

# Cataract Surgery – Patient Characteristics, Practice Pattern and Treatment Outcomes

## Issues

Age-related cataract is the major cause of blindness (39%) in Malaysia<sup>1</sup>. Fortunately, patients with cataract can have their vision restored following cataract surgery with intraocular lens (IOL) implantation. Phacoemulsification (phaco), a small incision sutureless surgery gives a better outcome than extracapsular cataract extraction (ECCE), which requires a larger incision and sutures<sup>2</sup>. Patients who have had cataract surgery done in both eyes have a better quality of life<sup>3</sup>.

Cataract surgery is a cost-effective intervention<sup>4</sup> and is more cost effective than other medical interventions<sup>5</sup>. When done as day care surgery, the current internationally preferred approach, saves up to 20% of the cost and has similar outcome to in-patient surgery<sup>6</sup>.

An economic evaluation on cataract surgery at the Ministry of Health (MOH) hospitals in 2000 showed that the cost for in-patient surgery for both phaco and ECCE was RM4288, and RM3442 respectively<sup>7</sup>. A large proportion of the cost was paid for overheads and consumable items incurred in the wards and operating theaters compounded by the small volume of surgeries done at each operating session. The cost can be reduced by doing the surgery as day care and increasing the volume of cataract surgeries per operating session.

## Key Messages

1. Less than 50% of cataract surgeries performed at MOH facilities were done as day care surgeries despite these being more cost effective than in-patient surgeries.
2. Age-related cataract usually affects both eyes simultaneously thus the need for cataract surgeries in both eyes to improve vision. Data from our MOH facilities revealed that only one-third of the patients operated have had surgery in both eyes as compared with 70% of patients in Sweden<sup>8</sup>.
3. The mean age of patients undergoing cataract surgery was 64 years. The majority of them had poor vision due to dense cataract at the time of surgery. In Sweden, the mean age was 75 years in 2006.<sup>8</sup>
4. Systemic co-morbidity increased over the years from 35 % to 51% for hypertension and 29% to 38% for diabetes mellitus in 2002 and 2008 respectively. This increasing trend in co-morbidity is reflected in the disease prevalence of the country as shown in the National Health and Morbidity Survey<sup>9</sup>.
5. The proportion of cataract surgeries performed as phaco has increased from 39.7% in 2002 to 69.1% in 2008. Phaco surgery requires specialized equipment and more consumables compared with ECCE.
6. Achievement of postoperative visual acuity of 6/12 or better with corrective glasses among patients who were without ocular comorbidity was 91% in those who had phaco and 81% in those who had ECCE. This is comparable to the visual outcome of cataract surgery done in developed countries<sup>8,10</sup>.

## Method

**Study Design:** Cataract Surgery Registry: Cohort Study  
**Study Centre:** All the Ophthalmology Departments at MOH Hospitals (36)  
**Participants:** Patients who had cataract surgery at MOH Hospitals.

### Data Collection, Management and Analysis

Three case record forms were used i.e. i) pre-clerking form for patients' demography, medical and ocular history; ii) operative form for details of operation and iii) outcome form for post-op vision and complications. Data were entered into the web-based application. The web application has functions to check duplication based on unique identifier; and auto-calculates age, duration of surgery and postoperative period. It identifies errors such as out of range data and inconsistent data, e.g. edit check on gender based on last digit on identification card number. The software provides realtime descriptive data analysis.

### Ascertainment Rate

Based on the MOH cataract surgery census, 84.6% of cataract surgeries were registered to cataract surgery registry.

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### Additional information

This summary was prepared by Goh Pik Pin, Mohd Aziz Salowi, Zuraidah Mustari. Detailed findings of the Cataract Surgery Registry are in the 2002, 2003, 2004, 2007, and 2008 annual reports of National Eye Database (NED). Reports are downloadable from the NED website ([www.acrm.org.my/ned](http://www.acrm.org.my/ned)).

**Conflict of interest:** None declared.

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This summary is based on:  
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National Cataract Surgery  
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and National Eye Database  
2007 and 2008.



## National Eye Database

Email: [ned@acrm.org.my](mailto:ned@acrm.org.my)  
Website: [www.acrm.org.my/ned](http://www.acrm.org.my/ned)

National Medical Research  
Registry Reference Number:  
NMRR 08-552-1707

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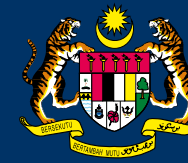
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investigators participating in the  
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Project reference number  
National Eye Database:  
NMRR 08-552-1707  
Cataract Surgery registry

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**Background**

Cataract surgery forms the majority of the eye surgeries in MOH ophthalmology departments. In order to monitor this service, MOH established the Cataract Surgery Registry (CSR) in 2002. This registry collects data on patient's characteristics, surgical procedures, complications and visual outcomes following cataract surgery. Initially it was paper based and data that were collected at individual hospitals were sent to the centre for analysis. Since 2007, data is captured electronically through a web based application, which is hosted at the National Eye Database (NED) website at [www.acrm.org.my/ned](http://www.acrm.org.my/ned). The National Eye Database is currently sponsored by MOH and Malaysian Society of Ophthalmology. It is administered by the ophthalmology service of MOH and is governed by a special steering committee appointed by the sponsors.

**Key Considerations for Policy Makers**

1. Day care cataract surgery is more cost effective than in-patient surgery. Ministry of Health hospitals that do not optimize the ambulatory care service available should identify existing barriers in the utilization of this service.
2. The hospital management needs to provide adequate budget for procuring and maintenance of phaco machines and consumables.
3. Although complication rates and treatment outcomes of cataract surgeries have improved over the years, there are obvious variations in the performance of individual hospitals. For continuous quality improvement, hospitals should conduct regular clinical audits and monitor surgeons' performance through key performance indicators.

**Key Considerations for Primary Healthcare Professionals**

1. Primary healthcare doctors should perform opportunistic eye examinations on elderly patients especially those more than 60 years. An assessment of vision, external eye examination including examining the red reflex by direct ophthalmoscopy should be done.
2. Primary healthcare doctors should refer patients with visual acuity worse than 6/12 or whose daily activities are affected by reduced vision to an ophthalmologist, regardless of status of visual acuity.
3. Primary healthcare doctors should ensure optimization of treatment of systemic co-morbidity (especially hypertension and diabetes) to avoid cancellation or delay in surgery.

**Key Considerations for Eyecare Professionals**

1. Patients who have bilateral cataract and have had surgery done in both eyes have less visual problems due to anisometropia (significant difference in visual acuity in both eyes), better binocular vision and thus a better quality of life. Therefore for patients who have had cataract surgery in the first eye, they should be encouraged to have cataract surgery in the fellow eye early.
2. Since most patients who undergo cataract surgery have some form of systemic co-morbidity they should have their medical conditions stabilized preoperatively.
3. Visual outcome of cataract surgery can be further improved by providing training to surgeons through workshops and continuous hands-on training.
4. Regular clinical audit especially on intra-operative complications and post-operative visual outcomes need to be done at both at departmental and at individual surgeon's levels so as to identify shortcomings and take effective remedial actions.
5. Surgeons should also pay attention to factors other than surgical competency that contribute to the visual outcome and patient satisfaction. These include accurate biometric measurement, selection of IOL power based on patient's visual needs and proper planning for surgery.

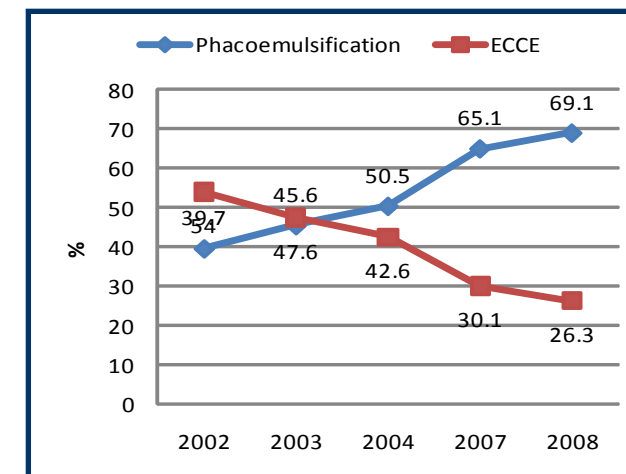
**Key Findings**

1. Characteristics of patients (Table 1).
  - Two thirds of patients had cataract surgery for the first eye.
  - The mean age at surgery was 64 years which is 11 years younger than patients in Sweden.
  - The majority of the patients had hypertension and/or diabetes mellitus.
2. Practice pattern
  - In 2008, 43% of cataract surgery was done as day care surgery (Table 1).
  - Phaco surgery increased from 40% in 2002 to 69% in 2008 (Figure 1). It surpassed ECCE in 2004.
  - In 2008, almost all the patients had an IOL implanted for refractive correction (98%) and the commonest type was foldable acrylic IOL (73%) (Figure 2).
  - Intra and post-operative complication rates (Table 1) decreased over the years. The rate of posterior capsule rupture (PCR) declined from 6% in 2002 to 4% (range 0.8% - 6.4%) in 2008 (Figure 3). The rate of post-operative endophthalmitis decreased from 0.20% in 2002 to 0.11% in 2008.
3. Visual outcome of patients without ocular co-morbidity in 2008 (Figure 4).
  - Forty-seven percent who had phaco and 28% who had ECCE achieved postoperative vision of 6/12 or better without any refractive correction.
  - Ninety-one percent who had phaco and 81% who had ECCE achieved postoperative vision of 6/12 or better with refractive correction.

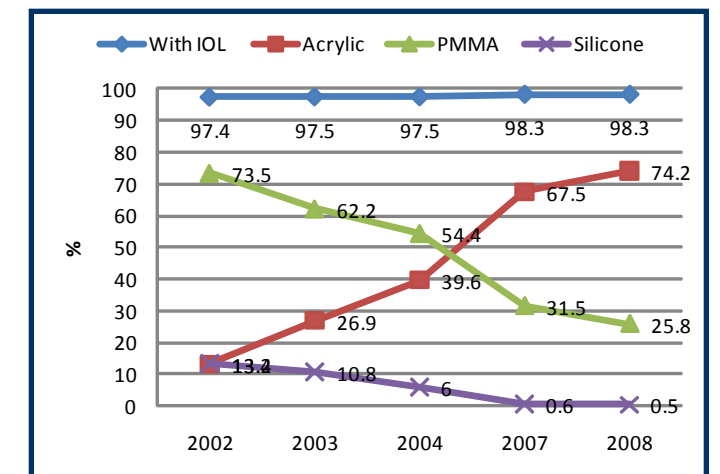
**Table 1. Characteristics of patients, rate of day care surgery, intra and post-operative complications**

	2002	2003	2004	2007	2008
Number of cataract surgery (N)	12798	16811	18392	18426	21496
Mean age (in years)	64.0	63.7	63.5	64.3	64.6
% Female	51.0	50.0	51.0	52.1	52.0
% With HPT	35.4	38.1	40.4	46.8	50.9
% With DM	28.9	30.5	31.5	37.3	38.1
% Had surgery in the fellow eye (i.e. both eyes had cataract surgery)	30.0	29.5	29.8	30.2	31.9
% Pre-op refracted vision < 3/60 (blind)	24.4	27.5	26.2	39.8	32.5
% Day care surgery	39.3	38.1	40.0	43.9	42.6
% Intra-op complication (posterior capsular rupture)	6.0	6.2	5.6	4.2	3.7
% Post-operative endophthalmitis	0.2	0.24	0.16	0.21	0.11

**Figure 1. Types of cataract surgery performed**

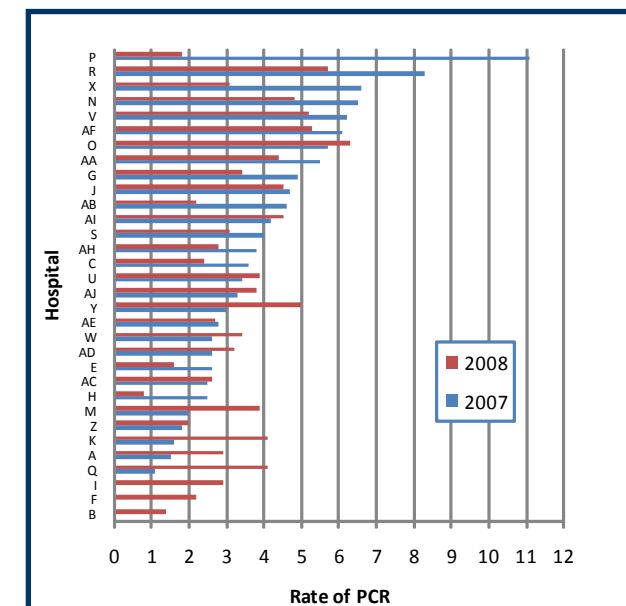


**Figure 2. Types of IOL implanted**



PMMA = Polymethyl methacrylate

**Figure 3. Rate of PCR by Hospital, 2007 and 2008 (Key Performance Indicator standard set <5%)**



**Figure 4. Post-operative unaided and refracted visual acuity for patients who were without ocular co-morbidity**

