Royal Cornwall Hospitals
NHS Trust

Carrying out Biometry in Ophthalmology Clinics Standard Operating Procedure

V1.0

July 2024

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The Trust has a duty under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed, and documented. We cannot rely on opt out, it must be opt in.

Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 please see the Information Use Framework Policy or contact the Information Governance Team.

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1. Introduction

1.1. This Standard Operating procedure (SOP) is applicable to all Registered Nurses (RN), Nursing Associates (NA) and Assistant Practitioners (AP) who are employed by the Royal Cornwall Hospital (RCHT) and are required to carry out biometry recording. However, all eye doctors and surgeons who deal with the assessment and management of cataract must be aware of it and be aware of their responsibilities to ensure patient's safety in relation to cataract surgery.

Biometry is a test that involves measuring various dimensions of the eye including the axial length and the corneal curvature either by optical or ultrasound methods. These measurements are then reviewed by the responsible clinician and determines the appropriate lens strength needed to be inserted in the patient's eye when a cataract is removed, to give the best optimal outcome.

Biometry is carried out on patients attending an Ophthalmology Out-Patient Pre-operative Assessment appointment, for their planned cataract / ocular operation.

This process reflects the standards advised by the Royal College of Ophthalmologists and NICE guidance in addition to agreed related local standards to ensure safe cataract surgery pathway.

Ref: Correct IOL implantation in cataract surgery, The Royal College of Ophthalmologists. (March 2018) and Cataracts in adults: management, NICE (October 2017).

1.2. This version supersedes any previous versions of this document.

2. Purpose of this Standard Operating Procedure

2.1. To provide the standards expected for carrying out a Biometry test.

2.2. To describe the competency required to carry out a Biometry test on the equipment available i.e. the IOL master, the A-scan or a handheld keratometry.

2.3. To standardise the information provided to patients, including introducing the concept of planning post operative refractive outcomes.

2.4. To assist and guide nursing staff who are providing nurse-led clinics. This should reduce the need for repeat biometry or for same day cancellation as an unsatisfactory biometry would have been rectified prior to the day of surgery.

2.5. To ensure all teams and members of staff know their responsibilities including the role of the nursing team and the role of the responsible ophthalmic clinicians in the cataract clinic and the role of the ophthalmic surgeons to ensure all data are reviewed, analysed, and used correctly.

3. Ownership and Responsibilities

Ownership of this SOP will be shared between the responsible clinician, the Eye unit sister / charge nurse, the Nurse-in-charge (NIC) on the shift and the member of staff carrying out the Biometry test.

3.1. **Role of the Responsible Ophthalmic Clinician**

The responsible Ophthalmic Clinician is responsible for:

- To be aware of the standards described in this SOP and their role in following them.
- When clinicians are present during the clinic (i.e. one stop cataract clinic), the responsible clinician takes full responsibility for complete and correct pre-operative assessment, documentation, listing and the approval of the data quality or requesting a repeat biometry or additional tests to ensure correct management and patient safety.
- Taking full related history of the patient and documenting all the clinical findings and eye diagnoses.
- Reviewing and evaluating all the available data including glasses prescription, history of contact lens and any history of previous eye laser or eye operations or disease or trauma in addition to reviewing the Biometry test results, approving it and/or informing the appropriate nursing staff if repeat testing is required or requesting alternative or additional tests.
- Identifying if there is a problem with the biometry measurements, they will inform the member of staff who carried out the biometry and the NIC and will dictate next steps.

3.2. Taking full discussion with the patient about the refractive outcome and related various options and documenting the full discussion and agreement with the patient and documenting the agreed or chosen lens for the patient, so this is ready and available for the surgeon on the day of the surgery. Taking full discussion about the surgery with its risks and benefits in general in addition to any related specific clinical findings or surgical risks and difficulties or any expected variations to standard surgery that apply to the specific patient and documenting the full discussion.

3.3. Documenting the post-operative plan including the requirement for any clinical follow, listing for the second eye or discharging the patient to the community optometrist.

3.4. **Role of the Eye Unit Sister/Charge Nurse**

The Eye Unit sister/Charge Nurse is responsible for:

- To be aware of the standards described in this SOP and their role in following them.

- To ensure staff carrying out Biometry tests have completed the appropriate competency and being signed off as competent.

- To assign competent staff to the clinics where Biometry test is required.

3.5. **Role of the Nurse-In-Charge (NIC) on the Shift**

- To be aware of the standards described in this SOP and their role in following them.

- To ensure that staff assigned to perform Biometry tests are competent.

3.6. **Role of the individual colleague carrying out the Biometry Test**

- To be aware of the standards described in this SOP and their role in following them.

- If the Biometry test taken is outside of parameters described within the standards of this SOP, then a second Biometry test is routinely performed.

- If the second Biometry measurements are still outside the described parameters (as described in appendix 3), double check and exclude common causes such as, machine calibration, difference in glasses prescription between both eyes, the patient is wearing contact lens or the patient did not take the contact lenses out for a specific number of days, the patient had previous LASIK or other eye operations including silicone oil in the eye or scleral buckle. If all are excluded, please inform the surgeon and the theatre bookers so the patient does not get a theatre booking until biometry is approved.

- To act as per the responsible clinician, should an issue with the Biometry recording be identified.

- Carry out calibration of the equipment daily prior to clinic commencing.

4. Standards and Practice

4.1. The standards reflected are as per those advised by:

- Royal College of Ophthalmologists Quality Standard, Correct IOL implantation in cataract surgery (March 2018) Available at https://www.rcophth.ac.uk and National Institute for Health and Care Excellence (NICE) Cataracts in adults: Management (October 2017).

  Available at: www.nice.org.uk/guidance/ng77

- NICE guidance for adult cataract surgery to prevent wrong intraocular lens (IOL) insertion and never events in cataract surgery.

4.2. **Competency/Training**

- Only competent staff can perform a Biometry test.

- Training and competency requirements:

The Registered Nurse is required to complete the 'Departmental Biometry learning pack' which includes supervised practice and sign off by a competent registered staff of the individual staff member carrying out a minimum of:

  - 10 IOL Master readings.
  - 10 A Scan Readings.
  - 10 Handheld Keratometer readings.

4.3. **Biometry Testing Standards**

- Biometry testing standards – (Please see appendix 1).
- If the diagnosis is subluxated or dislocated intraocular lens, complete biometry as pseudophakic and as Aphakic.
- If the diagnosis is subluxated or dislocated lens (cataract), complete the biometry as phakic and Aphakic.
- Repeat Biometry required if any 1 of these factors are evident:
  - AL is <21.20mm or >26.60mm.
  - Mean corneal power is <41D or >47D.
  - If either of K readings is above 47D or below 41D – If above 47D nurse to request Pentacam to rule out keratoconus (if clinician is not available) and must also bring this result to the attention of the ophthalmic surgeon.
  - Delta K >2.5D.&
  - Difference between K1 & and K2 is more than 2.5D – and must also bring this result to the attention of the surgeon.
  - Difference in AL between fellow eyes of >0.3mm.
  - Difference in corneal power of >0.9 dioptres.
  - Difference in the IOL power between eyes of 0.9 dioptre or more. If consistent must bring to the attention of the surgeon.
  - Previous biometry measurements are more than 4 years old.
  - IOL exchange is required.
  - Patient has had previous corneal surgery or retinal surgery or any other major eye surgery since the last biometry.
  - Macular disease or other eye disease that may have changed the AL since last biometry.

5. Dissemination and Implementation

5.1. This SOP is signed off at specialty Business and Governance meeting.

5.2. This SOP is available on the RCHT intranet on the Documents library, in the Ophthalmology department shared folder and there is also a hard copy available to view, within the Eye Unit Sister/Charge Nurse Office.

5.3. The Eye Unit Sister/Charge Nurse will ensure that all nurses and AHP's have read and understood this SOP.

5.4. Competency records are held and available in the Eye Unit Sister/Charge Nurse Office.

6. Monitoring Compliance and Effectiveness

Information Category	Detail of Process and Methodology for Monitoring Compliance
Element to be monitored	All the SOP to be monitored.
Lead	Eye Unit Sister.
Tool	Incident reporting and spot check reviews will be monitored as part of ongoing audit process
Frequency	Monitoring will be an ongoing practice within the Department.
Reporting arrangements	Any concerns regarding the ongoing implementation of this SOP should be reported to the Eye Unit Sister who will investigate and report back to the team.
Acting on recommendations and Lead(s)	Any recommendations/changes to this SOP will be reported at the Departmental Business and Governance meeting/safety huddle and changes implemented.
Change in practice and lessons to be shared	Required changes to practice will be identified and actioned immediately. A lead member of the team will be identified to take each change forward where appropriate; lessons will be shared with all the relevant stakeholders.

7. Updating and Review

This document will be reviewed every 3 years, but sooner if any amendments are required.

8. Equality and Diversity

8.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the Equality Diversity And Inclusion Policy or the Equality and Diversity website.

8.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Carrying out Biometry in Ophthalmology Clinics Standard Operating Procedure V1.0
This document replaces (exact title of previous version):	New Document
Date Issued/Approved:	May 2024
Date Valid From:	July 2024
Date Valid To:	July 2027
Author/Owner:	Specialist Services and Surgery Eye Unit, Karen Bowers and Cath Miles
Contact details:	01872 252244
Brief summary of contents:	Standards for Biometry Competency and Testing.
Suggested Keywords:	Eye unit, Biometry, Ophthalmology.
Target Audience:	**RCHT:** Yes **CFT:** No **CIOS ICB:** No
Executive Director responsible for Policy:	Chief Medical Officer
Approval route for consultation and ratification:	Care Group Governance Meeting, Specialty Business and Governance Meeting
Manager confirming approval processes:	Roz Davies
Name of Governance Lead confirming consultation and ratification:	Maria Lane
Links to key external standards:	http://nice.org.uk/guidance/ng77 https://www.rcophth.ac.uk
Related Documents:	None
Training Need Identified:	Yes – Department Based Training.

Information Category	Detailed Information
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet and Intranet
Document Library Folder/Sub Folder:	Clinical / Ophthalmology

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
June 2024	V1.0	Initial issue	Eye Unit, Karen Bowers, Sister and Cath Miles, Deputy Sister

All or part of this document can be released under the Freedom of Information Act 2000.

All Policies, Strategies and Operating Procedures, including Business Plans, are to be kept for the lifetime of the organisation plus 6 years.

This document is only valid on the day of printing.

Controlled Document.

This document has been created following the Royal Cornwall Hospitals NHS Trust The Policy on Policies (Development and Management of Knowledge Procedural and Web Documents Policy). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people.

For guidance, please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity, and Inclusion Team rcht.inclusion@nhs.net

Information Category	Detailed Information
Name of the strategy/policy/proposal/service function to be assessed:	Carrying out Biometry in Ophthalmology Clinics Standard Operating Procedure V1.0.
Department and Service Area:	Ophthalmology, Eye Unit.
Is this a new or existing document?	New.
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Specialist Services and Surgery Eye Unit, Karen Bowers, Sister and Cath Miles, Deputy Sister.
Contact details:	karenbowers@nhs.net

Information Category	Detailed Information
1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	All staff working within the RCH Ophthalmology service where Biometry is required as part of the patient requirement.
2. Policy Objectives	To standardise and formalise the standards expected for Biometry requirement in the RCH Ophthalmology Service.
3. Policy Intended Outcomes	To provide clarity and standards for biometry and the actions required by staff involved in this.
4. How will you measure each outcome?	Where standards are not met or concerns regarding standard not being achieved an incident report will be completed for investigation by the Specialty Governance Lead.
5. Who is intended to benefit from the policy?	All staff and patients where biometry is used as part of the patient pathway.

Information Category	Detailed Information
6a. Who did you consult with? (Please select Yes or No for each category).	• Workforce: Yes • Patients/visitors: No • Local groups/system partners: No • External organisations: No • Other: No
6b. Please list the individuals/groups who have been consulted about this policy.	Ophthalmology clinical lead, Governance Lead, Specialty consultants within the cataract specialty, Ophthalmology Sister and Deputy, Service Manager. Specialty Team through Business and Governance meeting discussion and sharing.
6c. What was the outcome of the consultation?	Approved by Specialty.
6d. Have you used any of the following to assist your assessment?	**National or local statistics, audits, activity reports, process maps, complaints, staff, or patient surveys:** Audits, Complaints, Incidents.

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	No	
Sex (male or female)	No	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	No	
Race	No	
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	No	
Religion or belief	No	
Marriage and civil partnership	No	

Protected Characteristic	(Yes or No)	Rationale
Pregnancy and maternity	No	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	No	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Specialist Services and Surgery Eye Unit, Karen Bowers, Sister and Cath Miles, Deputy Sister.

Specialist Services and Surgery (SSS), Eye Unit, Karen Bowers and Cath Miles **If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here:**
Section 2. Full Equality Analysis

Appendix 3. Ophthalmic Surgery Pre-Assessment Clinic Checklist

Nurses Checklist – Ophthalmic Surgery

Face to Face / Telepac

BIOMETRY **Completed on:** If patient has had biometry done, but in meantime has had a procedure that could affect shape of eye, then biometry will need to be repeated		
Contact lens wearer?	Yes / No	If yes, needs to have CLs removed 10 days before measurement.
Previous LASIK / LASEK?	Yes / No	If yes, will need Pentacam, and then biometry reviewed by surgeon.
Is SNR on AL for each eye below 100?	Yes / No	If yes, need to do an A-scan to justify the measurement, SNR should be over 100. A-scan must include the patient ID and the side of the eye and must be scanned to Medisoft.
Is AL below 21.20 or above 26.60?	Yes / No	If yes, biometry will need to be repeated and surgeon made aware.
Is there a difference of >0.3 in AL between eyes?	Yes / No	If yes, biometry will need to be repeated.
Is there a difference of >0.9 D between eyes?	Yes / No	If yes, biometry will need to be repeated. If consistent, bring to the attention of the surgeon.
Delta K more than 2.5 (3 for Mr Toumia)?	Yes / No	If yes, biometry to be repeated and surgeon made aware for assessment on Pentacam requirement and consideration of Toric lens implantation.
Are any K readings below 41D or above 47D?	Yes / No	If yes, biometry will need to be repeated and bring to the attention of the surgeon.
If above 47D Pentacam to be requested	Yes / No	If Yes biometry will need to be repeated and bring to the attention of the surgeon.

BIOMETRY **Completed on:** If patient has had biometry done, but in meantime has had a procedure that could affect shape of eye, then biometry will need to be repeated		
Is IOL under 6 or over 27?	Yes / No	If yes, bring to the attention of the surgeon for them to check result and then to choose the lens and to check its availability in advance. Please inform the theatre booking team into this correspondence.
Is ACD 2.6 mm or less?	Yes / No	If yes, surgeon to be made aware.
Is the diagnosis subluxated or dislocated intraocular lens?	Yes / No	If yes do biometry as pseudophakic and as Aphakic.
Is the diagnosis subluxated or dislocated lens (cataract)	Yes / No	If yes do the biometry as phakic and Aphakic.
If retinal surgery and Silicone oil used previously, complete biometry using Silicone oil setting	Yes / Na	
Is the prescription of the glasses documented correctly and scanned or available on Medisoft.	Yes	Confirm completed.

BIOMETRY **Completed on:** If patient has had biometry done, but in meantime has had a procedure that could affect shape of eye, then biometry will need to be repeated		
Does any related A-scan have: - full identity. - Laterality of the eye. - Correct date. - Scanned to Medisoft.	Yes	Confirm completed.
If the Biometry test taken is outside of parameters described within the standards of this SOP, then a second Biometry test is routinely performed. If the measurements are still outside the described parameters, then double check and exclude common causes such as, machine calibration, difference in glasses prescription between both eyes, the patient is wearing contact lens or the patient did not take the contact lenses out for a specific number of days, the patient had previous LASIK or other eye operations including silicone oil in the eye or scleral buckle or the patient has dislocated lens. If all are excluded, please inform the surgeon and the theatre bookers so the patient does not get a theatre slot until biometry is approved.	Yes	Confirm completed.
PAC Nurse Name: **Signature:**		