	309	6.1	7674	489	6.4	9282	513	5.5	11960	393	3.3	14781	432	2.9	17717	471	2.7	21810	489	2.2	23872	568	2.4	26345	538	2.0
ECCE	6914	356	5.1	8012	374	4.7	7830	356	4.5	5524	239	4.3	5627	210	3.7	5457	216	4.0	5363	195	3.6	5291	181	3.4	4784	145	3.0
Lens Aspiration	372	32	8.6	435	41	9.4	550	38	6.9	323	18	5.6	340	17	5.0	400	22	5.5	451	20	4.4	460	11	2.4	444	13	2.9
ICCE	311	3	3.7	469	5	5.3	454	11	10.7	432	15	10.6	524	7	5.4	134	8	6.0	143	9	6.3	123	6	4.9	136	6	4.4
Phaco converted to ECCE	81	73	23.5	94	125	26.7	103	95	20.9	141	99	22.9	129	124	24.0	573	135	23.6	586	119	20.3	652	162	24.8	621	161	25.9

Figure 1.4.7: PCR by Type of Cataract Surgery, CSR 2002-2012



1.5 CATARACT SURGERY OUTCOME

1.5.1 Post-operative Complications

The post-operative complication records were 100% in 2002 and 2003. With exclusion for 2004, the ascertainment for the visual outcome was above 90.0%.

Table 1.5.1: Distribution of Cataract Surgery with Post-operative Complication Record, CSR 2002-2012

Year	2002	2003	2004	2007	2008	2009	2010	2011	2012
Total number of cataract surgery registered to CSR	12798	16815	18392	18426	21496	24438	28506	30611	32473
Cataract surgery with post-operative complication record	12798	16815	15996	17604	20521	21851	26014	28834	30011
Ascertainment on post-operative complication (%)	100	100	87.0	95.5	95.5	89.4	91.3	94.2	92.4
Cataract surgery with visual outcome record	12512	14683	6228	15786	19063	20590	24522	27219	28589
Ascertainment on visual outcome (%)	97.7	87.3	33.9	85.7	88.7	84.3	86.0	88.9	88.0

1.5.1.1 Post-operative Infectious Endophthalmitis

The occurrence of post-operative infectious endophthalmitis appeared to be decreasing over the years. It was an improvement with only 0.4 cases in 1000 cataract surgeries performed in MOH hospitals. The median duration from the time of surgery to diagnosis of infection for eyes operated in 2012 was 13 days.

Table 1.5.1.1(a): Post-operative Infectious Endophthalmitis, CSR 2002-2012

Year	2002	2003	2004	2007	2008	2009	2010	2011	2012
Eyes with post-operative complication records (N)	12798	16815	15996	17604	20521	21851	26014	28834	30011
Eyes with post-operative infectious endophthalmitis (n)	25	41	25	37	22	19	24	11	13
Percentage of eyes with post-operative endophthalmitis (%)	0.20	0.24	0.16	0.21	0.11	0.09	0.09	0.04	0.04

Figure 1.5.1.1(a): Percentage of Post-operative Infectious Endophthalmitis, CSR 2002-2012

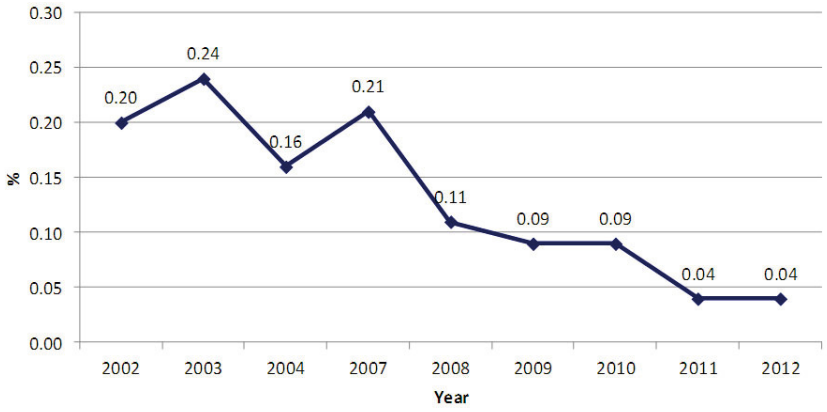


Figure 1.5.1.1(b-i): Post-operative Infectious Endophthalmitis, by SDP CSR 2007

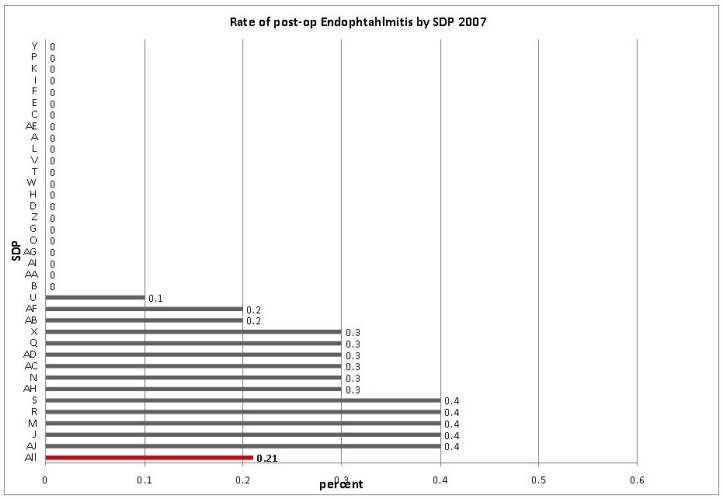


Figure 1.5.1.1(b-ii): Post-operative Infectious Endophthalmitis, by SDP CSR 2008

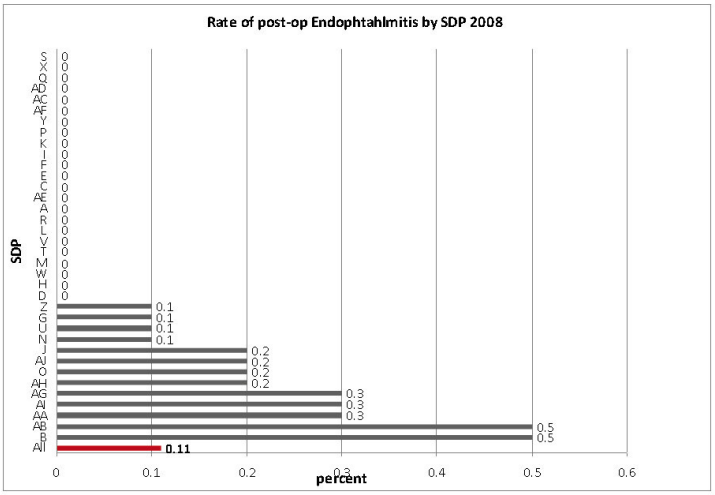


Figure 1.5.1.1(b-iii): Post-operative Infectious Endophthalmitis, by SDP CSR 2009

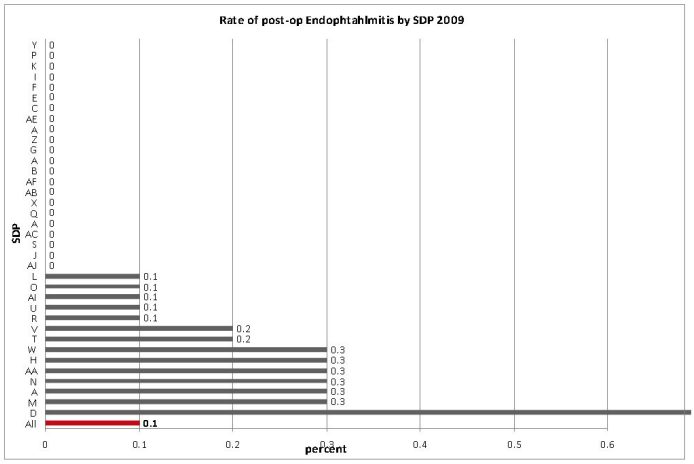


Figure 1.5.1.1(b-iv): Post-operative Infectious Endophthalmitis, by SDP CSR 2010

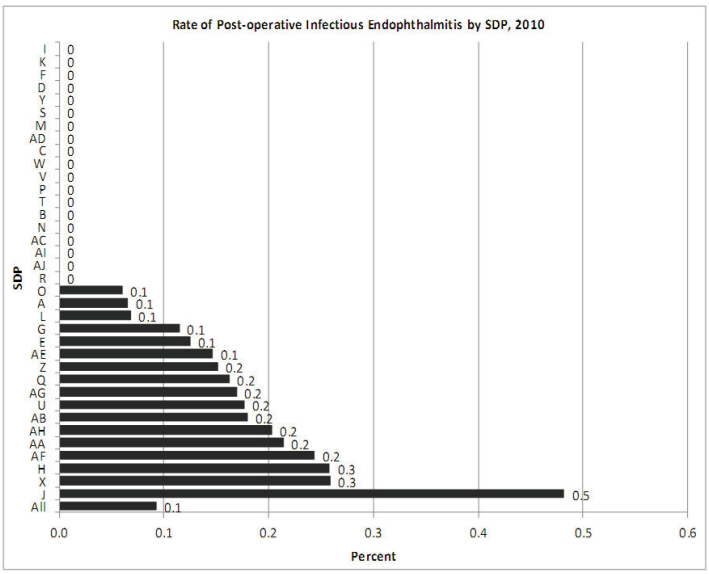


Figure 1.5.1.1(b-iv): Post-operative Infectious Endophthalmitis, by SDP CSR 2011

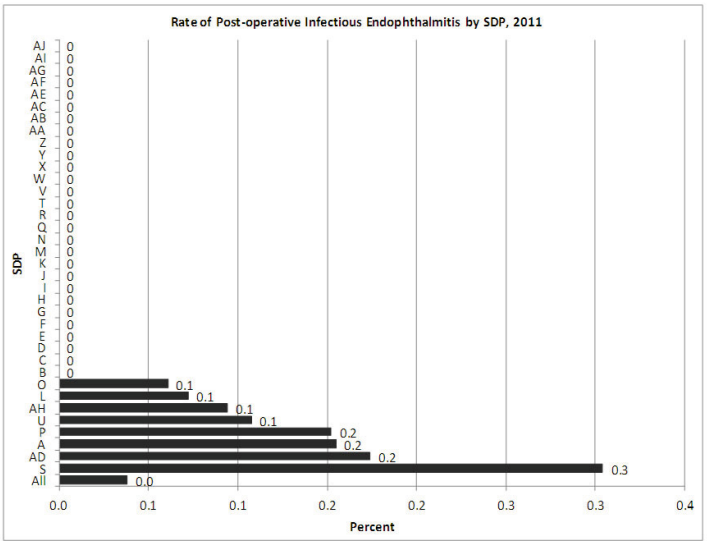


Figure 1.5.1.1(b-iv): Post-operative Infectious Endophthalmitis, by SDP CSR 2012

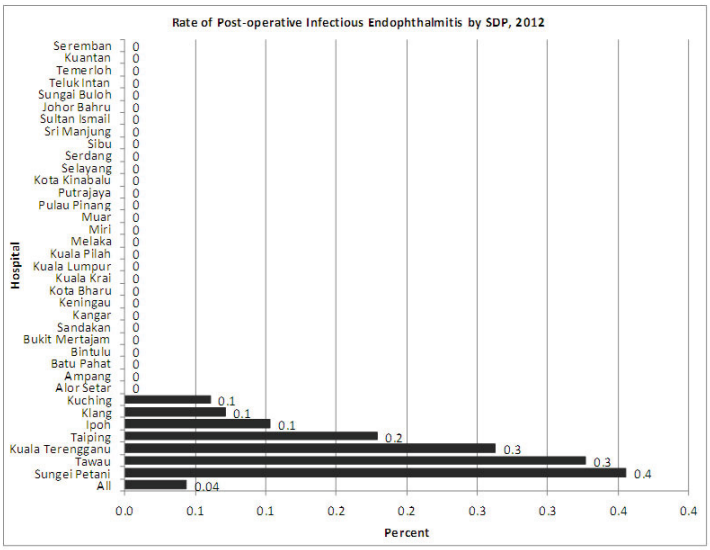


Figure 1.5.1.1(c-i): Post-operative Infectious Endophthalmitis, by SDP CSR 2007

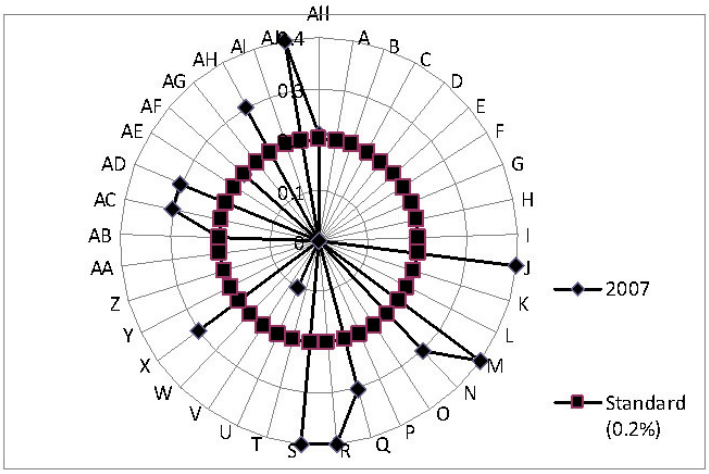


Figure 1.5.1.1(c-ii): Post-operative Infectious Endophthalmitis, by SDP CSR 2008

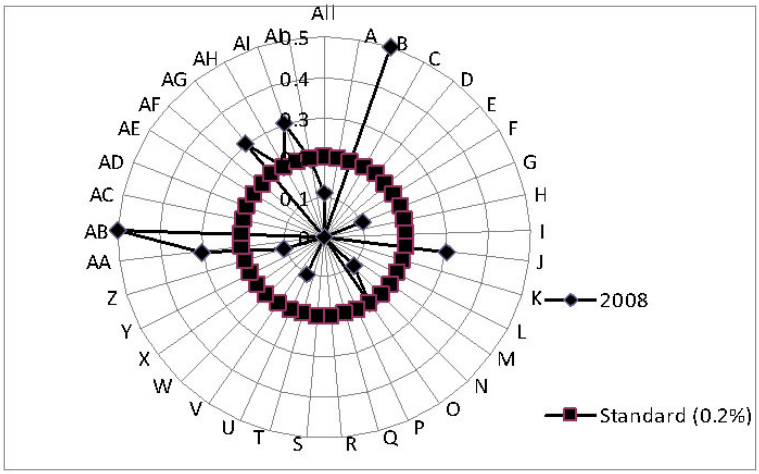


Figure 1.5.1.1(c-iii): Post-operative Infectious Endophthalmitis, by SDP CSR 2009

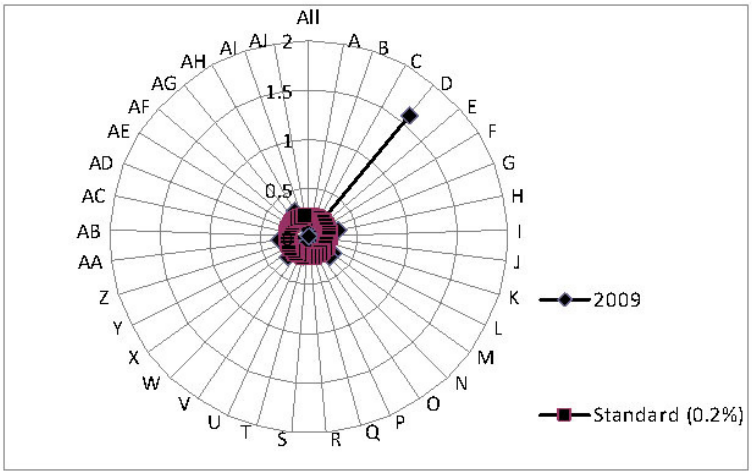


Figure 1.5.1.1(c-iv): Post-operative Infectious Endophthalmitis, by SDP CSR 2010

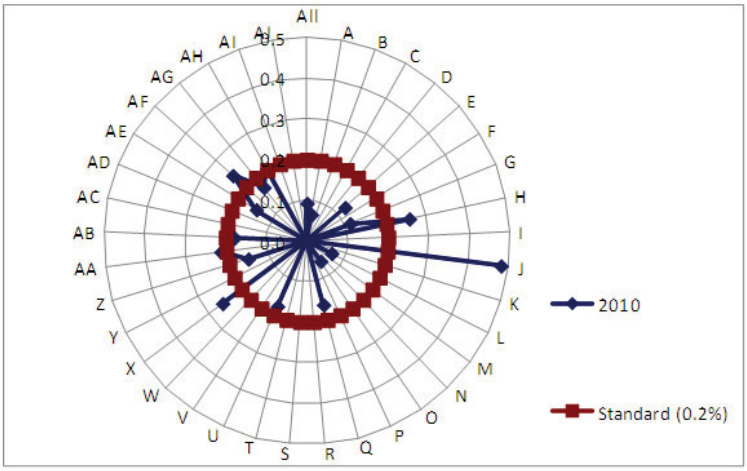


Figure 1.5.1.1(c-iv): Post-operative Infectious Endophthalmitis, by SDP CSR 2011

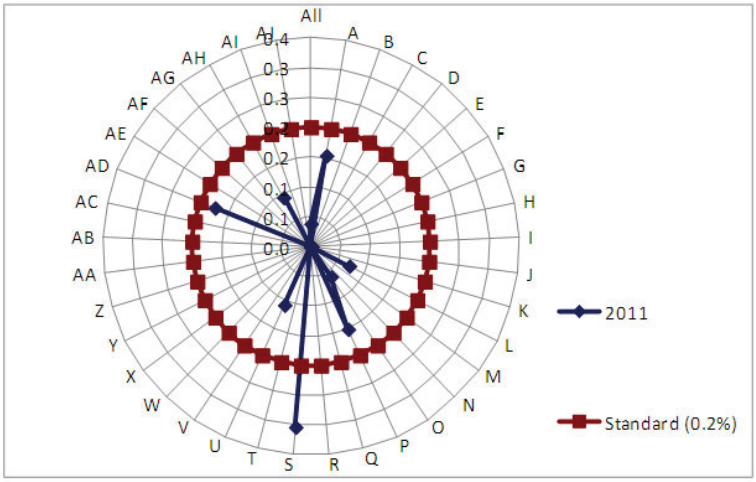


Figure 1.5.1.1(c-iv): Post-operative Infectious Endophthalmitis, by SDP CSR 2012

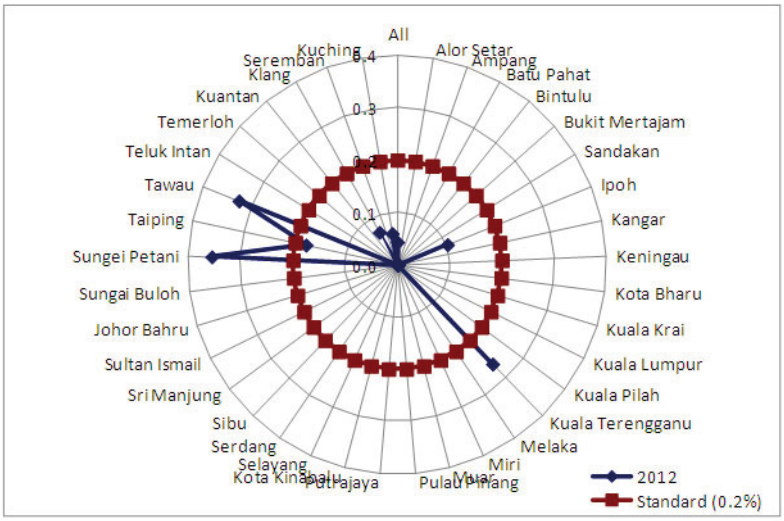


Table 1.5.1.1(b): Time from Surgery to Diagnosis of Post-operative Infectious Endophthalmitis, CSR 2007-2012

Year	2007	2008	2009	2010	2011	2012
Number of patients with post-operative infective endophthalmitis	37	22	19	24	11	13
Time from surgery to diagnosis of infection (day)			**Days**			
Min	1	1	1	0	0	2
Max	92	76	103	141	391	59
Mean	21.6	20.6	20.4	22.7	43.7	19.9
Median					6	13
Distribution of patients			**Number of Patients**			
Less than 3 days	2	5	5	4	2	1
3-5 days	4	1	1	5	3	2
6-14 days	8	5	5	4	4	4
More than 14 days	12	9	7	10	2	5
Missing	11	2	1	1	0	1

1.5.1.2 Unplanned Return to Operating Theatre (OT)

Data for unplanned return to OT were available for June to December 2004 and the whole year of 2007 onwards. The average percentage was 0.43% or 4.3 cases per 1000 cataract surgeries.

Iris prolapse showed a decreasing trend but wound dehiscence, high post- operative IOP and IOL related problem demonstrated an increasing trend. IOL related problem demonstrated otherwise.

Table 1.5.1.2(a): Unplanned Return to OT, CSR 2004-2012

Year	*2004		2007		2008		2009		2010		2011		2012	
Patients with outcome records (N)	9039		17604		20521		21851		26014		28834		30011	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
	31	0.34	87	0.50	88	0.43	116	0.53	123	0.47	122	0.42	103	0.34

**Data in 2004 available only from June-December*

Table 1.5.1.2(b): Reasons for Unplanned Return to OT, CSR 2004-2012

Year	*2004		2007		2008		2009		2010		2011		2012	
Patients with unplanned return to OT	31		87		88		116		123		122		103	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Iris prolapse	10	32.3	20	23.0	12	13.6	18	15.5	20	16.3	24	19.7	11	10.7
Wound dehiscence	7	22.6	13	14.9	7	8.0	22	19.0	20	16.3	18	14.8	19	18.4
High IOP	4	12.9	5	5.7	2	2.3	9	7.8	3	2.4	4	3.3	6	5.8
IOL related	2	6.5	10	11.5	14	15.9	15	12.9	22	17.9	18	14.8	18	17.5
Infective endophthalmitis	7	22.6	12	13.8	6	6.8	6	5.2	9	7.3	2	1.6	5	4.8
Others	9	29.0	38	43.7	48	54.5	53	45.7	56	45.5	68	55.7	52	50.5

**Data in 2004 available only for June-December*

Figure 1.5.1.2: Reasons for Unplanned Return to OT, CSR 2004-2012

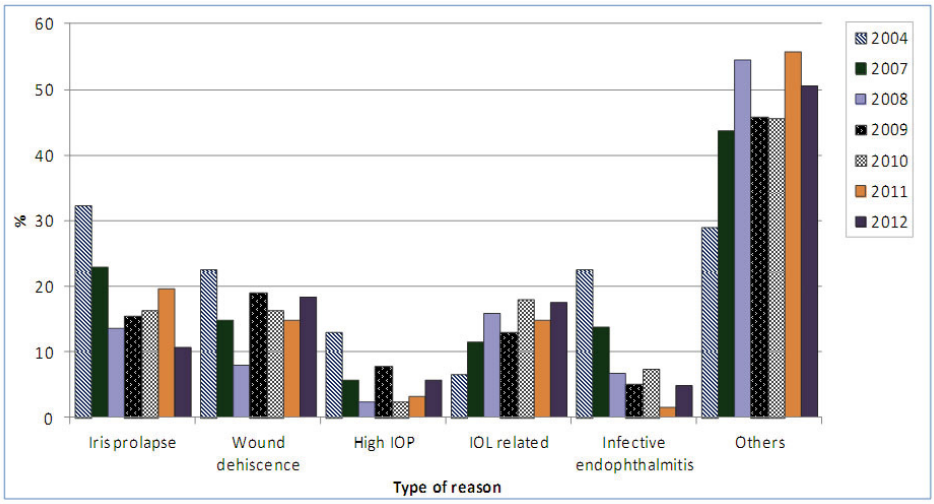


Table 1.5.1.2(c): Time from Surgery to Unplanned Return to OT, CSR 2012

Post-operative period (day)	N	n	Median	Min	Max	Mean
Iris prolapse	11	11	8.0	1	51	13.5
Wound dehiscence	19	18	2.0	0	18	4.5
High IOP	6	6	1.5	1	7	2.7
IOL related	18	18	7.0	1	55	12.7
Infective endophthalmitis	5	4	5.5	2	18	7.7
Others	52	48	3.0	0	82	11.5

n = No. of available information

1.5.1.3 Post-operative Follow-up Period

Most patients were followed up until 7-9 weeks post-operatively.

Table 1.5.1.3(a): Median Follow-up Period for Eyes with Unaided Vision (in weeks) by Types of Surgery, 2012

Types of surgery	N	n	Median	25th percentile	75th percentile
All surgeries	28569	28254	7	6	9
Phaco	23314	23035	7	6	8
ECCE	4158	4123	8	6	11
Phaco → ECCE	543	540	8	6	11
ICCE	112	111	8	5	11
Lens aspiration	347	342	7	5	10

n = No. of available information

Table 1.5.1.3(b): Median Follow-up Period for Eyes with Refracted Vision (in weeks) by Types of Surgery, 2011

Types of surgery	N	n	Median	25th percentile	75th percentile
All surgeries	25488	25255	7	6	9
Phaco	21074	20864	7	6	9
ECCE	3473	3449	8	7	11
Phaco → ECCE	492	489	9	6	11
ICCE	90	90	8	6	11
Lens aspiration	290	287	7	6	10

n = No. of available information

1.5.2 Post-operative Visual Acuity

1.5.2.1 Post-operative Visual Acuity (All Eyes)

Only approximately 40.0% of eyes had vision unaided VA 6/12 or better i.e. good VA outcome. This percentage increased double folds following refraction. This trend remained unchanged throughout the years.

Table 1.5.2.1: Post-operative Visual Acuity, All Eyes, CSR 2002-2012

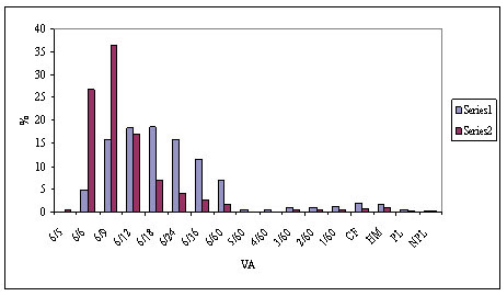
Year	2002				2003				2004				2007				2008			
	Unaided		Refracted		Unaided		Refracted		Unaided		Refracted		Unaided		Refracted		Unaided		Refracted	
VA	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
6/5	9	0.1	60	0.6	16	0.1	91	0.7	2	0.0	17	0.3	3	0.0	35	0.2	9	0	51	0.3
6/6	598	4.8	2784	26.8	648	4.1	3795	27.8	318	4.7	1659	28.6	878	5.6	4409	30.5	1126	5.9	6072	35.2
6/9	1968	15.7	3773	36.3	2286	14.5	4857	35.6	1011	15.0	2170	37.4	2806	17.8	4961	34.3	3040	15.9	5714	33.1
6/12	2294	18.3	1759	16.9	2858	18.2	2303	16.9	1230	18.3	920	15.8	2717	17.2	2100	14.6	3351	17.6	2577	14.9
6/5-6/12	4869	38.9	8376	80.7	5808	36.9	11046	81.0	2561	38.0	4766	82.1	6404	40.6	11505	79.6	7526	39.4	14414	83.5
6/18	2308	18.5	735	7.1	3046	19.4	970	7.1	1244	18.5	414	7.1	2893	18.3	1055	7.3	3792	19.9	1012	5.9
6/24	1954	15.6	410	4.0	2484	15.8	540	4.0	1130	16.8	205	3.5	2315	14.7	573	4	2978	15.6	607	3.5
6/36	1452	11.6	279	2.7	1935	12.3	359	2.6	761	11.3	169	2.9	1687	10.7	444	3.1	2018	10.6	421	2.4
6/60	868	6.9	166	1.6	1097	7.0	240	1.8	489	7.3	77	1.3	1126	7.1	266	1.9	1300	6.8	261	1.5
5/60	77	0.6	13	0.1	124	0.8	15	0.1	56	0.8	7	0.1	92	0.6	23	0.2	116	0.6	37	0.2
4/60	64	0.5	13	0.1	114	0.7	29	0.2	40	0.6	6	0.1	87	0.6	35	0.2	97	0.5	30	0.2
3/60	127	1.0	43	0.4	173	1.1	56	0.4	73	1.1	27	0.5	207	1.3	80	0.6	266	1.4	112	0.6
6/18-3/60	6850	54.8	1659	16.0	8973	57.0	2209	16.2	3793	56.3	905	15.6	8407	53.3	2476	17.3	10567	55.4	2480	14.3
2/60	128	1.0	59	0.6	154	1.0	43	0.3	50	0.7	26	0.5	158	1.0	73	0.5	186	1	70	0.4
1/60	146	1.2	54	0.5	116	0.7	45	0.3	76	1.1	23	0.4	155	1.0	76	0.5	159	0.8	60	0.3
CF	231	1.9	86	0.8	345	2.2	134	1.0	132	2.0	35	0.6	300	1.9	121	0.8	295	1.5	85	0.5
HM	203	1.6	105	1.0	219	1.4	115	0.8	87	1.3	40	0.7	253	1.6	149	1	230	1.2	84	0.5
PL	54	0.4	27	0.3	77	0.5	33	0.2	25	0.4	6	0.1	75	0.5	46	0.3	53	0.3	22	0.1
NPL	31	0.3	19	0.2	49	0.3	20	0.2	15	0.2	6	0.1	34	0.2	0	0	32	0.2	0	0
2/60-NPL	793	6.3	350	3.4	960	6.1	390	2.9	385	5.7	136	2.3	975	6.2	465	3.1	955	5	321	1.8
TOTAL	**12512**		**10385**		**15741**		**13645**		**6739**		**5807**		**15786**		**14446**		**19048**		**17215**	

('cont.)

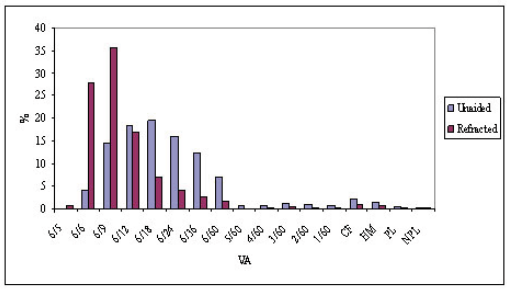
2009				2010				2011				2012			
Unaided		Refracted		Unaided		Refracted		Unaided		Refracted		Unaided		Refracted	
n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
10	0	46	0.2	12	0.0	119	0.5	15	0.1	124	0.5	14	0.0	102	0.4
1100	5.3	6555	34.7	1568	6.4	8362	37.0	1776	6.5	9239	37.4	2011	7.0	9732	38.2
3649	17.7	6550	34.7	4523	18.4	7369	32.6	5040	18.5	8162	33.0	5498	19.2	8254	32.4
3837	18.6	2762	14.6	5054	20.6	3332	14.8	5499	20.2	3585	14.5	5925	20.7	3723	14.6
8596	41.7	15913	84.3	11157	45.5	19182	85.0	12330	45.3	21110	85.4	13448	47.0	21811	85.5
4052	19.7	1050	5.6	4727	19.3	1131	5.0	5209	19.1	1218	4.9	5285	18.5	1327	5.2
2958	14.4	616	3.3	3232	13.2	666	2.9	3689	13.6	738	3.0	3728	13.0	746	2.9
2095	10.2	416	2.2	2211	9.0	497	2.2	2528	9.3	503	2.0	2713	9.5	531	2.1
1323	6.4	276	1.5	1456	5.9	350	1.6	1558	5.7	388	1.6	1468	5.1	361	1.4
93	0.5	27	0.1	119	0.5	37	0.2	111	0.4	28	0.1	130	0.5	38	0.1
103	0.5	31	0.2	112	0.5	31	0.1	109	0.4	32	0.1	119	0.4	26	0.1
331	1.6	118	0.6	378	1.5	151	0.7	435	1.6	155	0.6	469	1.6	168	0.7
10955	53.2	2534	13.4	12235	49.9	2863	12.7	13639	50.1	3062	12.4	13912	48.7	3197	12.5
199	1	77	0.4	227	0.9	97	0.4	249	0.9	113	0.5	257	0.9	94	0.4
168	0.8	66	0.3	196	0.8	93	0.4	213	0.8	99	0.4	211	0.7	79	0.3
315	1.5	127	0.7	345	1.4	147	0.7	400	1.5	135	0.5	371	1.3	125	0.5
269	1.3	126	0.7	280	1.1	155	0.7	294	1.1	150	0.6	291	1.0	154	0.6
58	0.3	31	0.2	47	0.2	24	0.1	52	0.2	20	0.1	61	0.2	28	0.1
30	0.1	12	0.1	35	0.1	18	0.1	42	0.2	18	0.1	38	0.1	17	0.1
1039	5	439	2.3	1130	4.6	534	2.4	1250	4.6	535	2.2	1229	4.3	497	1.9
20590	**100**	**18886**	**100**	**24522**	**100**	**22579**	**100**	**27219**	**100**	**24707**	**100**	**28589**	**100**	**25505**	**100**

Figure 1.5.2.1(a): Percent Distribution of Post-operative Unaided and Refracted Visual Acuity, CSR 2002-2011

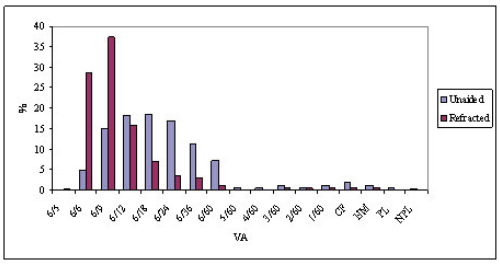
2002



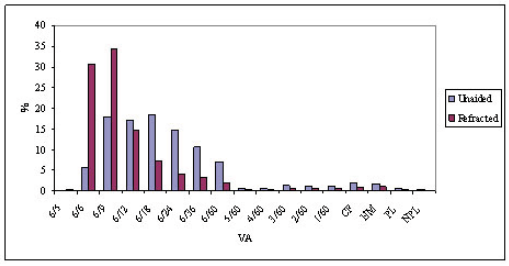
2003



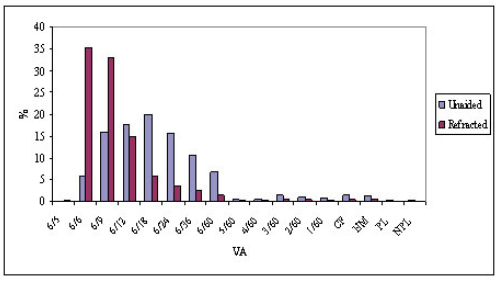
2004



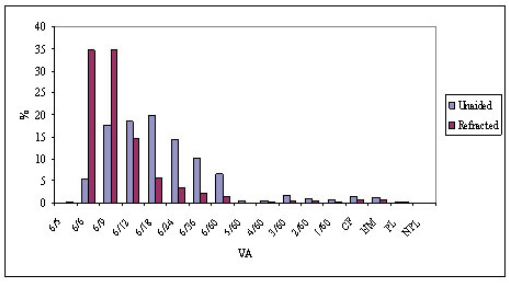
2007



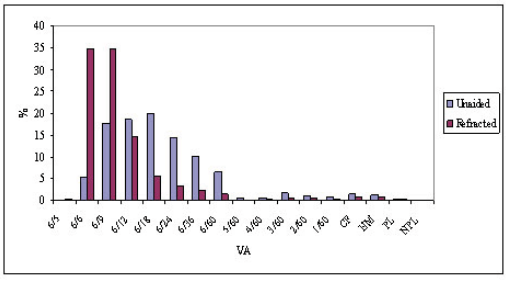
2008



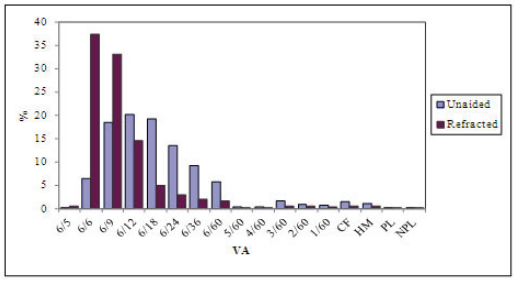
2009



2010



2011



2012

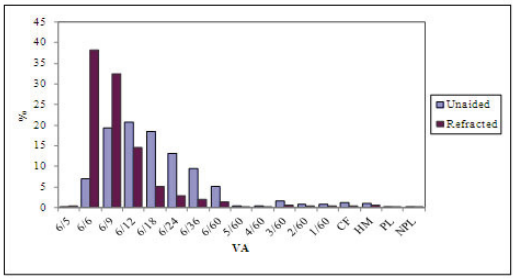
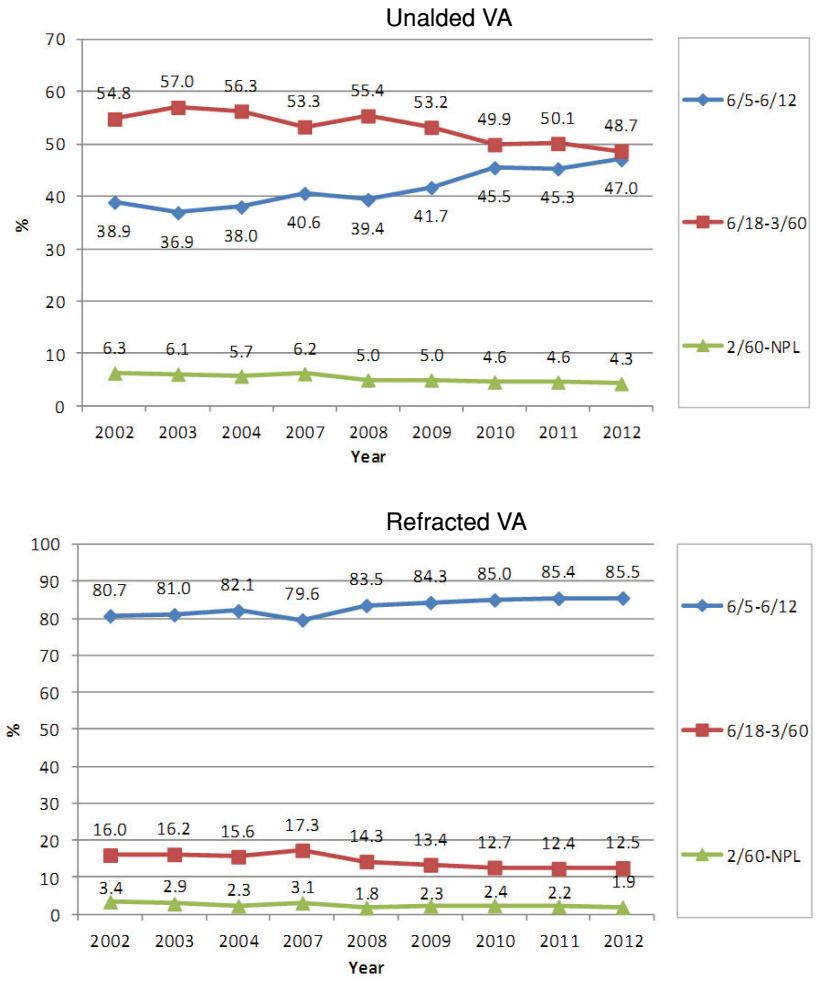


Figure 1.5.2.1(b): Post-operative Unaided and Refracted Visual Acuity by Visual Category for All Eyes, CSR 2002-2012



1.5.2.2 Post-operative Visual Acuity (Eyes without Ocular Co-morbidity)

The percentage of eyes with unaided VA 6/12 or better slightly increased but similar to eyes with ocular co-morbidity; this percentage increased double folds following refraction. This trend remained unchanged throughout the years.

Table 1.5.2.2: Post-Operative Visual Acuity for Eyes without Ocular Co-morbidity, CSR 2002-2012

Year	2002				2003				2004				2007				2008			
	Unaided		Refracted		Unaided		Refracted		Unaided		Refracted		Unaided		Refracted		Unaided		Refracted	
VA	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
6/5	7	0.1	44	0.6	9	1.0	70	0.8	1	0.0	14	0.4	3	0.0	25	0.3	2	0	23	0.3
6/6	501	5.6	2229	29.9	511	5.0	2826	31.6	247	5.9	1196	32.1	667	6.2	3326	33.5	561	6.2	3061	36.4
6/9	1568	17.6	2892	38.7	1710	16.8	3421	38.2	758	18.0	1505	40.5	2061	19.3	3574	36	1477	16.4	2939	35
6/12	1780	20.0	1260	16.9	2074	20.4	1595	17.8	871	20.7	608	16.3	2021	18.9	1473	14.8	1683	18.7	1377	16.4
6/5-6/12	3856	43.4	6425	86.1	4304	42.2	7912	88.4	1877	44.6	3323	89.3	4752	44.4	8398	84.6	3723	41.3	7400	88.1
6/18	1698	19.1	444	6.0	2072	20.3	485	5.4	813	19.3	216	5.8	2037	19.1	634	6.4	1882	20.9	411	4.9
6/24	1403	15.8	240	3.2	1634	16.0	242	2.7	709	16.8	90	2.4	1619	15.1	351	3.5	1518	16.9	254	3
6/36	1001	11.3	136	1.8	1162	11.4	140	1.6	443	10.5	55	1.5	1087	10.2	234	2.4	975	10.8	151	1.8
6/60	514	5.8	74	1.0	593	5.8	74	0.8	240	5.7	12	0.3	650	6.1	113	1.1	536	6	71	0.8
5/60	39	0.4	6	0.1	61	0.6	3	0.0	26	0.6	2	0.1	52	0.5	8	0.1	52	0.6	10	0.1
4/60	30	0.3	3	0.0	45	0.4	4	0.0	13	0.3	1	0.0	48	0.4	13	0.1	25	0.3	7	0.1
3/60	64	0.7	18	0.2	71	0.7	14	0.2	20	0.5	5	0.1	94	0.9	26	0.3	79	0.9	29	0.3
6/18-3/60	4749	53.4	921	12.3	5638	55.3	962	10.7	2264	53.8	381	10.2	5587	52.3	1379	13.9	5067	56.4	933	11
2/60	60	0.7	22	0.3	65	0.6	10	0.1	18	0.4	6	0.2	62	0.6	25	0.3	54	0.6	16	0.2
1/60	43	0.5	18	0.2	28	0.3	8	0.1	14	0.3	1	0.0	68	0.6	23	0.2	33	0.4	8	0.1
CF	94	1.1	30	0.4	95	0.9	36	0.4	22	0.5	4	0.1	120	1.1	47	0.5	73	0.8	23	0.3
HM	64	0.7	30	0.4	37	0.4	14	0.2	11	0.3	5	0.1	69	0.6	42	0.4	31	0.3	12	0.1
PL	13	0.2	10	0.1	13	0.1	8	0.1	5	0.1	1	0.0	23	0.2	13	0.1	7	0.1	4	0
NPL	11	0.1	9	0.1	10	0.1	5	0.1	1	0.0	0	0.0	8	0.1	7	0.1	7	0.1	0	0
2/60-NPL	285	3.2	119	1.6	248	2.4	81	0.9	71	1.7	17	0.5	350	3.2	157	1.6	205	2.3	63	0.7
TOTAL	**8890**	**100**	**7465**	**100**	**10190**	**100**	**8955**	**100**	**4212**	**100**	**3721**	**100**	**10689**	**100**	**9934**	**100**	**8995**	**100**	**8396**	**100**

('cont.)

2009				2010				2011				2012			
Unaided		Refracted		Unaided		Refracted		Unaided		Refracted		Unaided		Refracted	
n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
8	0.1	37	0.3	7	0.0	83	0.6	14	0.1	105	0.7	11	0.1	82	0.5
802	6.4	4717	40	1127	8.0	5640	42.8	1249	7.9	6314	43.3	1422	8.3	6779	44.0
2595	20.6	4348	36.9	2989	21.1	4550	34.5	3447	21.8	5167	35.4	3845	22.5	5358	34.8
2585	20.5	1602	13.6	3311	23.4	1842	14.0	3587	22.6	1882	12.9	3870	22.7	2060	13.4
5990	47.5	10704	90.9	7434	52.6	12115	92.0	8297	52.4	13468	92.4	9148	53.6	14279	92.6
2599	20.6	479	4.1	2777	19.6	445	3.4	3061	19.3	480	3.3	3212	18.8	501	3.3
1772	14	251	2.1	1805	12.8	242	1.8	2098	13.2	267	1.8	2154	12.6	248	1.6
1170	9.3	152	1.3	1113	7.9	139	1.1	1253	7.9	132	0.9	1419	8.3	159	1.0
651	5.2	61	0.5	586	4.1	83	0.6	651	4.1	107	0.7	640	3.7	100	0.6
38	0.3	8	0.1	50	0.4	11	0.1	40	0.3	5	0.0	41	0.2	4	0.0
33	0.3	5	0	31	0.2	6	0.0	39	0.2	8	0.1	31	0.2	3	0.0
114	0.9	37	0.3	105	0.7	33	0.3	131	0.8	26	0.2	142	0.8	33	0.2
6377	50.5	993	8.4	6467	45.7	959	7.3	7273	45.9	1025	7.0	7639	44.7	1048	6.8
60	0.5	15	0.1	56	0.4	16	0.1	71	0.4	22	0.2	78	0.5	18	0.1
46	0.4	16	0.1	40	0.3	18	0.1	51	0.3	15	0.1	60	0.4	22	0.1
87	0.7	27	0.2	87	0.6	31	0.2	93	0.6	19	0.1	102	0.6	26	0.2
46	0.4	20	0.2	48	0.3	26	0.2	46	0.3	23	0.2	37	0.2	15	0.1
9	0.1	6	0.1	7	0.0	5	0.0	9	0.1	3	0.0	11	0.1	3	0.0
3	0	1	0	3	0.0	1	0.0	6	0.0	1	0.0	3	0.0	2	0.0
251	2	85	0.7	241	1.7	97	0.7	276	1.7	83	0.6	291	1.7	86	0.6
12618	**100**	**11782**	**100**	**14142**	**100**	**13171**	**100**	**15846**	**100**	**14576**	**100**	**17078**	**100**	**15413**	**100**

Figure 1.5.2.2(a): Post-Operative Visual Acuity for Eyes without Ocular Co-morbidity, CSR 2002-2011

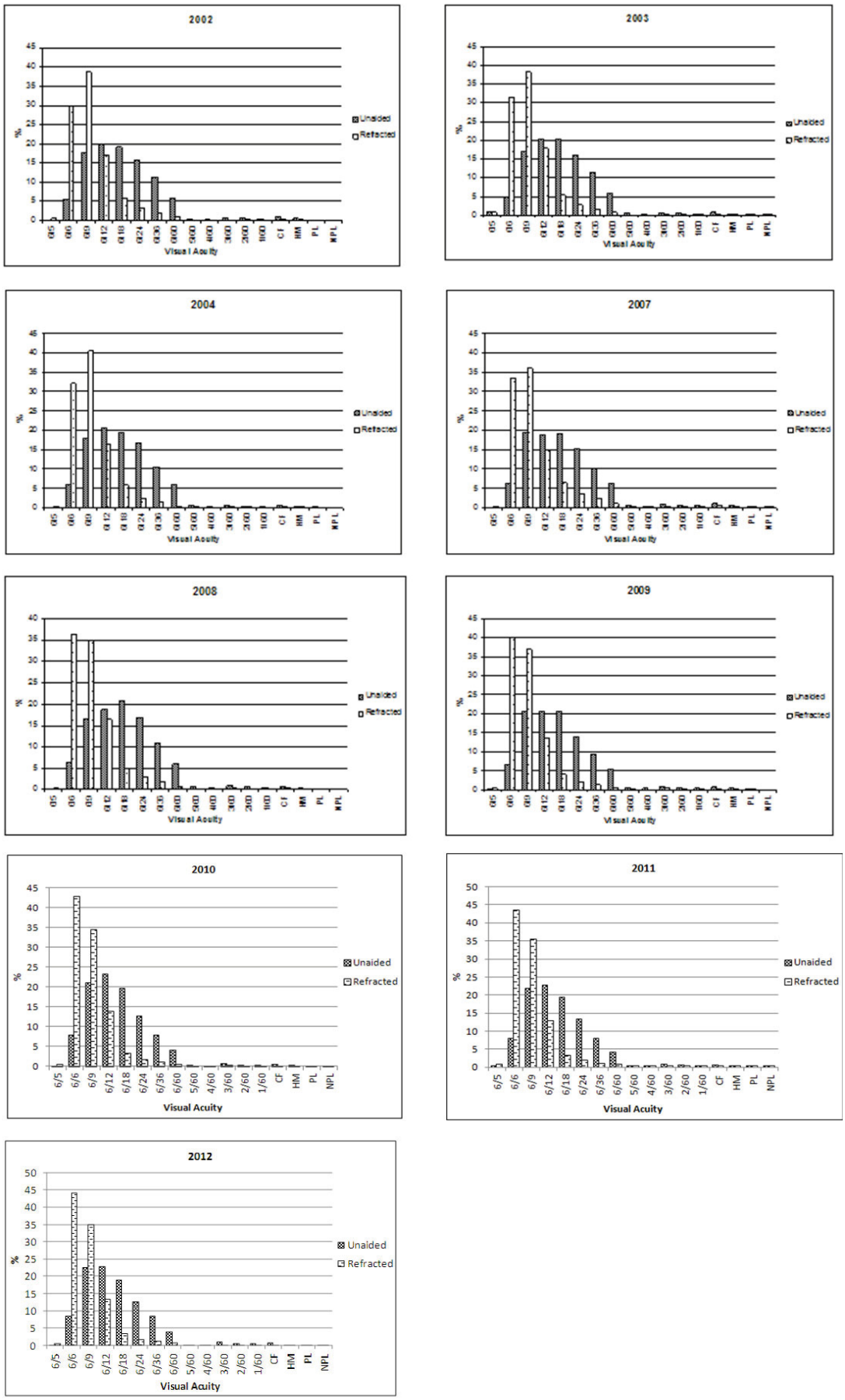
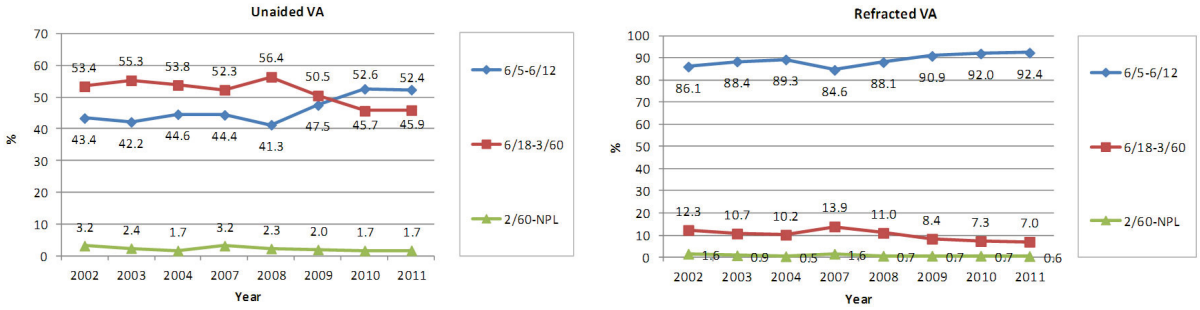


Figure 1.5.2.2(b): Post-operative Visual Acuity by Visual Category for Eyes without Ocular Co-morbidity, CSR 2002-2012



1.5.2.3 Post-operative Visual Acuity 6/12 or Better Among Eyes without Ocular Co-morbidity

The patients who had undergone phacoemulsification showed the highest proportion of achieving good visual outcome when compared with other surgeries. The percentage demonstrated an increasing trend (from 87.0% in 2002 to 94.2% in 2012). When complication occurred in phacoemulsification which necessitated conversion to ECCE, the visual outcome became less favorable.

The proportion of eyes with unaided VA 6/12 or better was poor in almost all types of surgery throughout the years. This percentage increased double folds following refraction. These findings indicated that a large number of patients required some forms of visual rehabilitation or correction post-operatively.

Table 1.5.2.3(a): Post-operative Visual Acuity 6/12 or Better for Eyes without Ocular Co-morbidities by Types of Surgery, CSR 2002-2012

Year	2002						2003						2004					
	Unaided			Refracted			Unaided			Refracted			Unaided			Refracted		
	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%
All Surgeries	12517	4869	38.9	10392	8376	81.0	9861	4181	42.0	8683	7693	89.0	4058	1818	44.8	3604	3226	90.0
Phaco	5010	2490	49.7	4311	3746	87.0	4930	2524	51.0	4411	4111	93.0	4138	2226	53.8	1974	1852	94.0
ECCE	6761	2177	32.2	5490	4255	78.0	4445	1507	34.0	3840	3245	85.0	4823	1659	34.4	1479	1257	85.0
Phaco ECCE	305	94	30.8	255	192	75.0	311	88	28.0	289	236	82.0	347	107	30.8	91	72	79.0
Lens Aspiration	315	86	27.3	237	129	54.0	123	52	42.0	100	75	75.0	145	40	27.5	31	23	74.0
ICCE	80	12	15.0	66	33	50.0	8	3	38.0	6	4	67.0	-	7	0.0	4	2	50.0
Secondary IOL	33	10	30.3	26	21	81.0	42	7	17.0	36	22	61.0	97	22	22.7	19	15	79.0

('cont.)

Year	2007						2008						2009					
	Unaided			Refracted			Unaided			Refracted			Unaided			Refracted		
	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%
All Surgeries	7130	3080	43.0	6632	5551	84.0	8983	3719	41.0	8390	7392	88.0	12618	5990	47.5	11782	10704	90.9
Phaco	4868	2332	48.0	4508	3890	86.0	6419	3017	47.0	5958	5440	91.0	9511	5038	53.0	9001	8397	93.3
ECCE	2033	675	33.0	1910	1520	80.0	2263	629	28.0	2158	1744	81.0	2607	816	31.3	2329	1967	84.5
Phaco ECCE	158	36	23.0	143	89	62.0	201	40	20.0	184	140	76.0	270	53	19.6	259	200	77.2
Lens Aspiration	62	33	53.0	59	46	78.0	74	29	39.0	66	54	82.0	160	57	35.6	128	89	69.5
ICCE	15	2	13.0	10	4	39.0	24	4	17.0	19	11	58.0	29	7	24.1	25	15	60.0
Secondary IOL	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-

('cont.)

Year	2010						2011						2012					
	Unaided			Refracted			Unaided			Refracted			Unaided			Refracted		
	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%
All Surgeries	14142	7434	52.6	13171	12115	92.0	15846	8297	52.4	14576	13468	92.4	17078	9148	53.6	15413	14279	92.6
Phaco	11520	6589	57.2	10818	10151	93.8	13036	7454	57.2	12155	11465	94.3	14540	8439	58.0	13344	12564	94.2
ECCE	2089	672	32.2	1866	1596	85.5	2238	689	30.8	1901	1628	85.6	2044	570	27.9	1633	1373	84.1
Phaco ECCE	268	67	25.0	253	198	78.3	311	59	19.0	291	210	72.2	261	41	15.7	239	176	73.6
Lens Aspiration	192	86	44.8	168	126	75.0	200	79	39.5	175	131	74.9	163	84	51.5	141	124	87.9
ICCE	28	4	14.3	25	13	52.0	20	3	15.0	19	10	52.6	24	2	8.3	20	13	65.0
Secondary IOL	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-

** Note: Secondary IOL was excluded from CSR from the year 2007*
**1.5.2.3(a) – no. refracted all surgeries included missing surgery type*

Figure 1.5.2.3(a): Post-operative Visual Acuity 6/12 or Better for Eyes without Ocular Co-morbidities by ECCE and Phaco, CSR 2002-2012

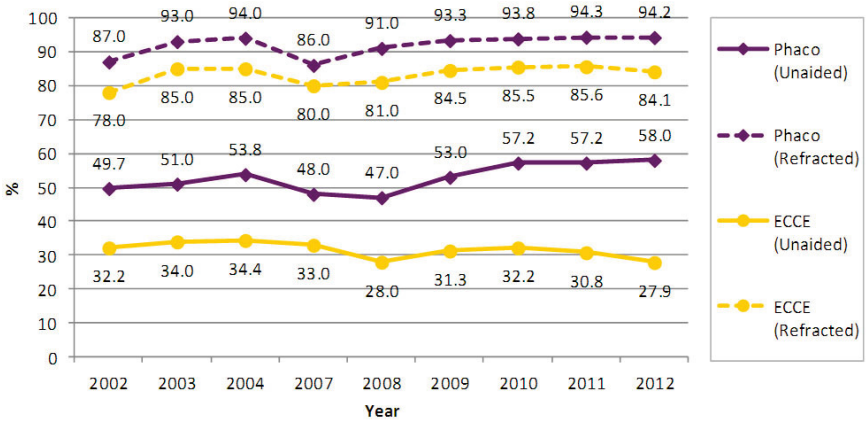


Table 1.5.2.3(b): Post-operative Refracted Visual Acuity 6/12 or Better in Eyes without Ocular Co-morbidities by Complications and Types of Surgery, CSR 2012

	Types of Cataract Surgery																	
	All Surgeries			Lens Aspiration			ECCE			Phaco			Phaco → ECCE			ICCE		
	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%
	15404	14271	92.6	141	124	87.9	1633	1373	84.1	13344	12564	94.2	239	176	73.6	20	13	65.0
With intra-op complications	632	484	76.6	3	1	33.3	102	68	66.7	408	343	84.1	101	61	60.4	8	4	50.0
No intra-op complications	14772	13787	93.3	138	123	89.1	1531	1305	85.2	12936	12221	94.5	138	115	83.3	12	9	75.0

Table 1.5.2.3(c): Post-operative Refracted Visual Acuity 6/12 or Better in Eyes without Ocular Co-morbidities by Surgeon Status and Types of Surgery, CSR 2012

	Types of Cataract Surgery																	
	All Surgeries			Lens Aspiration			ECCE			Phaco			Phaco → ECCE			ICCE		
	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%
	15404	14271	92.6	141	124	87.9	1633	1373	84.1	13344	12564	94.2	239	176	73.6	20	13	65.0
Specialist	13016	12097	92.9	131	115	87.8	1051	880	83.7	11611	10935	94.2	185	139	75.1	15	10	66.7
Gazetting Specialist	1270	1170	92.1	8	7	87.5	141	118	83.7	1083	1018	94.0	36	25	69.4	0	0	0.0
Medical Officer	1105	991	89.7	2	2	100.0	441	375	85.0	637	598	93.9	18	12	66.7	5	3	60.0

In phacoemulsification, the proportion of patients who could achieve post-operative VA better than 6/12 was initially increasing among all surgeons. However, it declined in the year 2007 before rising again from 2008 onwards. In general, better visual outcomes were observed in phaco and phaco converted to ECCE performed by the specialists. The percentage of patients who could achieve post-operative VA better than 6/12 in ECCE performed by gazeting specialist appeared to be decreasing.

**1.5.2.3(a) – no. refracted all surgeries inluded missing surgery type, where as in 1.5.2.3(b), (c), (d) – total excluded missing.*

Figure 1.5.2.3(b): Post-operative Refracted Visual Acuity 6/12 or Better in Eyes without Ocular Co-morbidities by Surgeon Status and Types of Surgery, CSR 2002-2012

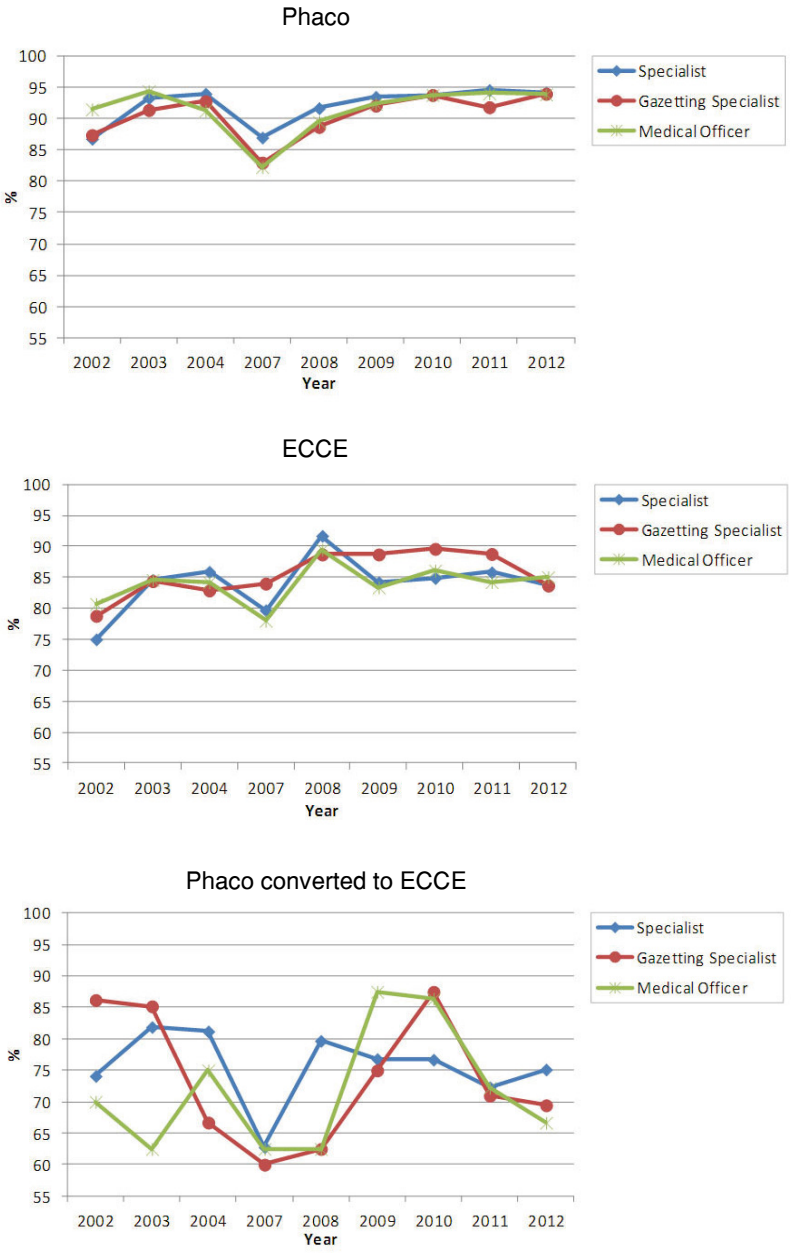


Table 1.5.2.3(d): Post-operative Refracted Visual Acuity 6/12 or Better in Eyes without Ocular Co-morbidities by SDP and Types of Surgery, CSR 2012

	All Patients	Type of Cataract Surgery																	
		All Surgeries			Lens Aspiration			ECCE			Phaco			Phaco → ECCE			ICCE		
	N	N	n	%	%	n	%	n	%	n	%	n	%						
All Centre	15413	15404	14271	92.6	141	124	87.9	1633	1373	84.1	13344	12564	94.2	239	176	73.6	20	13	65.0
Alor Setar	850	850	768	90.4	8	8	100.0	82	63	76.8	750	690	92.0	10	7	70.0	0	0	0.0
Ampang	468	468	456	97.4	4	4	100.0	13	12	92.3	439	431	98.2	11	8	72.7	1	1	100.0
Batu Pahat	326	326	303	92.9	4	4	100.0	45	37	82.2	259	248	95.8	18	14	77.8	0	0	0.0
Bintulu	232	232	207	89.2	2	1	50.0	81	71	87.7	148	134	90.5	1	1	100.0	0	0	0.0
Bukit Mertajam	246	246	236	95.9	1	1	100.0	32	30	93.8	210	202	96.2	2	2	100.0	0	0	0.0
Ipoh	1108	1100	1023	93.0	4	2	50.0	89	67	75.3	1002	950	94.8	3	3	100.0	1	0	0.0
Johor Bahru	522	522	470	90.0	1	0	0.0	25	17	68.0	485	442	91.1	9	9	100.0	0	0	0.0
Kangar	190	190	189	99.5	1	1	100.0	4	4	100.0	183	182	99.5	2	2	100.0	0	0	0.0
Keningau	16	16	15	93.8	0	0	0.0	16	15	93.8	0	0	0.0	0	0	0.0	0	0	0.0
Klang	647	647	599	92.6	2	2	100.0	67	50	74.6	568	540	95.1	4	3	75.0	2	1	50.0
Kota Bharu	118	118	110	93.2	1	1	100.0	16	14	87.5	95	90	94.7	5	4	80.0	1	1	100.0
Kota Kinabalu	474	474	455	96.0	13	12	92.3	89	83	93.3	358	346	96.6	6	6	100.0	5	5	100.0
Kuala Krai	124	124	114	91.9	0	0	0.0	7	7	100.0	115	105	91.3	2	2	100.0	0	0	0.0
Kuala Lumpur	755	755	698	92.5	2	2	100.0	119	105	88.2	614	574	93.5	20	17	85.0	0	0	0.0
Kuala Pilah	250	250	236	94.4	0	0	0.0	23	18	78.3	220	213	96.8	7	5	71.4	0	0	0.0
Kuala Terengganu	566	566	519	91.7	24	21	87.5	125	106	84.8	410	388	94.6	4	3	75.0	2	0	0.0
Kuantan	360	360	345	95.8	8	7	87.5	45	38	84.4	297	291	98.0	10	9	90.0	0	0	0.0
Kuching	696	696	626	89.9	3	3	100.0	20	16	80.0	669	606	90.6	4	1	25.0	0	0	0.0
Melaka	869	869	789	90.8	6	4	66.7	103	84	81.6	753	696	92.4	3	3	100.0	3	1	33.3
Miri	701	701	660	94.2	10	9	90.0	17	13	76.5	670	634	94.6	0	0	0.0	1	1	100.0
Muar	358	358	310	86.6	3	3	100.0	8	3	37.5	331	297	89.7	16	7	43.8	0	0	0.0
Pulau Pinang	695	695	661	95.1	2	2	100.0	8	8	100.0	678	646	95.3	5	3	60.0	0	0	0.0
Putrajaya	182	182	177	97.3	2	2	100.0	6	6	100.0	165	161	97.6	9	8	88.9	0	0	0.0
Sandakan	143	143	128	89.5	1	1	100.0	86	78	90.7	49	45	91.8	4	3	75.0	1	1	100.0
Selayang	926	926	818	88.3	12	11	91.7	42	25	59.5	843	766	90.9	25	15	60.0	0	0	0.0
Serdang	412	412	361	87.6	3	3	100.0	51	44	86.3	344	303	88.1	14	11	78.6	0	0	0.0
Seremban	679	679	642	94.6	3	3	100.0	50	43	86.0	617	592	95.9	8	4	50.0	1	0	0.0

('cont.)

	All Patients	Type of Cataract Surgery																	
		All Surgeries			Lens Aspiration			ECCE			Phaco			Phaco → ECCE			ICCE		
	N	N	n	%	%	n	%	n	%	n	%	n	%						
Sibu	247	247	233	94.3	1	1	100.0	4	4	100.0	239	226	94.6	2	1	50.0	0	0	0.0
Sri Manjung	278	277	265	95.7	0	0	0.0	18	15	83.3	253	244	96.4	4	4	100.0	1	1	100.0
Sultan Ismail	173	173	172	99.4	4	4	100.0	27	27	100.0	140	139	99.3	2	2	100.0	0	0	0.0
Sungai Buloh	374	374	339	90.6	4	3	75.0	38	29	76.3	317	293	92.4	14	13	92.9	1	1	100.0
Sungai Petani	340	340	317	93.2	3	2	66.7	52	44	84.6	281	268	95.4	3	2	66.7	0	0	0.0
Taiping	344	344	343	99.7	2	2	100.0	33	33	100.0	309	308	99.7	0	0	0.0	0	0	0.0
Tawau	167	167	143	85.6	0	0	0.0	167	143	85.6	0	0	0.0	0	0	0.0	0	0	0.0
Teluk Intan	311	311	299	96.1	6	5	83.3	20	18	90.0	281	273	97.2	4	3	75.0	0	0	0.0
Temerloh	266	266	245	92.1	1	0	0.0	5	3	60.0	252	241	95.6	8	1	12.5	0	0	0.0

Figure 1.5.2.3(c): Post-operative Refracted Visual Acuity 6/12 or Better in Eyes without Ocular Co-morbidities by SDP and All Surgeries, CSR 2012

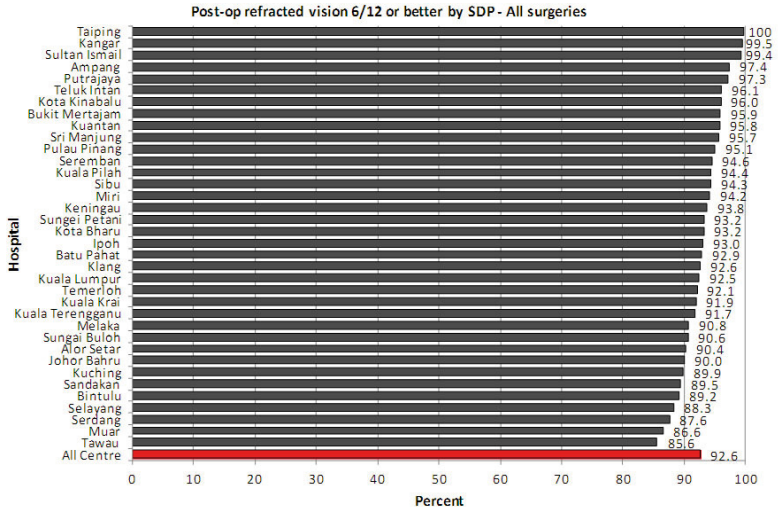


Figure 1.5.2.3(d): Post-operative Refracted Visual Acuity 6/12 or Better in Eyes without Ocular Co-morbidities by SDP for Phacoemulsification, CSR 2012

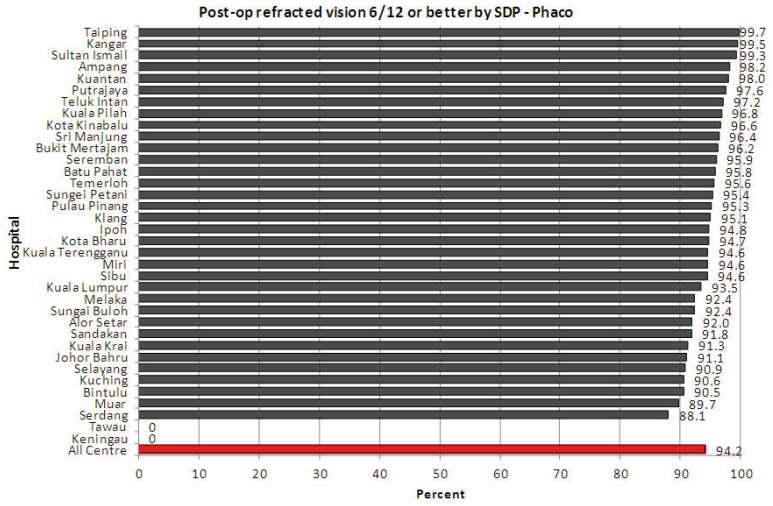
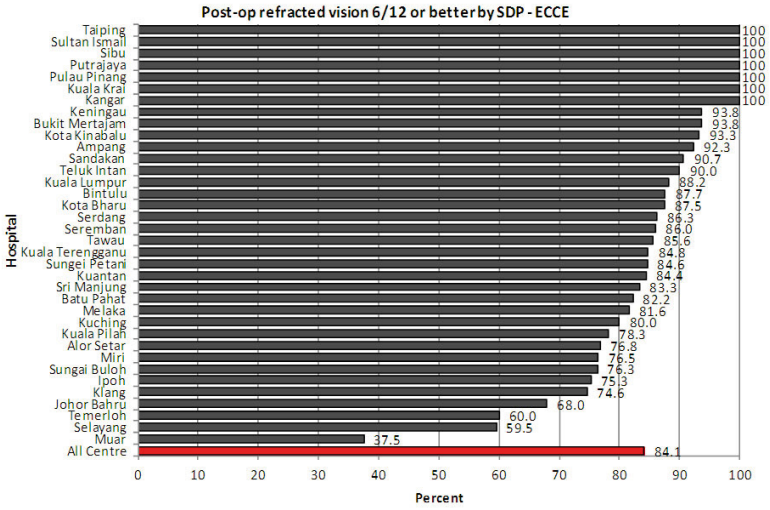


Figure 1.5.2.3(e): Post-operative Refracted Visual Acuity 6/12 or Better in Eyes without Ocular Co-morbidities by SDP for ECCE, CSR 2012



1.5.3 Reasons for No Record of Visual Acuity

Of the 32473 eyes operated in 2012, 1787 eyes did not have record of visual outcome. The main reason for no record of VA was loss to follow up.

Table 1.5.3: Reasons for No Records of Visual Acuity, CSR 2002-2012

Years	2002		2003		2004		2007		2008		2009		2010		2011		2012	
Reasons	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
All cases	1940	100	1331	100	1872	100	1458	100	1463	100	1557	100	1359	100	1607	100	1787	100
Loss to follow-up	1331	68.1	876	65.8	1177	62.9	1078	73.9	1230	84.1	1261	81.0	1078	79.3	1362	84.8	1451	81.2
Discharged by doctor	396	20.4	212	15.9	306	1.6	32	2.2	13	0.9	44	2.8	38	2.8	32	2.0	22	1.2
Unable to take vision	69	3.6	33	40.3	108	5.8	49	3.4	26	1.8	30	1.9	33	2.4	27	1.7	33	1.8
Others	144	7.4	210	15.8	281	15.0	299	20.5	194	13.3	222	14.3	210	15.5	186	11.6	281	15.7

1.5.4 Factors Contributing to Post-operative Refracted Visual Acuity of Worse than 6/12

The main contributing factors for eyes with post-operative refracted VA worse than 6/12 were pre-existing ocular co-morbidity followed by high astigmatism and PCO. Pre-existing ocular co-morbidity appeared to be increasing while PCO appeared to be decreasing.

When eyes with preexisting ocular co-morbidity were excluded from analysis from the year 2004 onwards, high astigmatism contributed the highest number followed by preexisting ocular co-morbidity (not detected preoperatively).

Table 1.5.4(a): Factors Contributing to Post-operative Refracted VA of Worse than 6/12 in All Eyes, CSR 2002-2012

Years	2002		2003		2004		2007		2008		2009		2010		2011		2012	
Factors	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
N (total no. of post-op refracted vision worse than 6/12)											2973		3397		3597			
Preexisting ocular co-morbidity	818	40.7	386	39.1	503	47.2	904	28.8	802	28.4	1016	34.2	1364	40.2	1412	39.3	1544	41.8
High astigmatism	489	24.3	392	39.8	321	31.1	478	15.2	460	16.3	395	13.3	378	11.1	397	11.0	438	11.9
Posterior capsular opacity	198	9.9	152	15.4	53	5.0	140	4.5	112	4.0	136	4.6	112	3.3	111	3.1	114	3.1
Cystoid macular oedema	93	4.6	59	6.0	33	3.1	101	3.2	64	2.3	82	2.8	94	2.8	96	2.7	88	2.4
Endophthalmitis	16	0.8	10	1.0	6	0.6	14	0.4	6	0.2	6	0.2	5	0.1	2	0.1	4	0.1
Corneal decompensation	37	1.8	19	1.9	6	0.6	28	0.9	31	1.1	61	2.1	33	1.0	36	1.0	42	1.1
Decentered IOL	14	0.7	1	0.1	3	0.3	4	0.1	6	0.2	5	0.2	5	0.1	8	0.2	9	0.2
Retinal detachment	27	1.3	8	0.8	7	0.7	67	2.1	50	1.8	56	1.9	44	1.3	35	1.0	69	1.9
Others	302	15.0	202	20.5	134	12.6	620	19.8	603	21.3	794	26.7	857	25.2	927	25.8	1072	29.0
Missing/ Unavailable	14	0.7	49	5.0	0	0.0	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Figure 1.5.4: Factors Contributing to Post-operative Refracted VA of Worse than 6/12 in All Eyes, CSR 2002-2012

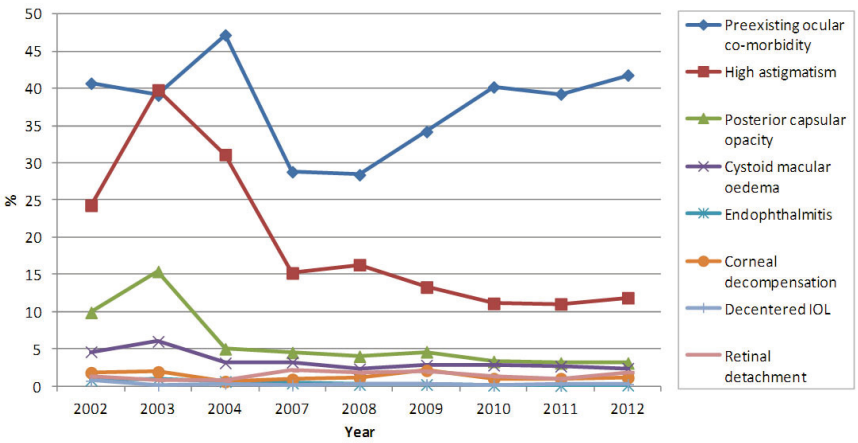


Table 1.5.4(b): Factors Contributing to Post-operative Refracted VA of Worse than 6/12 in Eyes without Preexisting Ocular co-morbidity, CSR 2004-2012

Years	2004		2007		2008		2009		2010		2011		2012	
Factors	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
N							1078		1056		1108		1134	
Preexisting ocular co-morbidity (not detected pre-operatively)	23	6.1	271	17.6	229	16.5	121	11.2	92	8.7	66	6.0	98	8.6
High astigmatism	197	52.0	303	19.7	286	20.6	178	16.5	180	17.0	175	15.8	193	17.0
Posterior capsular opacity	20	5.3	83	5.4	61	4.4	87	8.1	65	6.2	50	4.5	51	4.5
Cystoid macular oedema	20	5.3	52	3.4	26	1.9	32	3.0	42	4.0	38	3.4	38	3.4
Endophthalmitis	4	1.0	9	0.6	4	0.3	4	0.4	2	0.2	1	0.1	2	0.2
Corneal decompensation	3	0.8	15	1.0	13	0.9	36	3.3	21	2.0	18	1.6	18	1.6
Decentered IOL	2	0.5	4	0.3	2	0.1	1	0.1	0	0.0	4	0.4	5	0.4
Retinal detachment	1	0.3	18	1.2	11	0.8	11	1.0	6	0.6	1	0.1	6	0.5
Others	76	20.0	320	20.8	323	23.3	368	34.1	389	36.8	453	40.9	506	44.6
Missing/Unavailable	NA	-	461	30.0	NA	-	NA	-	NA	-	NA	-	NA	-

1.5.5 Actual or Residual Refractive Power (Spherical Equivalent)

Target refractive power is the refractive power aimed by the surgeon for a patient while the actual or residual refractive power or spherical equivalent (SE) is the postoperative refraction results for the same eye. Myopic shift is the shift of the refraction status (actual refraction) towards more negative value as compared to the targeted refraction pre-operatively. It can be the results of surgery induced astigmatism or more anterior placement of IOL in the bag. It can also be due to indentation of eyeball during biometry resulting in shorter axial length.

Data from 2007 to 2012 demonstrated that ECCE produced more myopic shift as compared to phaco. The difference between the target and actual refraction remained a broad-based distribution curve indicating that a large percentage of eyes did not achieve the target refraction status post-operatively.

Table 1.5.5(a): Distribution of Target and Actual Refractive Power in ECCE and Phaco, CSR 2007-2012

	Target Refraction						Actual-Target Refraction					
	All Eyes						All Eyes					
Years	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
N	11876	15083	20279	24528	25887	26061	8738	12295	14670	17696	18813	17964
Mean	-0.5	-0.1	-0.4	-0.4	-0.4	-0.4	-0.5	-0.4	-0.4	-0.3	-0.3	-0.3
SD	+0.4	+0.4	+0.4	+0.4	+0.3	+0.4	+1.1	+1.2	+1.1	+1.1	+1.0	+1.0
Median	-0.5	-0.5	-0.5	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3	-0.3	-0.3	-0.3
Minimum	-9.0	-9.9	-9.9	-9.1	-9.1	-8.0	-9.5	-9.9	-8.8	-9.8	-9.2	-9.9
Maximum	+5.0	+9.5	+5.9	+6.0	+4.8	+9.0	+5.0	+9.0	+10.7	+10.7	+10.7	+10.6

	Actual Refraction											
	ECCE						Phaco					
Years	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
N	3624	4400	4013	3851	3714	3153	8343	12085	12891	15485	17197	17931
Mean	-1.1	-0.2	-1.0	-0.9	-1.0	-0.9	-0.8	0.0	-0.7	-0.6	-0.7	-0.6
SD	+1.4	+1.2	+1.4	+1.5	+1.4	+1.4	+1.1	1.03	+1.0	+1.0	+0.9	+0.9
Median	-1.0	-0.2	-1.0	-1.0	-1.0	-1.0	-0.7	0.0	-0.7	-0.6	-0.6	-0.6
Minimum	-10.0	-8.4	-10.0	-9.3	-7.3	-8.5	-10.0	-10.0	-9.0	-10.0	-10.0	-9.9
Maximum	+9.8	+10.0	+10.0	+10.0	+10.0	+10.0	+10.0	+10.0	+10.0	+10.0	+10.0	+10.0

Note: Eyes with actual refractive power (SE) of more than +10.0D and -10.0D were excluded from analysis

Table 1.5.5(b): Percentage Distribution of Target and Actual Refractive Power in ECCE and Phaco, CSR 2007-2012

Target Refraction												
All Eyes												
Years	**2007**		**2008**		**2009**		**2010**		**2011**		**2012**	
Dioptre (D)	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
-10-<(-9.5)	0	0.0	1	0.0	2	0.0	0	0.0	0	0.0	0	0.0
-9.5-<(-9)	4	0.0	1	0.0	1	0.0	2	0.0	1	0.0	0	0.0
-9-<(-8.5)	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0
-8.5-<(-8)	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0
-8-<(-7.5)	2	0.0	3	0.0	1	0.0	1	0.0	0	0.0	1	0.0
-7.5-<(-7)	1	0.0	0	0.0	1	0.0	1	0.0	0	0.0	2	0.0
-7-<(-6.5)	3	0.0	1	0.0	0	0.0	1	0.0	1	0.0	1	0.0
-6.5-<(-5)	1	0.0	2	0.0	7	0.0	4	0.0	10	0.0	10	0.0
-5-<(-4.5)	3	0.0	4	0.0	7	0.0	3	0.0	3	0.0	5	0.0
-4.5-<(-4)	2	0.0	3	0.0	5	0.0	10	0.0	3	0.0	5	0.0
-4-<(-3.5)	7	0.1	8	0.1	11	0.1	5	0.0	11	0.0	5	0.0
-3.5-<(-3)	6	0.0	7	0.0	11	0.1	15	0.1	12	0.0	6	0.0
-3-<(-2.5)	13	0.1	22	0.1	18	0.1	29	0.1	15	0.1	15	0.1
-2.5-<(-2)	29	0.2	21	0.1	29	0.1	33	0.1	26	0.1	38	0.1
-2-<(-1.5)	77	0.6	48	0.3	58	0.3	46	0.2	54	0.2	67	0.3
-1.5-<(-1)	429	3.5	373	2.5	260	1.3	292	1.2	201	0.8	226	0.9
-1-<(-0.5)	4670	37.7	6155	40.9	7972	39.3	7590	30.9	7507	29.0	7190	27.6
-0.5-<0	6631	53.5	7481	49.7	10604	52.3	15220	62.1	16915	65.3	17421	66.8
0-<0.5	406	3.3	719	4.8	977	4.8	921	3.8	849	3.3	631	2.4
0.5-<1	77	0.6	145	1.0	182	0.9	238	1.0	234	0.9	216	0.8
1-<1.5	12	0.1	28	0.2	17	0.1	23	0.1	20	0.1	32	0.1
1.5-<2	5	0.0	14	0.1	22	0.1	19	0.1	9	0.0	52	0.2
2-<2.5	15	0.1	10	0.1	85	0.4	69	0.3	12	0.0	123	0.5
2.5-<3	0	0.0	6	0.0	4	0.0	3	0.0	2	0.0	10	0.0
3-<3.5	1	0.0	2	0.0	2	0.0	0	0.0	1	0.0	1	0.0
3.5-<4	1	0.0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0
4-<4.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
4.5-<5	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0	0	0.0
5-<5.5	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0
5.5-<6	0	0.0	0	0.0	2	0.0	0	0.0	0	0.0	0	0.0
6-<6.5	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0
6.5-<7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
7-<7.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
7.5-<8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
8-<8.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
8.5-<9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
9-<9.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
9.5-<10	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Eyes with actual refractive power (SE) of more than +10.0D and -10.0D were excluded from analysis

Actual Refraction																								
	ECCE												Phaco											
Years	2007		2008		2009		2010		2011		2012		2007		2008		2009		2010		2011		2012	
Dioptre (D)	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
-10-<(-9.5)	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	2	0.0	1	0.0	1	0.0
-9.5-<(-9)	0	0.0	1	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	7	0.1	0	0.0	1	0.0	2	0.0	2	0.0
-9-<(-8.5)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	2	0.0	0	0.0	0	0.0	0	0.0
-8.5-<(-8)	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	2	0.1	0	0.0	2	0.0	0	0.0	0	0.0	1	0.0	1	0.0
-8-<(-7.5)	0	0.0	0	0.0	3	0.1	1	0.0	0	0.0	0	0.0	0	0.0	3	0.0	0	0.0	0	0.0	1	0.0	2	0.0
-7.5-<(-7)	0	0.0	1	0.0	1	0.0	0	0.0	1	0.0	1	0.0	1	0.0	11	0.1	0	0.0	3	0.0	1	0.0	2	0.0
-7-<(-6.5)	0	0.0	1	0.0	1	0.0	1	0.0	3	0.1	5	0.2	0	0.0	6	0.0	3	0.0	3	0.0	2	0.0	2	0.0
-6.5-<(-5)	0	0.0	3	0.1	10	0.2	9	0.2	16	0.4	4	0.1	1	0.0	16	0.1	24	0.2	22	0.1	11	0.1	21	0.1
-5-<(-4.5)	1	0.0	1	0.0	12	0.3	15	0.4	8	0.2	11	0.3	1	0.0	15	0.1	14	0.1	13	0.1	11	0.1	13	0.1
-4.5-<(-4)	3	0.1	5	0.1	15	0.4	16	0.4	20	0.5	20	0.6	3	0.0	15	0.1	14	0.1	16	0.1	19	0.1	21	0.1
-4-<(-3.5)	8	0.2	7	0.2	52	1.3	38	1.0	30	0.8	26	0.8	5	0.1	19	0.2	42	0.3	41	0.3	35	0.2	37	0.2
-3.5-<(-3)	19	0.5	15	0.3	74	1.8	68	1.8	62	1.7	51	1.6	2	0.0	29	0.2	81	0.6	78	0.5	74	0.4	74	0.4
-3-<(-2.5)	26	0.6	41	0.9	183	4.6	128	3.3	131	3.5	128	4.1	7	0.1	58	0.5	208	1.6	182	1.2	161	0.9	164	0.9
-2.5-<(-2)	65	1.6	76	1.7	318	7.9	252	6.5	235	6.3	204	6.5	27	0.3	80	0.7	443	3.4	426	2.8	448	2.6	451	2.5
-2-<(-1.5)	149	3.6	203	4.6	509	12.7	458	11.9	464	12.5	377	12.0	88	1.0	147	1.2	1045	8.1	1043	6.7	1138	6.6	1100	6.1
-1.5-<(-1)	360	8.7	431	9.7	713	17.8	716	18.6	662	17.8	530	16.8	277	3.1	393	3.2	2093	16.2	2367	15.3	2693	15.7	2700	15.1
-1-<(-0.5)	722	17.5	763	17.2	765	19.1	810	21.0	774	20.8	667	21.2	1022	11.4	1370	11.3	3206	24.9	3831	24.7	4452	25.9	4715	26.3
-0.5-<0	956	23.2	956	21.6	654	16.3	612	15.9	640	17.2	544	17.3	2602	29.1	3152	26.0	3143	24.4	3926	25.4	4560	26.5	4750	26.5
0-<0.5	860	20.8	983	22.2	397	9.9	373	9.7	371	10.0	297	9.4	2551	28.5	3568	29.5	1697	13.2	2194	14.2	2358	13.7	2564	14.3
0.5-<1	444	10.8	460	10.4	151	3.8	161	4.2	148	4.0	144	4.6	1273	14.2	1738	14.3	535	4.2	801	5.2	771	4.5	845	4.7
1-<1.5	236	5.7	228	5.1	60	1.5	80	2.1	68	1.8	65	2.1	546	6.1	780	6.4	179	1.4	285	1.8	257	1.5	278	1.6
1.5-<2	129	3.1	98	2.2	35	0.9	25	0.6	31	0.8	33	1.0	268	3.0	367	3.0	79	0.6	112	0.7	91	0.5	85	0.5
2-<2.5	50	1.2	48	1.1	20	0.5	19	0.5	17	0.5	9	0.3	117	1.3	160	1.3	26	0.2	48	0.3	43	0.3	44	0.2
2.5-<3	24	0.6	22	0.5	5	0.1	7	0.2	3	0.1	6	0.2	59	0.7	56	0.5	14	0.1	27	0.2	20	0.1	17	0.1
3-<3.5	15	0.4	16	0.4	3	0.1	9	0.2	5	0.1	4	0.1	28	0.3	32	0.3	11	0.1	11	0.1	13	0.1	11	0.1
3.5-<4	10	0.2	8	0.2	6	0.1	5	0.1	0	0.0	3	0.1	17	0.2	23	0.2	5	0.0	10	0.1	4	0.0	7	0.0
4-<4.5	3	0.1	3	0.1	0	0.0	5	0.1	0	0.0	3	0.1	12	0.1	12	0.1	5	0.0	9	0.1	2	0.0	6	0.0
4.5-<5	3	0.1	2	0.0	3	0.1	3	0.1	1	0.0	2	0.1	11	0.1	4	0.0	2	0.0	3	0.0	4	0.0	1	0.0
5-<5.5	3	0.1	2	0.0	1	0.0	2	0.1	1	0.0	0	0.0	3	0.0	1	0.0	3	0.0	8	0.1	4	0.0	1	0.0

('cont.)

Actual Refraction																								
	ECCE												Phaco											
Years	**2007**		**2008**		**2009**		**2010**		**2011**		**2012**		**2007**		**2008**		**2009**		**2010**		**2011**		**2012**	
Dioptre (D)	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
5.5-<6	2	0.0	1	0.0	1	0.0	4	0.1	1	0.0	0	0.0	1	0.0	3	0.0	2	0.0	1	0.0	2	0.0	1	0.0
6-<6.5	1	0.0	0	0.0	0	0.0	0	0.0	2	0.1	1	0.0	4	0.0	2	0.0	2	0.0	6	0.0	2	0.0	2	0.0
6.5-<7	2	0.0	1	0.0	0	0.0	4	0.1	3	0.1	1	0.0	4	0.0	1	0.0	2	0.0	2	0.0	1	0.0	1	0.0
7-<7.5	1	0.0	3	0.1	1	0.0	5	0.1	0	0.0	3	0.1	0	0.0	1	0.0	0	0.0	3	0.0	2	0.0	2	0.0
7.5-<8	2	0.0	1	0.0	3	0.1	1	0.0	1	0.0	1	0.0	2	0.0	3	0.0	0	0.0	0	0.0	1	0.0	2	0.0
8-<8.5	1	0.0	3	0.1	2	0.0	4	0.1	2	0.1	1	0.0	3	0.0	1	0.0	1	0.0	2	0.0	0	0.0	0	0.0
8.5-<9	5	0.1	1	0.0	0	0.0	2	0.1	3	0.1	0	0.0	0	0.0	0	0.0	2	0.0	2	0.0	1	0.0	1	0.0
9-<9.5	1	0.0	8	0.2	3	0.1	4	0.1	5	0.1	3	0.1	0	0.0	0	0.0	2	0.0	0	0.0	6	0.0	1	0.0
9.5-<10	5	0.1	2	0.0	10	0.2	12	0.3	6	0.2	7	0.2	4	0.0	6	0.0	6	0.0	7	0.0	5	0.0	6	0.0

Eyes with actual refractive power (SE) of more than +10.0D and -10.0D were excluded from analysis

Figure 1.5.5(a): Percentage Distribution of Actual Refractive Power in ECCE and Phaco, CSR 2007-2012

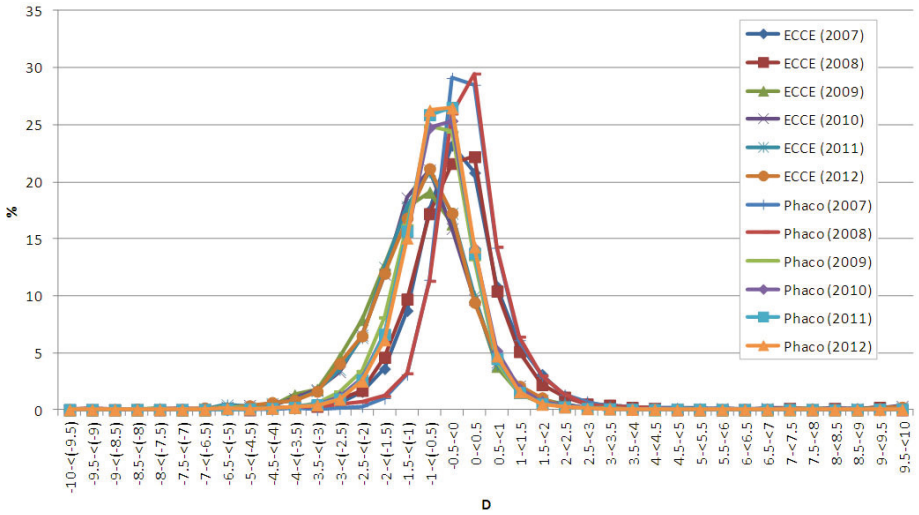


Table 1.5.5(c): Difference in Target and Actual Refractive Power for Patients who had Phacoemulsification Only, CSR 2007-2012

	Target Refraction												Actual Refraction											
Years	**2007**		**2008**		**2009**		**2010**		**2011**		**2012**		**2007**		**2008**		**2009**		**2010**		**2011**		**2012**	
Power (D)	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
N	7975	100	10660	100	10837	100	13653	100	14901	100	14727	100	8342	100	12154	100	12845	100	15485	100	17158	100	17884	100
-5-<(-4.5)	2	0.0	4	0.0	3	0.0	1	0.0	1	0.0	2	0.0	15	0.2	13	0.1	14	0.1	13	0.1	11	0.1	13	0.1
-4.5-<(-4)	1	0.0	3	0.0	2	0.0	6	0.0	2	0.0	4	0.0	30	0.4	19	0.2	14	0.1	16	0.1	19	0.1	21	0.1
-4-<(-3.5)	5	0.1	7	0.1	5	0.0	5	0.0	6	0.0	4	0.0	49	0.6	17	0.1	42	0.3	41	0.3	35	0.2	37	0.2
-3.5-<(-3)	5	0.1	6	0.1	4	0.0	10	0.1	8	0.1	4	0.0	97	1.2	20	0.2	81	0.6	78	0.5	74	0.4	74	0.4
-3-<(-2.5)	10	0.1	20	0.2	6	0.1	15	0.1	9	0.1	6	0.0	200	2.4	55	0.5	208	1.6	182	1.2	161	0.9	164	0.9
-2.5-<(-2)	18	0.2	16	0.2	12	0.1	22	0.2	14	0.1	23	0.2	405	4.9	85	0.7	443	3.4	426	2.8	448	2.6	451	2.5
-2-<(-1.5)	51	0.6	35	0.3	32	0.3	19	0.1	30	0.2	40	0.3	746	8.9	164	1.3	1045	8.1	1043	6.7	1138	6.6	1100	6.2
-1.5-<(-1)	239	3.0	288	2.7	115	1.1	151	1.1	115	0.8	112	0.8	1382	16.6	423	3.5	2093	16.3	2367	15.3	2693	15.7	2700	15.1
-1-<(-0.5)	2473	31.0	4065	38.1	3699	34.1	3721	27.3	3867	26.0	3675	25.0	1771	21.2	1408	11.6	3206	25.0	3831	24.7	4452	25.9	4715	26.4
-0.5-<0	4512	56.6	5498	51.6	6282	58.0	9087	66.6	10338	69.4	10380	70.5	1884	22.6	3167	26.1	3143	24.5	3926	25.4	4560	26.6	4750	26.6
0-<0.5	583	7.3	563	5.3	494	4.6	443	3.2	379	2.5	261	1.8	1069	12.8	3534	29.1	1697	13.2	2194	14.2	2358	13.7	2564	14.3
0.5-<1	45	0.6	107	1.0	115	1.1	123	0.9	114	0.8	138	0.9	399	4.8	1740	14.3	535	4.2	801	5.2	771	4.5	845	4.7
1-<1.5	6	0.1	23	0.2	6	0.1	8	0.1	6	0.0	7	0.0	142	1.7	786	6.5	179	1.4	285	1.8	257	1.5	278	1.6
1.5-<2	2	0.0	7	0.1	8	0.1	6	0.0	1	0.0	18	0.1	55	0.7	365	3.0	79	0.6	112	0.7	91	0.5	85	0.5
2-<2.5	9	0.1	6	0.1	52	0.5	32	0.2	9	0.1	49	0.3	14	0.2	156	1.3	26	0.2	48	0.3	43	0.3	44	0.2
2.5-<3	1	0.0	4	0.0	2	0.0	1	0.0	1	0.0	4	0.0	15	0.2	55	0.5	14	0.1	27	0.2	20	0.1	17	0.1
3-<3.5	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	13	0.2	30	0.2	11	0.1	11	0.1	13	0.1	11	0.1
3.5-<4	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4	0.0	22	0.2	5	0.0	10	0.1	4	0.0	7	0.0
4-<4.5	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	0.0	10	0.1	5	0.0	9	0.1	2	0.0	6	0.0
4.5-<5	0	0.0	1	0.0	0	0.0	0	0.0	1	0.0	0	0.0	4	0.0	4	0.0	2	0.0	3	0.0	4	0.0	1	0.0
5-<5.5	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	1	0.0	3	0.0	8	0.1	4	0.0	1	0.0

NOTE: Formula of $SE = Sp + \left(\frac{Cy}{2}\right)$

Difference between Target and Actual Refraction												
Years	**2007**		**2008**		**2009**		**2010**		**2011**		**2012**	
Power (D)	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
N	5782	100	8803	100	10812	100	13653	100	14874	100	14712	100
-5-<(-4.5)	12	0.2	12	0.1	5	0.0	5	0.0	7	0.0	8	0.1
-4.5-<(-4)	14	0.2	19	0.2	8	0.1	7	0.1	10	0.1	9	0.1
-4-<(-3.5)	28	0.5	18	0.2	23	0.2	26	0.2	14	0.1	18	0.1
-3.5-<(-3)	43	0.7	51	0.6	52	0.5	37	0.3	32	0.2	38	0.3
-3-<(-2.5)	93	1.6	103	1.2	94	0.9	104	0.8	81	0.5	100	0.7
-2.5-<(-2)	176	3.0	245	2.8	238	2.2	189	1.4	191	1.3	204	1.4
-2-<(-1.5)	311	5.4	541	6.1	473	4.4	510	3.7	529	3.6	533	3.6
-1.5-<(-1)	595	10.3	1052	12.0	1129	10.4	1270	9.3	1390	9.3	1299	8.8
-1-<(-0.5)	994	17.2	1984	22.5	2126	19.7	2659	19.5	3073	20.7	3004	20.4
-0.5-<0	1367	23.6	2278	25.9	2862	26.5	3691	27.0	4404	29.6	4270	29.0
0-<0.5	1179	20.4	1434	16.3	2245	20.8	3051	22.3	3270	22.0	3258	22.1
0.5-<1	573	9.9	558	6.3	994	9.2	1329	9.7	1253	8.4	1341	9.1
1-<1.5	225	3.9	214	2.4	329	3.0	422	3.1	410	2.8	401	2.7
1.5-<2	73	1.3	97	1.1	132	1.2	173	1.3	106	0.7	145	1.0
2-<2.5	32	0.6	46	0.5	55	0.5	63	0.5	63	0.4	45	0.3
2.5-<3	14	0.2	26	0.3	18	0.2	31	0.2	20	0.1	19	0.1
3-<3.5	13	0.2	15	0.2	8	0.1	18	0.1	13	0.1	10	0.1
3.5-<4	8	0.1	15	0.2	11	0.1	14	0.1	4	0.0	6	0.0
4-<4.5	3	0.0	12	0.1	4	0.0	8	0.1	3	0.0	2	0.0
4.5-<5	3	0.0	12	0.1	3	0.0	4	0.0	0	0.0	2	0.0
5-<5.5	9	0.2	9	0.1	3	0.0	6	0.0	1	0.0	0	0.0

NOTE: Formula of $SE = Sp + \left(\frac{Cy}{2}\right)$

Figure 1.5.5(b): Difference in Target and Actual Refractive Power for Patients who had Phacoemulsification Only, CSR 2007-2012

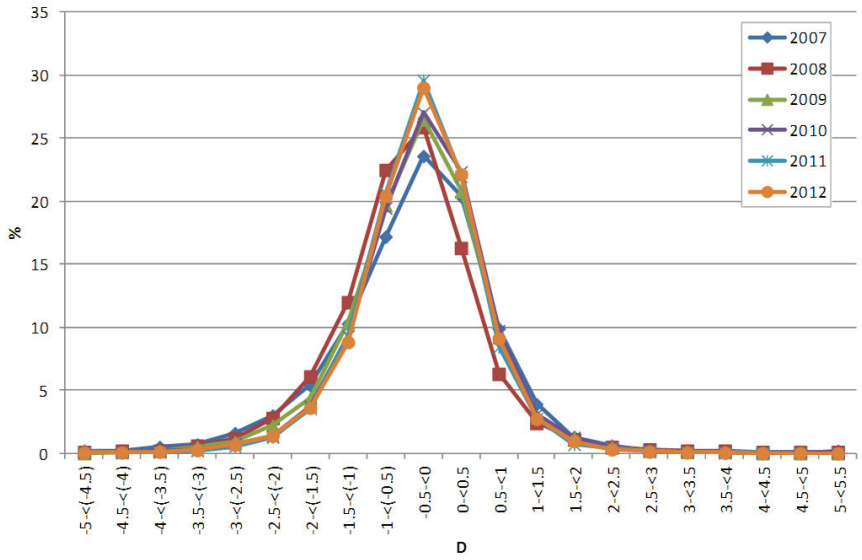


Table 1.5.5(d): Percentage of Difference in Target and Actual Refractive Power within 1.0D by SDP, CSR 2012

Target/Planned refractive power = Section pre-clerking
Actual refractive power, SE = Section post-op visual acuity measurement (SE=SP+(CY/2))
Denominator = patient with refraction = if info available in refracted vision Section post-op visual acuity measurement

Hospital	All			By Phacoemulsification			By ECCE		
	No. of patient with refracted VA	Difference between Target and Actual Refraction within ±1.0D		No. of patient with refracted VA	Difference between Target and Actual Refraction within ±1.0D		No. of patient with refracted VA	Difference between Target and Actual Refraction within ±1.0D	
	N	N	n	%	%	n	%	n	%
All Centre	25550	13891	54.4	21090	11883	56.3	3476	1622	46.7
Alor Setar	1564	773	49.4	1253	676	54.0	254	71	28.0
Ampang	791	472	59.7	691	432	62.5	60	22	36.7
Batu Pahat	515	47	9.1	403	44	10.9	78	3	3.8
Bintulu	263	0	0.0	170	0	0.0	90	0	0.0
Bukit Mertajam	764	420	55.0	466	267	57.3	279	143	51.3
Ipoh	1617	881	54.5	1429	802	56.1	140	63	45.0
Johor Bahru	854	573	67.1	776	529	68.2	48	32	66.7
Kangar	398	324	81.4	365	304	83.3	20	15	75.0
Keningau	16	0	0.0	0	0	0.0	16	0	0.0
Klang	911	441	48.4	783	373	47.6	102	59	57.8
Kota Bharu	384	109	28.4	263	71	27.0	97	34	35.1
Kota Kinabalu	674	261	38.7	462	202	43.7	147	46	31.3
Kuala Krai	194	115	59.3	174	103	59.2	13	7	53.8
Kuala Lumpur	886	655	73.9	710	532	74.9	148	105	70.9
Kuala Pilah	396	1	0.3	337	1	0.3	45	0	0.0
Kuala Terengganu	751	493	65.6	529	371	70.1	173	103	59.5
Kuantan	528	425	80.5	433	350	80.8	69	58	84.1
Kuching	1217	234	19.2	1129	218	19.3	74	14	18.9
Melaka	1240	805	64.9	1028	698	67.9	188	100	53.2
Miri	890	375	42.1	839	350	41.7	28	14	50.0
Muar	549	440	80.1	505	418	82.8	11	3	27.3
Pulau Pinang	1209	843	69.7	1156	817	70.7	25	13	52.0
Putrajaya	335	181	54.0	261	151	57.9	42	15	35.7
Sandakan	220	128	58.2	76	46	60.5	132	78	59.1
Selayang	1551	893	57.6	1397	826	59.1	65	28	43.1
Serdang	607	374	61.6	488	316	64.8	90	42	46.7
Seremban	1310	958	73.1	1113	835	75.0	169	108	63.9
Sibu	637	1	0.2	588	1	0.2	34	0	0.0
Sri Manjung	422	288	68.2	374	265	70.9	36	17	47.2
Sultan Ismail	271	186	68.6	203	143	70.4	53	30	56.6
Sungai Buloh	447	117	26.2	364	104	28.6	54	8	14.8
Sungai Petani	666	416	62.5	470	310	66.0	171	95	55.6
Taiping	1016	868	85.4	810	716	88.4	185	143	77.3
Tawau	210	96	45.7	0	0	0.0	209	96	45.9
Teluk Intan	517	302	58.4	439	267	60.8	60	26	43.3
Temerloh	730	396	54.2	606	345	56.9	71	31	43.7

NOTE: Formula of Actual Refraction,
Result is based on available info of target and actual refraction

Table 1.5.5(e):: Post-operative visual acuity and week of outcome notification, CSR 2012

	Unaided VA*						Refracted VA*					
Post op week	**6/5-6/12**		**6/18-3/60**		**2/60-NPL**		**6/5-6/12**		**6/18-3/60**		**2/60-NPL**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
1 week	594	4.4	815	5.9	136	11.1	279	1.3	46	1.4	23	4.6
2-4 week	505	3.8	651	4.7	128	10.4	697	3.2	157	4.9	44	8.9
5-12 week	11556	85.9	11439	82.2	863	70.2	19425	89.1	2739	85.7	378	76.1
13-20 weeks	521	3.9	732	5.3	69	5.6	1013	4.6	182	5.7	33	6.6
21-30 weeks	82	0.6	88	0.6	10	0.8	140	0.6	27	0.8	7	1.4
31-60 weeks	26	0.2	32	0.2	9	0.7	44	0.2	16	0.5	7	1.4
>60 weeks	1	0.0	3	0.0	1	0.1	3	0.0	1	0.0	0	0.0
(Missing)	163	1.2	152	1.1	13	1.1	210	1.0	29	0.9	5	1.0
Total	134**48**		**13912**		**1229**		**21811**		**3197**		**497**	

**Missing of unaided VA = 3884 cases; refracted VA = 6968 cases*

CHAPTER 2

RETINOBLASTOMA REGISTRY 2012

Contributing Editor

Dr Jamalia Rahmat

CHAPTER 2: RETINOBLASTOMA REGISTRY

Retinoblastoma is the most common intraocular childhood malignancy in children, with a reported incidence ranging from 1 in 15,000 to 1 in 18,000 live births.

The retinoblastoma (RB) registry tracks all the patients diagnosed with Retinoblastoma since 2004 that were seen in 3 major RB treatment centers in the country; namely Hospital Kuala Lumpur (covering Peninsular Malaysia), Hospital Queen Elizabeth (Sabah) and Hospital Umum Kuching (Sarawak).

2.1 INTRODUCTION

There are total of 119 patients registered, of which 11 patients were diagnosed in 2012.

Table 2.1: Stock and Flow

	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Hospital Kuala Lumpur	8	10	12	9	11	13	11	5	9	98
Hospital Queen Elizabeth, Kota Kinabalu	0	0	0	0	0	0	6	1	2	9
Hospital Umum Kuching, Sarawak	1	0	0	2	2	6	1	0	0	12
Total	**9**	**10**	**12**	**21**	**13**	**19**	**18**	**6**	**11**	**119**

2.2 PATIENT DEMOGRAPHY

The mean age at presentation was 2.2 years. The youngest age was 3 weeks and the oldest was 10.2 years. About a third (30.3%) of these patients were in the age group of 13 to 24 months and 26.1% were less than 12 months at presentation.

Table 2.2(a): Distribution of Patients by Age

Age, years	**n=119**	
Mean (SD)	2.2 (1.7)	
Median (IQR)	1.9 (1.8)	
Min, max	0.1, 10.2	
Age group	**No.**	**%**
<12 months	31	26.1
13-24 months	36	30.3
25-36 months	26	21.9
37-48 months	16	13.5
49-60 months	4	3.4
>60 months	6	5.0
Total	**119**	**100.0**

There were slightly more boys (56.3%) than girls affected, and the majority were of Malay ethnicity (54.6%), followed by Chinese (17.7%) and Indians (8.4%).

Table 2.2(b): Distribution of Patients by Gender

Gender	**No.**	**%**
Male	67	56.3
Female	52	43.7

Table 2.2(c): Distribution of Patients by Ethnics

Age group	No.	%
Malay	65	54.6
Chinese	21	17.7
Indian	10	8.4
Orang Asli	1	0.8
Melanau	1	0.8
Kadazan/ Murut/Bajau	5	4.2
Bidayuh	0	0.0
Iban	2	1.7
Other	12	10.1
Not available/ Missing	2	1.7

2.3 OCULAR HISTORY AND PRESENTATION

The most common presentation was leukocoria followed by strabismus.

Table 2.3(a): Clinical Presentation

Presentation	No.	%
Leukocoria	110	92.4
Strabismus	19	16.0
Proptosis	12	10.1
Others	15	12.6

Number or percentage may be more than total or 100% as patients might have more than one clinical presentation

The mean duration of disease from onset of symptoms to presentation was 4.5 months with the majority (80.2 %) within 1 to 6 months.

Table 2.3(b): Duration of Disease at the Time of Presentation

	Months (n=111)
Mean (SD)	4.5 (6.0)
Median (IQR)	2.0 (5.0)
Min, max	0, 36
	No.	**%**
Less than 1 month	2	1.8
1 to 6 months	89	80.2
7 to 12 months	14	12.6
More than 12 months	6	5.4

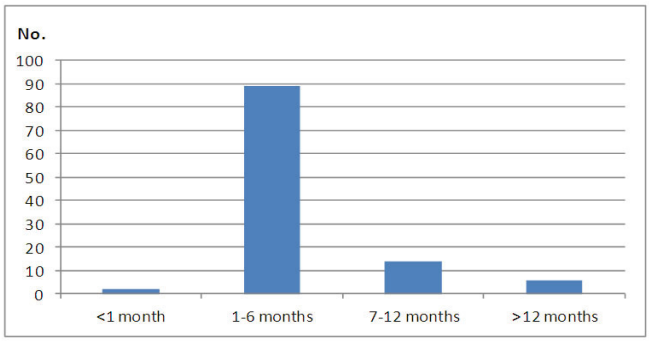
Of the 119 patients, 76 (63.8%) had unilateral disease whereas 43 patients (33.4%) had both eyes affected. A total of 162 eyes were affected. Only 1 patient had positive family history of retinoblastoma.

Table 2.3(c): Eyes Affected

	No. of patients	% of eyes
Right eye affected only	32	19.8
Left eye affected only	44	27.2
Both eyes affected	43	26.5
Total eyes	162	100.0

Family history	No.	%
Yes	1	0.8
No	115	96.6
Missing	3	2.5

Figure 2.3: Onset of Disease



2.4 INVESTIGATION AND CLASSIFICATION

The presence of calcified mass was detected in 75.9 % of CT scan imaging. In patients who had MRI done, 12.3 % showed presence of mass but only 9.3% had calcification. There was extraocular extension detected through imaging in 17 eyes, 10.5 % and 3.1% through CT scan and MRI respectively. Majority of them were extension into the optic pathway.

Table 2.4(a): Type of imaging done at diagnosis, by no. of eyes

No. of eyes		MRI scan	
		Yes	No
		No. (%)	No. (%)
CT scan	Yes	20 (12.3)	118 (72.8)
	No	6 (3.7)	18 (11.1)

Note: 13 eyes where without any imaging, either CT scan or MRI scan.(1 patient with bilateral eye affected but only 1 imaging done for the right eye but not for the left eye).

Table 2.4(b): Type of imaging done at diagnosis by patient

No. of eyes		MRI scan	
		Yes	No/NA/Missing
		No. (%)	No. (%)
CT scan	Yes	14 (11.8)	89 (74.8)
	No/NA/Missing	3 (2.5)	13 (10.9)

NA=Not available

**1 patient with both eyes affected, done the CT scan on the right eye only (PatientID=97)*

Table 2.4(c): Presence of mass, by CT scan

	No.	%
Yes	125	77.2
No	13	8.0
No CT scan/ NA/ missing	24	14.8

Table 2.4(d): Presence of mass, by MRI scan

	No.	%
Yes	20	12.3
No	6	3.7
No CT scan/ NA/ missing	136	84.0

Table 2.4(e): Presence of calcification, by CT scan

	No.	%
Yes	123	75.9
No	15	9.3
No CT scan/ NA/ missing	24	14.8

Table 2.4(f): Presence of calcification, by MRI scan

	No.	%
Yes	15	9.3
No	11	6.8
No CT scan/ NA/ missing	136	84.0

Table 2.4(g): Presence of extraocular extension, by CT scan

	No.	%
Yes	17	10.5
No	121	74.7
No CT scan/ NA/ missing	24	14.8

Table 2.4(h): Presence of extraocular extension, by MRI scan

	No.	%
Yes	5	3.1
No	21	13.0
No CT scan/ NA/ missing	136	84.0

Table 2.4(i): Type of extraocular extension, by CT scan

	No.	% (n=17)
Yes	15	88.2
No	7	41.2
No CT scan/ NA/ missing	6	35.3

Table 2.4(j): Type of extraocular extension, by MRI scan

	No.	% (n=5)
Yes	4	80.0
No	1	20.0
No CT scan/ NA/ missing	0	0.0

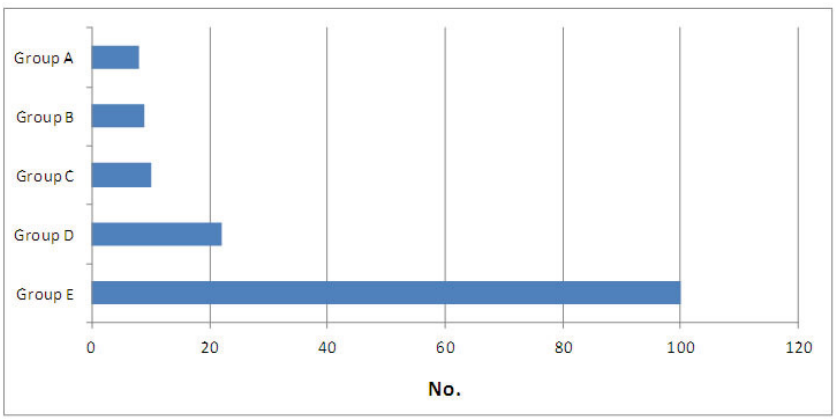
Number or percentage may be more than total or 100% as patients might have more than one type of extraocular extension

About two-thirds (61.7%) of the patients presented with Group E Retinoblastoma (based on International Intraocular Retinoblastoma Classification- IIRC)

Table 2.4(k): Classification of Retinoblastoma

	Right eye		Left eye		Total	
	No.	%	No.	%	No.	%
Group A	4	5.3	4	4.6	8	4.9
Group B	4	5.3	5	5.8	9	5.6
Group C	7	9.3	3	3.5	10	6.2
Group D	12	16.0	10	11.5	22	13.6
Group E	39	52.0	61	70.1	100	61.7
Not available / Missing	9	12.0	4	4.6	13	8.0
Total eyes	75	100.0	87	100.0	162	100.0

Figure 2.4: Disease Staging (IIRC)



2.5 MANAGEMENT AND OUTCOME

97.3 % of patients had systemic chemotherapy with a mean of 7.3 cycles (maximum 15 chemotherapy cycles). 6 patients had subtenon injection of chemotherapy together with the systemic chemotherapy. Focal therapy was given together with chemoreduction. 60 out of 76 eyes (78.9%) with unilateral RB were enucleated with 44.7% of them showed histopathological extension outside the eyeball. Of the bilateral RB, 41.9% were enucleated. 5 (5.8 %) patients had external beam radiotherapy.

Table 2.5(a): Chemotherapy by patient

	Unilateral		Bilateral		All	
	No.	%	No.	%	No.	%
Had chemotherapy	41	54.0	32	74.4	73	61.3
Did not have chemotherapy	26	34.2	6	14.0	32	26.9
Total patients registered	76	100.0	43	100.0	119	100.0
	No.	% (n=41)	No.	% (n=32)	No.	% (n=73)
Systemic chemotherapy	39	95.1	32	100.0	71	97.3
Subtenon injection*	0	0.0	6	18.8	6	8.2
Intraviteal injection*	0	0.0	1	3.1	1	1.4
• Mean cycles given	6.5		8.3		7.3	
• Minimum cycle	2		4		2	
• Maximum cycle	13		15		15	

**All patients in the subgroup had systemic chemotherapy as well.*

Table 2.5(b): Treatment method by no. of eyes

	Unilateral						Bilateral					
	Right (n=32)		Left (n=44)		All (n=76)		Right (n=43)		Left (n=43)		All (n=86)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Enucleation	27	90.0	33	75.0	60	78.9	16	37.8	20	54.1	36	41.9
HPE result:												
Intraocular (no extraocular extension)	11	34.4	10	22.7	21	27.6	4	9.3	0	0.0	4	4.7
With extraocular extension	14	43.8	20	45.5	34	44.7	9	20.9	1	2.3	10	11.6
*Missing	2	6.3	3	6.8	5	6.6	3	7.0	19	44.2	22	25.6
Focal therapy	1	3.1	4	9.1	5	6.6	20	46.5	14	32.6	34	39.5
Laser only	1	3.1	1	2.3	2	2.6	5	11.6	7	16.3	12	14.0
Cryotherapy only	0	0.0	0	0.0	0	0.0	1	2.3	1	2.3	2	2.3
Laser & cryotherapy	0	0.0	3	6.8	3	3.9	14	32.6	6	14.0	20	23.3
Radiotherapy	1	3.1	1	2.3	2	2.6	5	11.6	0	0.0	5	5.8
External beam radiation	0	0.0	1	2.3	1	1.3	5	11.6	0	0.0	5	5.8

***Missing on subgroup of radiotherapy.*

Table 2.5(c): Treatment method for all patients with chemotherapy

	Unilateral				Bilateral			
	Right eye	Left eye	All (n=41)		Both eyes	Either one eye	All (n=32)	
	n	n	No.	%	n	n	No.	%
Enucleation	17	19	36	87.8	3	25	28	87.5
Laser therapy	1	4	5	12.2	2	24	26	81.3

Table 2.5(d): Outcome and complications, by no. of eyes

	Unilateral						Bilateral					
	Right (n=32)		Left (n=44)		All (n=76)		Right (n=43)		Left (n=43)		All (n=86)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Remission												
Complete	11	34.4	19	43.2	30	39.5	4	9.3	8	18.6	12	14.0
Partial regression	0	0.0	2	4.5	2	2.6	13	30.2	9	20.9	22	25.6
No regression	0	0.0	2	4.5	2	2.6	0	0.0	0	0.0	0	0.0
*NA/Missing	21	65.6	21	47.7	42	55.3	26	60.5	26	60.5	52	60.5
Recurrence	0	0.0	4	9.1	4	5.3	8	18.6	5	11.6	13	15.1
Duration from first time treatment (in months)												
• n	0		4		4		7		5		8	
• Mean (SD)	-		12.0 (7.4)		12.0 (7.4)		18.1 (8.4)		5.8 (1.6)		16.8 (8.7)	
• Median (IQR)	-		11.0 (12.0)		11.0 (12.0)		22.0 (15.0)		5.0 (2.0)		19.5 (15.0)	
• Min, max	-		5, 21		5, 21		5, 28		4, 8		5, 28	
Complication	2	6.3	5	11.4	7	9.2	7	16.3	2	4.7	9	10.5
Socket /prosthesis related	1	3.1	2	4.5	3	3.9	3	7.0	1	2.3	4	4.7
Disease related	1	3.1	2	4.5	3	3.9	4	9.3	1	2.3	5	5.8

Table 2.5(e): Outcome by patient

	Unilateral (n=76)		Bilateral (n=43)		All (n=119)	
	No.	%	No.	%	No.	%
Lost to follow-up	11	13.9	4	9.3	15	12.6
Status by 1 year:						
Alive	43	54.4	23	53.5	66	55.5
Death	4	5.1	1	2.3	5	4.2
Unknown/Missing	29	36.7	19	44.2	48	40.3

2.6 COMMENT

There were 119 patients registered in the RB registry with 162 affected eyes. Data from the RB registry showed that the spectrum of presenting symptoms were similar to those reported elsewhere, in which leukocoria was the most common presentation followed by strabismus.

Late presentation was still a problem. Majority of patients presented with advanced stage Group E that necessitate enucleation. 78.9 % of unilateral RB were enucleated. In bilateral RB, nearly half (41.9%) of the patients had at least 1 eye enucleated. About 13.5% of eyes showed extraocular extension on imaging and 56.3 % had histopathological evidence of extension.

Chemoreduction is the mainstay of treatment especially in bilateral RB. 7.1% of patients still needed to have external beam radiation due to the advance stage of the disease.

As with other cancers, early detection of retinoblastoma and appropriate treatment can improve outcome.

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