

# Tally sheet system

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## **Introduction**

The purpose of the manual tally sheet system is to assist cataract surgeons and programme managers to monitor the quality and the results of their cataract surgery. Such monitoring is the key to improvement. It is quick, simple and user friendly.

The manual system is developed for eye units without computers or units without data entry staff. Once a system of manual monitoring is being used successfully, you may consider trying the more detailed computerised system. The tally sheet is given in Annex 1.

## **The process**

### **At discharge**

- Before the patient is discharged, the Snellen (or "E") visual acuity in the operated eye is assessed and recorded in the case notes. If you do not use standard case notes you might use the Cataract Surgical Record (CSR) as shown in Annex 2 as your standard format.
- If the Visual Acuity (VA) is less than (<) 6/60, it is re-checked, both with and without a pinhole.
- If the VA is <6/60 without a pinhole, the eye is carefully examined to determine the cause of the poor vision.
- The details for each patient are recorded on the Cataract Surgery Outcome tally sheet under the heading "Discharge".

### **At 4 week follow-up**

- At 4 weeks or more follow-up, the Snellen or ("E") visual acuity, with the spectacles that the patient has or will be wearing (=presenting vision), is assessed and recorded in the case notes or on the CSR.
- If the presenting VA is <6/60, the VA is also tested with best correction or pinhole and the eye is carefully examined to determine the cause of the poor vision.
- The details for each patient are recorded on the Cataract Surgery Outcome tally sheet under the heading ">4 weeks post-op".

## How to complete the tally sheet

### Personal & Surgery & Discharge VA

(see Annex 1. Manual tally sheet)

- Section “Personal & Surgery” is completed during admission.
- Section “Discharge” is completed at discharge.
- It should be completed for all cataract operations, except those in patients under the age of 20, those cases of cataract due to trauma and in combined procedures.
- The form is kept on a clipboard either in the ward or in the clinic, depending on where the discharge process happens.
- One row of the form is completed for each eye operated for cataract.
- If a patient is operated on both eyes, two rows will be completed.
- Each form has space for 20 cataract operations.
- Instructions to complete the tally sheet:
  - **Hospital** – Record the name of your hospital.
  - **Period** – The data should only be analysed when a minimum of 100 operations (5 forms) have been recorded. Calculating percentages from less than 100 cases can be misleading. Depending on your surgery volume this may take 1 to 6 months. Then start again for operation 101 up to 200, and so on.
  - **Surgeon** – Depending on your situation and your preference, either one form can be kept for all the surgeons working in your department, or a separate form can be completed for each surgeon.
  - **Serial number** – Record 1 to 100, and then 101 –200 and so on. If you perform more than 1000 operations per year, it may be advisable to start again at no. 1 at the beginning of a new year.
  - **Patient name** – This is optional if accurate patient ID numbers are available.
  - **Patient number** – Record the patient’s number, if your hospital uses a patient number system.
  - **Surgeon** – This is optional. If the form is being used for several surgeons, the surgeon’s ID can be recorded, using either a code or his/her initials.
  - **IOL** – Record “Y” (yes) if an IOL was implanted and “N” (no) if an IOL was not used.
  - **Surgical complications** – Record any surgical complications. The following abbreviations are suggested:
    - CR = capsule rupture without vitreous loss
    - VL = vitreous loss
    - RL = retained lens matter
    - EN = endophthalmitis
    - OT = other complications
  - **Discharge VA** (good, borderline, poor) – Tick one of the three columns, depending on the presenting VA (with the patient’s available correction, if any).

“No IOL” operations should be checked with +10 D spectacles.
  - **Cause of poor outcome** (Selection, Surgery, Spectacles) – If the presenting vision at discharge is less than 6/60, then the reason for this poor outcome should be recorded in the appropriate column. This should only be done if the presenting VA is less than 6/60. Only one cause should be entered. If there is more than one cause for the poor outcome, the clinically most significant cause should be identified.
    - **Selection** (co-existent disease or pathology causing poor vision)  
Specify the disease or pathology (for example: corneal scar = CS, Old iritis = OI, Retinal disease = RD, glaucoma = GL, etc.). See legend on form.

- **Surgery** (peri-operative complication(s))  
Specify the complication(s) (Capsule rupture without vitreous loss = CR, vitreous loss = VL, Retained lens matter = RL, Endophthalmitis = EN, etc.)
- **Spectacles** (uncorrected refractive error)  
Tick this column if the VA improves to 6/60 or better with a pinhole, or with spectacles that the patient does not have. "No IOL" operations should be checked with +10.0 spectacles.

**> 4 weeks post-op.**

*(see Annex 1. Manual tally sheet)*

- Section ">4 weeks post-op" is completed at follow-up at least 4 weeks after surgery.
- It should be completed for all cataract operations except those under the age of 20 years, those cases of cataract due to trauma and combined procedures.
- The form is kept on a clipboard in the clinic.
- One row of the form is completed for each cataract-operated eye, which is seen at 4 weeks or more.
- If a patient is operated on both eyes, two rows will be completed.
- Each form has space for 20 cataract operations.
  1. **No of weeks post-op.** – Record the interval in weeks since surgery
  2. **Follow up VA** (good, borderline, poor) – Tick one of the 3 columns, depending on the presenting VA (with the patient's available correction, if any). "No IOL" operations should be checked with +10 D spectacles.
  3. **Cause of poor outcome** (Selection, Surgery, Spectacles, Sequelae) – If the presenting vision at 4 weeks or more after the operation is less than 6/60, then the reason for this poor outcome should be recorded in the appropriate column.
    - This should only be done if the presenting VA is less than 6/60.
    - Only one column should be filled.
    - If there is more than one cause for the poor outcome, the clinically most significant cause should be identified.
    - **Selection** (co-existent disease or pathology causing poor vision)
    - Specify the disease or pathology (see legend on form).
    - **Surgery** (peri-operative complication(s))
    - Specify the complication(s) (see legend on form).
    - **Spectacles** (uncorrected refractive error)
    - Tick this column if the VA improves to 6/60 or better with a pinhole, or with spectacles that the patient does not have. "No IOL" operations should be checked with +10.0 spectacles.
    - **Sequelae** (post-operative complication(s))
    - Specify the complication(s) (see legend on form).

## Analysis of the data on the tally sheet

### Discharge Visual Acuity

- Note that cases under the age of 20 years, all traumatic cataract cases and all combined procedures are excluded from this analysis.
- The analysis should be done for every 100 cases, and compared with previous results.
- It can be done either for the department as a whole, or for individual surgeons, or both. You need to decide which option is most suitable for your situation.

Add up the entries in each column and calculate the percentages. It should take about 10 minutes!

Column	Meaning	Results
N	Total number of operations	
Y / N x 100	% with IOL implant	
C / N x 100	% with any surgical complication	
CR / N x 100	% capsule rupture without vitreous loss	
VL / N x 100	% vitreous loss	
RL / N x 100	% retained lens matter	
EN / N x 100	% endophthalmitis	
OT / N x 100	% other surgical complication	
G / N x 100	% with good outcome at discharge	
P / N x 100	% with poor outcome at discharge, due to all causes	
D1 / N x 100	% with poor outcome at discharge, due to other disease or pathology	
D2 / N x 100	% with poor outcome at discharge, due to surgical complication	
D3 / N x 100	% with poor outcome at discharge, due to uncorrected refractive error	

Note: the Borderline outcome column does not need to be reported. If required it can be calculated as 100 - (good + poor outcome).

**Follow up Visual Acuity**

Add up the entries in each column and calculate the percentages. It should take about 10 minutes!

<b>Column</b>	<b>Meaning</b>	<b>Result</b>
N	Total number of cases seen at follow up	
Y / N x 100	% with IOL implant	
G1 / N x 100	% with good outcome at 4 week or more follow up	
P1 / N x 100	% with poor outcome at 4 week or more follow up	
F1 / N x 100	% with poor outcome, wk 4+, due to other disease or pathology	
F2 / N x 100	% with poor outcome, wk 4+, due to surgical complication	
F3 / N x 100	% with poor outcome, wk 4+, due to uncorrected refractive error	
F4 / N x 100	% with poor outcome, wk 4+, due to post-op. complication	

Note: the Borderline outcome column does not need to be reported. If required it can be calculated as 100 - (good + poor outcome).

## Using the results to monitor performance and improve

The analysis is a tool to help improve the quality of surgery. It is used to compare past results with present results of an individual eye surgeon or a group of eye surgeons. It is NOT to be used to compare one surgeon with another or one hospital with another.

The results of every 100 cases can be summarised in this table.

The aim is to:

- Reduce surgical complications
- Increase the proportion of operations with good outcome
- Decrease the proportion of operations with poor outcome due to surgery or inadequate optical correction

Guidelines on the various proportions are given on the bottom line of each table. These are only indications and may vary from situation to situation.

### REPORTING DISCHARGE RESULTS IN 100 CASES

Operation numbers	% with IOL	% Surgical Complications					% Good Outcome 6/6-6/18	% Poor Outcome <6/60			
		CR	VL	RL	EN	OT		Select.	Surg.	Specs	Total
1 - 100											
101-200											
201-300											
301-400											
401-500											
etc.											
<b>Guideline Discharge</b>	<b>90+</b>	<b>&lt;5</b>	<b>&lt;5</b>	<b>&lt;2</b>	<b>&lt;3</b>	<b>&lt;2</b>	<b>50+</b>	<b>varies</b>	<b>&lt;5</b>	<b>varies</b>	<b>&lt;10</b>

### REPORTING 4-WEEK FOLLOW-UP RESULTS IN 100 CASES

Operation numbers	% with IOL	% Good Outcome 6/6-6/18	% Poor Outcome <6/60				
			Selection	Surgery	Spectacles	Sequelae	Total
1 - 100							
101-200							
201-300							
301-400							
401-500							
etc.							
<b>Guideline Follow-up</b>	<b>90+</b>	<b>85+</b>	<b>Varies</b>	<b>&lt;2</b>	<b>&lt;1</b>	<b>&lt;1</b>	<b>&lt;5</b>

Please note that in most countries not all operated patients will return for review. Therefore the number of operated cases may be much higher than 100 in order to get 100 cases in the '>4 weeks post-op.' column.

## What if the results are below the guideline?

Action to improve results is advisable if:

### IOLS

- The percentage of cases receiving an Intra-Ocular Lens (IOL) is less than 90%.
- *Take action to improve the availability and affordability of IOL's.*
- *Ensure that all surgeons are adequately trained in IOL surgery and have the necessary equipment.*

### SURGICAL COMPLICATIONS

- The posterior capsule rupture rate is more than 5%.
- The vitreous loss rate is more than 5%.
- The presenting VA at discharge is less than 6/60 in more than 10% of cases.
- *Take action to improve the surgical technique by asking advice from a good and experienced cataract surgeon.*
- *Ensure that all surgeons are adequately trained in IOL surgery and have the necessary equipment.*

### VISUAL OUTCOME

- More than 5% of the operated eyes have a presenting visual acuity less than 6/60 at 4 weeks or more post-operation (poor outcome).
- Less than 85% of the operated eyes have a presenting visual acuity of 6/18 or better at 4 weeks or more post-operation (good outcome).
- *Analyse whether the major cause of poor vision is selection, surgical problems or correction of refractive errors.*
- *Improve pre-operative examination to reduce the number of patients with other causes of blindness who will not benefit from cataract extraction.*
- *Take action to improve the surgery as above.*
- *Take action to provide at least best spherical correction spectacles at an affordable price.*

### TRENDS OVER TIME

- The trend over time is static outside the recommended limits.
- The trend over time is worsening.
- *Carefully analyse the reasons for lack of improvement and take action to deal with the identified problems.*

**Annex 1. Manual tally sheet**

**CATARACT SURGERY OUTCOME TALLY SHEET**

Hospital:

Period:

Personal & Surgery.					Discharge						> 4 weeks post-op.							
Serial number	Patient Number or Patient name	Surgeon	IOL Y/N	Surgical compl.	Good 6/6-6/18	Borderline 6/24-6/60	Poor <6/60	Cause of poor outcome (<6/60)			No of wks post-op.	Good 6/6-6/18	Borderline 6/24-6/60	Poor <6/60	Cause of poor outcome (<6/60)			
								Selection	Surgery	Spec's					Selection	Surgery	Spec's	Sequelae
1																		
2																		
3																		
4																		
5																		
6																		
7																		
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17																		
18																		
19																		
20																		
N=total			Y	C	G		P	D1	D2	D3		G1		P1	F1	F2	F3	F4

Excluded: age < 20, trauma, combined procedures

Abbreviations:

Surgery:

- CR Capsule rupture, no vitreous loss
- VL Vitreous Loss
- RL Retained lens matter
- EN Endophthalmitis
- OT Others

Selection:

- CS Corneal scar
- OI Old Iritis
- RD Retinal Disease
- GL Glaucoma
- OT Others

Spec's:

Tick if VA improves to 6/18 or better with pinhole or spectacles

Sequelae:

- UV Uveitis
- RD Retinal Detachment
- CME Cystoid Macular Edema

## **The cataract surgical record**

To collect the necessary personal and clinical data on all patients operated for cataract you can use your own medical record system, or the standardised Cataract Surgical Record (CSR) form, shown in Annex 2. The CSR form is designed to collect data, for the monitoring of cataract outcome, using computers. For eye surgeons who may consider a change from the manual tally sheet system to the computerised packages at a later stage, it may be useful to use the CSR form from the start.

All calculations programmed in the package are based on the fields, options and keys for Visual Acuity as printed in Annex 2, so do not change any of these on the form. Any change in the fields is likely to make the analysis reports invalid. However, it is possible to translate the CSR form into local language. Take care to preserve the layout of the CSR format.

It is important to realise that the CSR form is not completed at one time. Patient details, pre-operative examination, surgery and post-operative visual acuity at discharge, may all be completed while the patient is admitted. First, second and third follow-up visits can only be completed after several weeks or months. This means that the form has to be stored in a certain place to be retrieved whenever the patient returns for a follow-up visit.

Data entry will be done after discharge and after each follow-up visit, as it is not known if and when the patient will return for follow-up. This means that the form has to move repeatedly from one place to the other.

Each hospital may have its own procedure for patient's records and it may not be possible to standardise such procedures. The following option should therefore be regarded as an example only.

The CSR form stays with the patient during admission, pre-operative examination, surgery and discharge. After discharge the CSR form goes to a data entry clerk.

These CSR forms can be collected two times a week.

At the OPD divide a folder into two sections: 'Seen' and 'To Be Seen'.

After the data has been entered onto the computer take the forms to the OPD and put them in the folder under the 'To Be Seen' section.

Sort the CSR forms by name, serial number or Hospital Registration Number, whatever is common practice.

When the patient returns for follow up, trace their CSR form, complete your findings for that visit and put the form back in the folder, under the section 'Seen'.

Once a week the data entry clerk should collect all the CSR forms from the 'Seen' section, enter the data into the computer and return the forms to the 'To Be Seen' section for the patient's next visit.

It is very helpful if the data entry clerk places a mark behind each follow-up visit that was entered into the computer.

Divide the workload in such a way that the CSR forms remain only a short period at the data entry section.

The amount of work and the accuracy required for correct entry of all records should not be under-estimated. If designated and experienced data entry staff is not available, it may be better to use the manual tallying system to monitor cataract outcome.

The Cataract Surgical Record form is shown in Annex 2 and can be printed and copied from there. Please do not change the original layout of the form.

**Annex 2. Cataract Surgery Record**

<b>CATARACT SURGERY RECORD</b>																																																																																															
<b>A. PATIENT</b> Name: _____ Address (optional): _____ Sex: Male: <input type="radio"/> (1) Female: <input type="radio"/> (2)					Hosp. Reg. No.: <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> Serial No.: <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> Age (years): <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table>																																																																																										
<b>B. PRE-OPERATIVE EXAMINATION</b>					<b>Category of Visual Acuity (Snellen 6 m)</b>																																																																																										
<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"></td> <td style="width: 15%; text-align: center;"><b>Right eye</b></td> <td style="width: 15%;"></td> <td style="width: 15%; text-align: center;"><b>Left eye</b></td> <td style="width: 15%;"></td> </tr> <tr> <td><b>Visual Acuity:</b></td> <td>Presenting: VA</td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> <td>VA</td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Best' or pinhole: VA</td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> <td>VA</td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						<b>Right eye</b>		<b>Left eye</b>							<b>Visual Acuity:</b>	Presenting: VA	<table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table>			VA	<table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table>									Best' or pinhole: VA	<table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table>			VA	<table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table>								<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"><b>1</b></td> <td style="width: 15%;">6/6</td> <td style="width: 15%;"><b>9</b></td> <td style="width: 15%;">1/60</td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> </tr> <tr> <td><b>2</b></td> <td>6/9</td> <td><b>10</b></td> <td>PL+</td> <td></td> <td></td> </tr> <tr> <td><b>3</b></td> <td>6/12</td> <td><b>11</b></td> <td>NPL</td> <td></td> <td></td> </tr> <tr> <td><b>4</b></td> <td>6/18</td> <td><b>12</b></td> <td>Cannot examine, believed &lt;6/60</td> <td></td> <td></td> </tr> <tr> <td><b>5</b></td> <td>6/24</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>6</b></td> <td>6/36</td> <td><b>13</b></td> <td>Cannot examine, believed &gt;6/60</td> <td></td> <td></td> </tr> <tr> <td><b>7</b></td> <td>6/60</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>8</b></td> <td>3/60</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>					<b>1</b>	6/6	<b>9</b>	1/60			<b>2</b>	6/9	<b>10</b>	PL+			<b>3</b>	6/12	<b>11</b>	NPL			<b>4</b>	6/18	<b>12</b>	Cannot examine, believed <6/60			<b>5</b>	6/24					<b>6</b>	6/36	<b>13</b>	Cannot examine, believed >6/60			<b>7</b>	6/60					<b>8</b>	3/60				
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<b>Lens Examination:</b> Clear lens: <input type="radio"/> (1) <input type="radio"/> (1) Opacity, not ready for operation: <input type="radio"/> (2) <input type="radio"/> (2) Operable cataract: <input type="radio"/> (3) <input type="radio"/> (3) Inoperable cataract: <input type="radio"/> (4) <input type="radio"/> (4) Aphakia: <input type="radio"/> (5) <input type="radio"/> (5) Pseudophakia: <input type="radio"/> (6) <input type="radio"/> (6) Cannot examine: <input type="radio"/> (7) <input type="radio"/> (7)					<b>CLINICAL DATA</b>																																																																																										
<b>Other ocular pathology in the eye to be operated, likely to affect outcome:</b> Corneal scar: <input type="radio"/> (1) Old iritis: <input type="radio"/> (2) Retinal disease (Diabetes, AMD, etc.): <input type="radio"/> (3) Glaucoma: <input type="radio"/> (4) Other & specify: <input type="radio"/> (5) _____																																																																																															
<b>Optional:</b> Eye to be operated: Right: <input type="radio"/> (1) Left: <input type="radio"/> (2) Refraction: sp <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table> , cyl <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table> , axis <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table>											<b>Biometry:</b> K1: <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table> , K2: <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table> Axial length: <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table>																																																																																				
<b>C: SURGERY</b> <b>Date of operation:</b> <table border="1" style="width: 60px; height: 15px;"><tr><td> </td><td> </td><td> </td></tr></table> <b>Place of operation:</b> Base hospital <input type="radio"/> (1) Other hospital <input type="radio"/> (2) Out of hospital <input type="radio"/> (3)								<b>Hospital / camp ID:</b> _____ <b>Surgeon ID:</b> _____ <b>Training:</b> Ophthalmologist <input type="radio"/> (1) Resident / trainee <input type="radio"/> (2) Cataract surgeon <input type="radio"/> (3)																																																																																							
<b>Type of surgery:</b> ICCE <input type="radio"/> (1) PC-IOL <input type="radio"/> (1) ECCE <input type="radio"/> (2) AC-IOL <input type="radio"/> (2) SICS <input type="radio"/> (3) No IOL <input type="radio"/> (3) Phaco <input type="radio"/> (4)					<b>Operative complications in operated eye:</b> None <input type="radio"/> (1) Wound leak <input type="radio"/> (6) Capsule rupture without vitreous loss <input type="radio"/> (2) Striate keratopathy <input type="radio"/> (7) Vitreous loss <input type="radio"/> (3) Endophthalmitis <input type="radio"/> (8) Zonular dehiscence <input type="radio"/> (4) Others <input type="radio"/> (9) Retained lens matter <input type="radio"/> (5)																																																																																										
<b>Optional:</b> Section: corneal <input type="radio"/> (1) limbal <input type="radio"/> (2) tunnel <input type="radio"/> (3)					<b>Capsulotomy:</b> linear <input type="radio"/> (1) ccc <input type="radio"/> (2) can opener <input type="radio"/> (3) other <input type="radio"/> (4)					<b>Type IOL:</b> _____ <b>IOL power</b> <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table>							<b>Suture:</b> no suture <input type="radio"/> (1) continuous <input type="radio"/> (2) interrupted <input type="radio"/> (3) No. of sutures <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table>																																																																														
<b>D. VISUAL ACUITY OF OPERATED EYE POST-OP. Cause of presenting vision &lt;6/60 (Key 8, 9, 10, 11, 12)</b>																																																																																															
<table style="width:100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Follow-up visits</th> <th style="width: 15%;">Presenting VA</th> <th style="width: 15%;">'Best' VA</th> <th style="width: 10%;">Select.</th> <th style="width: 10%;">Surg.</th> <th style="width: 10%;">Specs.</th> <th style="width: 10%;">Sequel.</th> <th style="width: 25%;">Optional:</th> </tr> <tr> <td>At discharge, <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table> days post-op.</td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> <td><input type="radio"/> (1)</td> <td><input type="radio"/> (2)</td> <td><input type="radio"/> (3)</td> <td></td> <td>post-op refraction:</td> </tr> <tr> <td>1-3 wks p.o. <table border="1" style="width: 60px; height: 15px;"><tr><td> </td><td> </td><td> </td></tr></table></td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> <td><input type="radio"/> (1)</td> <td><input type="radio"/> (2)</td> <td><input type="radio"/> (3)</td> <td><input type="radio"/> (4)</td> <td>sp <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table> cyl <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table> axis <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> </tr> <tr> <td>4-11 wks p.o. <table border="1" style="width: 60px; height: 15px;"><tr><td> </td><td> </td><td> </td></tr></table></td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> <td><input type="radio"/> (1)</td> <td><input type="radio"/> (2)</td> <td><input type="radio"/> (3)</td> <td><input type="radio"/> (4)</td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table> <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table> <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> </tr> <tr> <td>12+ wks p.o. <table border="1" style="width: 60px; height: 15px;"><tr><td> </td><td> </td><td> </td></tr></table></td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> <td><input type="radio"/> (1)</td> <td><input type="radio"/> (2)</td> <td><input type="radio"/> (3)</td> <td><input type="radio"/> (4)</td> <td><table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table> <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table> <table border="1" style="width: 30px; height: 15px;"><tr><td> </td><td> </td></tr></table></td> </tr> </table>										Follow-up visits	Presenting VA	'Best' VA	Select.	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## Coding instructions for cataract surgery records

The Cataract Surgery Record (CSR) has to be completed for each eye operated for cataract (if all patients are included in the monitoring of visual outcome) or for patients randomly selected for follow-up. If the same patient is operated at a later date for cataract in the second eye, a new form should be completed for the second operation. Each operated eye should be treated as a separate event.

On lines, text (name of patient, address, etc) should be written. In the square boxes, a number has to be entered. Circles can be made black or tick marked. For each parameter, only one circle can be marked. All fields need an entry, except those marked 'optional'. Write clearly and make it a habit to check all data you have written on the form before you send it for data entry. Be aware that the data entry operator, who has not seen the patient and in most cases is not an eye surgeon, should not make any errors in transferring your findings into the computer. When an entry on the CSR cannot be entered into the database because of an error message, the data operator should return the form to the eye surgeon and request the CSR to be reviewed.

Annex 1 shows a CSR with VA in decimal measurement system. Similar CSR forms are provided with VA measured in Snellen 6 metres, Snellen 20 feet, the decimal and the LogMar system.

Please note that the following patients might be excluded from monitoring because the expected visual outcome after cataract surgery could be less than optimal:

- persons, operated for cataract and younger than 20 years
- persons with traumatic cataract
- persons having combined procedures (e.g. cataract surgery with corneal graft, or cataract surgery with trabeculectomy, etc.)

### A. Patient

#### Name

Write the surname first, followed by the first name and other name(s). The name can have a maximum of 23 characters. Names will not appear in analysis but are used to identify records to enter follow up data.

#### Address

Write the address to identify and locate the patient. The address can have a maximum of 40 characters. This field is not used for analysis. If you do not intend to follow-up patients, you may skip this field.

#### Registration No.

Enter the hospital registration number of the patient here. This may help to retrieve medical records of patients.

#### Serial No.

This number will be generated by the computer and is used to select a random sample for follow-up studies. The data entry operator has to write the number that appears on the computer screen on the corresponding CSR. This Serial number is unique and cannot appear twice.

#### Sex

Mark 'Male' or 'Female'.

#### Age (in years)

For age 20 to 98, write the age in years. For age of 99 years and over, write "99". Do not make a record when the operated patient is younger than 20 years. The computer only allows entry of ages of 20 to 99 years.

### B. Pre-operative examination

#### Presenting VA (right and left eye)

Measure the visual acuity of each eye separately, with the available correction, if any (=presenting vision). Use the categories listed in the box on the right (category of visual acuity) and write the acuity next to VA on the appropriate line. You can use the Snellen 6/60, Snellen 20/200, the decimal or the LogMar system. If you want to change the visual acuity measurement system for data entry, close the 'Patients' screen first, then click Utilities | Settings and select the VA system of your choice.

#### Best corrected VA (right and left eye)

Measure the visual acuity with the best possible correction. If refraction cannot be done, vision with pinhole can substitute for best correction. Use the categories listed in the box on the right (category of visual acuity) and write the acuity next to VA

on the appropriate line. You can use the Snellen 6/60, Snellen 20/200, the decimal or the LogMar system. The 'best' VA cannot be worse than the presenting vision. If this is the case you cannot continue until the correct entries are made.

### **Lens examination (right and left eye)**

The lens of both eyes should be examined. For each eye, only one option may be marked. At least one eye should have operable cataract; otherwise, there is no indication for cataract surgery. 'Cannot examine' should only be marked in those cases where the lens cannot be seen, as in phthisis bulbi, dense corneal scarring, etc.

### **Type of other eye disease in operated eye?**

Mark one of the other concurrent eye diseases in the operated eye, likely to affect the outcome. Mark 'corneal scar', 'old iritis', 'retinal disease', 'glaucoma' or 'other' and specify the condition. If there are no concurrent eye diseases, mark 'None'.

### **Optional:**

The fields under this heading are optional and can be left empty. Entries should only be made for the eye to be operated.

#### **Eye to be operated**

Mark the eye that is to be operated upon.

#### **Pre-op refraction**

Sp (spherical): allowed: -15 to +15

Cyl (cylindrical): allowed: 0 to -10

Axis: allowed: 0 to 180

#### **Biometry**

K1 (highest curvature) allowed: 35 to 50

K2 (lowest curvature) allowed: 35 to 50

Axial length allowed: 20 to 27

#### **Targeted post-op spherical equivalent**

Formula: Spherical equivalent = spherical correction + cylindrical correction/2

Allowed values are: -10 to +5

Enter the target post-operative refraction in spherical equivalents (SE) for this operation. For example, if you aim at -1, enter "-1". If emmetropia is your goal, enter "0". Should you aim at, for instance, S= -3 and Cyl= -1, enter "-3.5" (SE= -3+(-1 / 2)). The programme will calculate the difference in spherical equivalents between the estimated and actual refraction obtained after the operation.

## **C. Surgery**

### **Date of operation**

Write the date of cataract surgery in the format you as dd-mm-yyyy (default). If you want the mm-dd-yyyy format, select this option at Utilities | Settings. You can enter "02" for the year 2002.

### **Place**

Mark the place where the surgery was performed.

### **Eye operated**

Mark which eye was operated upon.

### **Type of surgery**

Mark the surgical technique used. "SICS" stands for Small Incision Cataract Surgery (SICS) or Blumenthal method.

### **IOL**

Mark which type of IOL was used. ICCE cannot be combined with PC-IOL.

## **Hospital/camp ID**

If you intend to analyse outcome by hospital(s) or camp(s), you should create a code for each hospital, clinic or camp in File | Other files | Hospitals/Camps. Make sure all participating staff knows these codes and uses them correctly. This will make it possible to analyse visual outcome of cataract operations for each of the coded centres or for all centres together. Even if all records are from one centre only, a number and a name have to be entered in the Hospitals/Camps file.

## **Surgeon ID**

If you wish to analyse outcome by surgeon, you should create a list of codes for each surgeon in File | Other files | Surgeons. Make sure all eye surgeons know these codes and use them correctly. It is possible to analyse visual outcome of cataract operations for each coded surgeon or for all surgeons together. Even if all records are by one eye surgeon only, a number and a name have to be entered in the Surgeons file.

## **Training**

Mark the level of training of the surgeon. The term 'Cataract surgeon' is reserved for non-doctors, specially trained and qualified to perform cataract surgery.

## **Peri-Operative complications in operated eye**

Mark if there were any operative complications in the operated eye. Only one complication may be marked. In case of more than one complication, the principal complication most (likely) responsible for the reduction in post-op vision, should be marked. In case the complication is not listed, mark "Other" and specify the condition.

## **Optional:**

The fields under this heading are optional and can be left empty. Entries should only be made for the eye that was operated upon.

### **Section**

Mark the place and type of the section.

### **Capsulotomy**

Mark the type of capsulotomy.

### **Type IOL**

Create a list of the most commonly used IOL's and enter the codes and names of these IOL's in File | Other files | IOL Types. Make sure all eye surgeons know these codes and use them correctly.

### **IOL power**

Enter the power of the IOL implanted. Allowed values are between +8 and +30 Dioptres.

### **Suturing**

Mark the type of suturing used.

### **No. of sutures**

Only when interrupted suturing is the number of sutures (1-9) can be entered. When "No suture" is entered under Suturing, you should enter "0" here. In case of "Continuous", "1" should be entered here.

## **D. Visual acuity of operated eye post-operatively**

The visual acuity of the operated eye only can be assessed at several periods after the operation. First assessment should be done at discharge. If the patients was operated and discharged the same day, and will be seen again after one or two days, then record the discharge findings can be taken on the first or second post-operative day.

### **No days between operation and discharge**

Write the number of days after the actual operation when the discharge assessment is made. You can enter 1 to 7 days. If the patient is discharged more than 7 days after the operation, then enter the findings on the 7<sup>th</sup> day and enter these in this row. When patients are operated and return home the same day, to be reviewed on the first or second day post-operatively, enter "1" or "2" respectively and measure the VA on this day. This field cannot be left empty.

**Discharge - presenting VA**

Write the visual acuity of the operated eye with available correction, if any, on the line next to VA. Use the categories listed in the box on the right (category of visual acuity) and write the code that goes with the acuity next to VA on the appropriate line. You can use the 6/60, 20/200, the decimal system or the LogMar system. This field cannot be left empty.

**Discharge – Best corrected VA**

Write the visual acuity of the operated eye only with best correction. If refraction cannot be done, pinhole vision can be used. Use the VA categories as given. This field cannot be left empty and 'Best corrected VA' cannot be worse than presenting vision.

**Discharge - cause of presenting VA <6/60**

If presenting VA at discharge is less than 6/60, mark one of the three causes of poor outcome. If the presenting VA at discharge is 6/60 or better, this field should not be marked.

**1-3 weeks postop. (first follow-up visit) - date**

The first follow-up visit should take place 1-3 weeks post-operatively. Write the date in dd/mm/yyyy or mm-dd-yyyy format. Only entries between 1-3 weeks after the date of operation are allowed in this field.

**1-3 weeks post-op - Presenting VA**

Enter the visual acuity of the operated eye only, with available glasses, if any, at this first follow-up visit, 1-3 weeks post-op. Use the VA categories as given.

**1-3 weeks post-op – Best corrected VA**

Enter the visual acuity of the operated eye only, with best correction or with pinhole. Use the VA categories as given. Best corrected VA cannot be worse than presenting VA.

**1-3 weeks post-op - cause of presenting VA <6/60**

If presenting VA at first follow-up visit is worse than 6/60, one of the four causes of poor outcome must be marked. Post-operative sequelae, like retinal detachment, PCO, etc. can be marked here. Only one cause can be marked. If there is more than one cause for poor outcome select the cause that contributes most to the poor outcome. If the presenting VA at discharge is 6/60 or better, do not mark any of the boxes under 'cause'.

**4-11 weeks post-op (second follow-up visit) - date**

The second follow-up visit should take place 4-11 weeks post-operatively. Write the date in dd/mm/yyyy or mm-dd-yyyy format. Only entries between 4-11 weeks after the date of operation are allowed in this field.

**4-11 weeks post-op - presenting VA**

Enter the visual acuity of the operated eye only, with available glasses, if any, at second follow-up visit, 4-11 weeks post-op. Use the VA categories as given.

**4-11 weeks post-op – Best corrected VA**

Enter the visual acuity of the operated eye only, with best correction or with pinhole. Use the VA categories as given. Best corrected VA cannot be worse than presenting VA.

**4-11 weeks post-op - cause of presenting VA <6/60**

If presenting VA at second follow-up visit is <6/60, one of the four causes of poor outcome must be marked. If there is more than one cause for poor outcome select the cause that contributes most to the poor outcome. If the presenting VA at discharge is 6/60 or better, do not mark any of the boxes under 'cause'.

**12+ weeks postop. (third follow-up visit) - date**

The third follow-up visit should take place 12 weeks or more post-operatively. Write the date in dd/mm/yyyy or mm-dd-yyyy format. Only entries of 12 weeks or more after the date of operation are allowed in this field.

**12+ weeks postop. - presenting VA**

Enter the visual acuity of the operated eye only, with available glasses, if any, at third follow-up visit, 12 or more weeks post-op. Use the VA categories as given.

**12+ weeks postop. - Best corrected VA**

Write the visual acuity of the operated eye only with best correction or with pinhole. Use the VA categories as given. Best corrected VA cannot be worse than the presenting VA.

**12+ weeks postop. - cause of presenting VA <6/60**

If presenting VA at third follow-up visit is <6/60, one of the four causes of poor outcome must be marked. If there is more than one cause for poor outcome select the cause that contributes most to the poor outcome. If the presenting VA at discharge is 6/60 or better, do not mark any of the boxes under 'cause'.

**Optional**

The fields under this heading are optional and can be left empty. Entries should only be made for the eye that was operated upon.

**4-11 weeks post-op. refraction**

Sp (spherical): allowed: -15 to +15

Cyl (cylindrical): allowed: 0 to -10

Axis: allowed: 0 to 180

DSE: calculated value: Difference in Spherical Equivalent between targeted SE and actual SE

**12+ weeks post-op. refraction**

Sp (spherical): allowed: -15 to +15

Cyl (cylindrical): allowed: 0 to -10

Axis: allowed: 0 to 180

DSE: calculated value: Difference in Spherical Equivalent between targeted SE and actual SE