

# SESLHD PROCEDURE COVER SHEET



**Health**  
South Eastern Sydney  
Local Health District

<b>NAME OF DOCUMENT</b>	Biometry and Ocular Ultrasonography
<b>TYPE OF DOCUMENT</b>	Procedure
<b>DOCUMENT NUMBER</b>	SESLHDPR/749
<b>DATE OF PUBLICATION</b>	May 2023
<b>RISK RATING</b>	Medium
<b>LEVEL OF EVIDENCE</b>	National Safety and Quality Health Service Standards: Standard 1 - Clinical Governance Standard 5 - Comprehensive Care Standard 6 - Communicating for Safety
<b>REVIEW DATE</b>	May 2026
<b>FORMER REFERENCE(S)</b>	N/A
<b>EXECUTIVE SPONSOR or EXECUTIVE CLINICAL SPONSOR</b>	Clinical Stream Director, Surgery, Perioperative and Anaesthetic
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<b>FUNCTIONAL GROUP(S)</b>	Allied Health Surgery, Perioperative and Anaesthetic
<b>KEY TERMS</b>	Ocular ultrasonography, Biometry, Axial Length, Corneal Topography, Refraction, Cataract
<b>SUMMARY</b>	This procedure describes staff responsibilities and assessments required when performing biometry via optical ocular ultrasonography to minimise unwarranted clinical variation and support delivery of safe patient care

## **COMPLIANCE WITH THIS DOCUMENT IS MANDATORY**

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**1. POLICY STATEMENT**

This procedure outlines key responsibilities for all clinicians who perform and review biometry or ocular ultrasonography. It defines minimum standard processes when performing biometry or ultrasonography.

To ensure the correct identity of the patient undergoing ocular ultrasonography or biometry, and to standardise the management of all results in the correct patients' health care records these guidelines comply with [NSW Health Policy Directive - PD2017\\_032 Clinical Procedure Safety](#).

**2. BACKGROUND**

Orthoptists and Nurses are responsible for performing biometry and ocular ultrasonography which are procedures routinely performed as part of cataract assessment. Biometry (optical or ocular ultrasonography) are part of the preparation of a lens extraction or lens exchange as well as other clinical situations (including monitoring axial length for myopic progression).

This procedure outlines the roles and responsibilities of clinicians who perform biometry and ocular ultrasonography.

**3. RESPONSIBILITIES**

Role	Responsibilities
Orthoptists	<ul style="list-style-type: none"> <li>• Ensure biometry and ocular ultrasonography are performed as outlined by this procedure and where there is departure from this, that it is clearly documented in the patient healthcare record.</li> <li>• Perform ocular ultrasonography in relation to ocular structures only when registered with the Australian Orthoptic Board<sup>2</sup> and ASAR<sup>2</sup>.</li> <li>• Perform biometry assessments only once competency assessments for IOL Master and ocular ultrasonography have been completed.</li> <li>• Performs biometry assessments consistent with SESLHD Orthoptic competencies, <a href="#">Australian Orthoptic Board competency standards</a> and within scope of practice.</li> <li>• Ensure the correct identity of the patient undergoing biometry and to standardise the management of all biometry related procedures. These guidelines comply with <a href="#">NSW Health Policy Directive PD2017_032 - Clinical Procedure Safety</a>.</li> </ul>
Nurses	<ul style="list-style-type: none"> <li>• Ensure biometry and ocular ultrasonography are performed as outlined by this procedure and where there is departure from</li> </ul>

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	<p>this, that it is clearly documented in the patient healthcare record.</p> <ul style="list-style-type: none"> <li>• Perform biometry assessments once clinical competency assessments for IOL Master and ocular ultrasonography have been completed.</li> <li>• Ensure the correct identity of the patient undergoing biometry and to standardise the management of all biometry related procedures. These guidelines comply with <a href="#">NSW Health Policy Directive PD2017_032 - Clinical Procedure Safety</a></li> </ul>
<p>Ophthalmic surgical team (includes ophthalmology consultant/ registrar or fellow)</p>	<ul style="list-style-type: none"> <li>• Ensure patient-specific needs relevant to surgical intervention for cataracts have been identified as part of the cataract pre-surgical assessment.</li> <li>• Review biometry, determine visual outcomes of surgery (e.g. target refraction) and select intraocular lens</li> <li>• Ensure patient details and results documented on biometry calculations/printouts matches those in healthcare record.</li> <li>• Advise clinicians performing biometry of any special consideration i.e., length of time of no contact lens wear/ alternate IOL selection within a reasonable time frame.</li> <li>• Perform biometry in circumstances where an orthoptist or nurse with required competency is not available prior to scheduled surgery (e.g. urgent after hours surgery)</li> </ul>

**4. DEFINITIONS**

<b>Term</b>	<b>Definition</b>
Axial Length	This is the distance between the anterior surface of the cornea and the fovea and usually measured by ocular biometry
Biometry	Biometry is a process of measuring the power of the cornea (Keratometry) and length of the eye (axial length) that is used to determine the power of an intraocular lens. Biometry is critical to the success of the cataract/lens exchange surgery in terms of the actual refractive outcome being congruent with the required refractive outcome <sup>3</sup> . Biometry can be performed using ocular ultrasound or optical biometry.
Cataract	A cataract is a clouding of the normally clear lens in the eye and is one of the leading causes of vision impairment.
Contact a-scan	Is an ocular ultrasound performed with a probe that is placed directly on the cornea to measure axial length. This probe slightly indents the surface of the cornea.
Cornea	The cornea is a transparent layer of the front of the eye. The cornea accounts for about 2/3 the total refractive power of the eye

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	and errors in calculation will have a significant effect on the refractive outcome. Corneal power is calculated from measurements made by a keratometer or by a corneal topographer <sup>4</sup> .
Pentacam	Pentacam uses a rotating Scheimpflug camera system for anterior segment analysis. It measures corneal topography and elevation of the anterior and posterior corneal surface and the corneal thickness.
Enrolled Nurse	An Enrolled nurse is a person who provides nursing care under the direct or indirect supervision of a registered nurse. They have completed the prescribed education preparation and demonstrate competence to practise under the Health Practitioner Regulation National Law as an enrolled nurse in Australia. Enrolled nurses are accountable for their own practice and remain responsible to a registered nurse for the delegated care.
Keratometry	Keratometry is the measurement of the anterior curvature of the cornea. It is traditionally measured using a manual keratometer.
Ocular ultrasound	Ocular ultrasound refers to the use of high amplitude sound waves for biometry or diagnostic imaging purposes. Types of ocular ultrasound include: <ul style="list-style-type: none"> <li>• A-Scan (Amplitude scan) – a one-dimensional scan to measure the length of the eye.</li> <li>• B-Scan (Brightness scan) – a two-dimensional scan to produce a cross-section image of the eye and orbit.</li> </ul>
Optical biometry	Biometry performed using a non-contact optical device that measures the distance from the corneal vertex to the retinal pigment epithelium by partial coherence interferometry (can be performed by IOL Master).
Orthoptist	Orthoptists are allied health professionals who specialise in the study of ocular motility and visual development. Their primary role is to investigate and diagnose visual system dysfunctions involving vision, eye movement, eye alignment and binocularity in children and adults. Orthoptics focuses on the non-surgical treatment of amblyopia and strabismus. They specialise in visual function assessment and neuromuscular anomalies.
Refractive Error	Refractive errors are a physiological condition of the eye where the eye cannot clearly focus the images from their environment on the back of the eye (macula). This causes blurred vision, which is sometimes so severe that it causes visual impairment. Glasses can help treat this.
Registered Nurse	A Registered nurse is a person who has completed the prescribed education preparation, demonstrates competence to practise and is registered under the Health Practitioner Regulation National Law as a registered nurse in Australia.

## 5. PROCEDURE

### 5.1 Patient Identification

Prior to commencing a patient assessment the clinician is required to perform patient identification in accordance to the protocol as outlined in the [NSW Health Policy Directive PD2017\\_032 - Clinical Procedure Safety](#), and document that this has occurred in the patients' healthcare record/eMR.

An identification check must also be documented on all printouts prior to the document being affixed to the patient file, this must comply with the [NSW Health Policy Directive PD2012\\_069 - Health Care Records – Documentation and Management](#).

All documentation in the healthcare record must comply with the [NSW Health Policy Directive PD2012\\_069 - Health Care Records – Documentation and Management](#) and should include the following:

- signature of the clinician performing the biometry
- printed name
- designation

Initials or signature of the clinician performing biometry must be recorded on the biometry printout and dated (initials or signature must be on each sheet of the printout).

### 5.2 Equipment

The following equipment can be used for biometry or A-scan for diagnostic purposes:

- IOLMaster® 500 (STG Eye Clinic)
- IOLMaster® 700 (SSEH, POWH, TSH)
- IOLMaster® 5.4 (SSEH)
- Quantel® Ascan/B Scan (SSEH)
- Ascan contact Tomey Bio meter AL -100- (POWH)
- Accutome A Scan (TSH)
- Accutome B Scan Plus (POWH)

Prior to performing ocular biometry (using IOL Master or ocular ultrasonography), calibration check of equipment in accordance with manufacturers recommendations (except B-scan machines) must be performed prior to the first patient biometry of the day. On the occasion that the equipment has been turned off following the daily calibration check, calibration must be re-performed.

**5.3 Biometry Procedure (Optical biometry or Ocular Ultrasonography)**

**5.3.1 Targeted history questions**

Prior to performing biometry, targeted history questions that should be asked include <sup>3,4</sup>:

- Relevant optical / refractive error history (e.g., use of glasses and age commenced wearing glasses, use of contact lenses)
- History of contact lenses use including pattern of use of contact lenses and the type of lenses, with date of last use.

History to be documented in the healthcare record progress notes by the clinician performing biometry in accordance with [NSW Health Policy Directive PD2012\\_069 - Health Care Records – Documentation and Management](#).

**5.3.2 Biometry**

Optical biometry should be performed (IOL Master) unless patient factors prevent this from being possible or do not give accurate measurements (as per local protocols)<sup>4</sup>, perform ultrasound biometry.

Patients who wear contact lenses are required to discontinue wear for a specified period of time prior to their biometry. Contact lenses can change the curvature of the anterior cornea. Length of time of contact lens wear is discontinued must be documented by the clinician performing biometry.

Patients who wear soft contact lens are to have 1 week cessation of use prior to keratometry and biometry being performed<sup>4</sup> unless otherwise indicated differently by surgical team. Any patients who wear hard contact lenses will require a minimum of 1 week of discontinued use of hard contact lenses<sup>4</sup>, unless otherwise indicated by consultants as per local protocols and processes.

Ocular lubricants can be administered if it is difficult to obtain keratometry measurements. However, this should be undertaken with caution as ocular lubricants can result in variable keratometry readings of patients with dry eyes with higher viscosity eye drops resulting in more variation in astigmatism<sup>7</sup>. If a clinician administers ocular lubricants during the biometry assessment, this must be documented in the healthcare record progress notes, including name of lubricant used and time between administering lubricants and undertaking keratometry measurements.

Clinicians should wait at least 5-10 minutes after ocular lubricants have been administered before taking keratometry readings using the IOL Master<sup>7</sup>. If K-readings are taken less than 5 minutes after lubricants were administered, this must be clearly documented in the progress notes of the medical record AND on the IOL Master printout and include justification and reasoning.

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If the quality of biometry (particularly keratometry) is poor or below recommended quality checks, it is recommended that where possible patients are booked another appointment for repeat biometry, prior to which they use ocular lubricants for a period of 2 weeks.

When performing biometry, it is important to consider the following to ensure the calculations are reliable and repeatable:

- Previous refractive history (including refractive surgery). Where possible, refer to their oldest glasses script prior to vision changes.
- Corneal curvature and its consistency with astigmatism
- Administration of eye drops in patients with dry eye can alter keratometry readings
- Axial length measurements.

When possible, the lens selection and visual outcomes of surgery (as decided by the surgical team), should be based on relevant lifestyle information. Intraocular lens calculations can then be targeted with a specific target refractive outcome.

Orthoptists and nurses may be requested by the surgical team to reprint biometry results with changes to default lens preferences and target refractive outcomes. Orthoptic and nursing staff are to clearly document this on the printout and in the healthcare record.

**6. DOCUMENTATION****6.1 Biometry printout documentation**

- If ultrasound biometry is completed, it should be clearly documented on the IOL Master printout in the comments section (SSEH only)
- IOL Master Printout Validation checklist (See Appendix 2) must be completed by clinician performing biometry and action checklist items as appropriate (i.e., perform additional tests or repeat measurements when required)
- Any requests for reprints of biometry or changes to default lens settings or target refraction requires ophthalmic surgical team requesting change/reprint to sign biometry printout
- Changes to default lens settings or target refraction should be documented on the biometry printout (e.g., target refraction changed to -2DS; initial by clinician and A printout of the biometry results (from the IOL Master) or A-scan machine should be signed and dated by the clinician performing the measurements and placed in the patients' healthcare record.

**6.2 Healthcare Record Progress Notes**

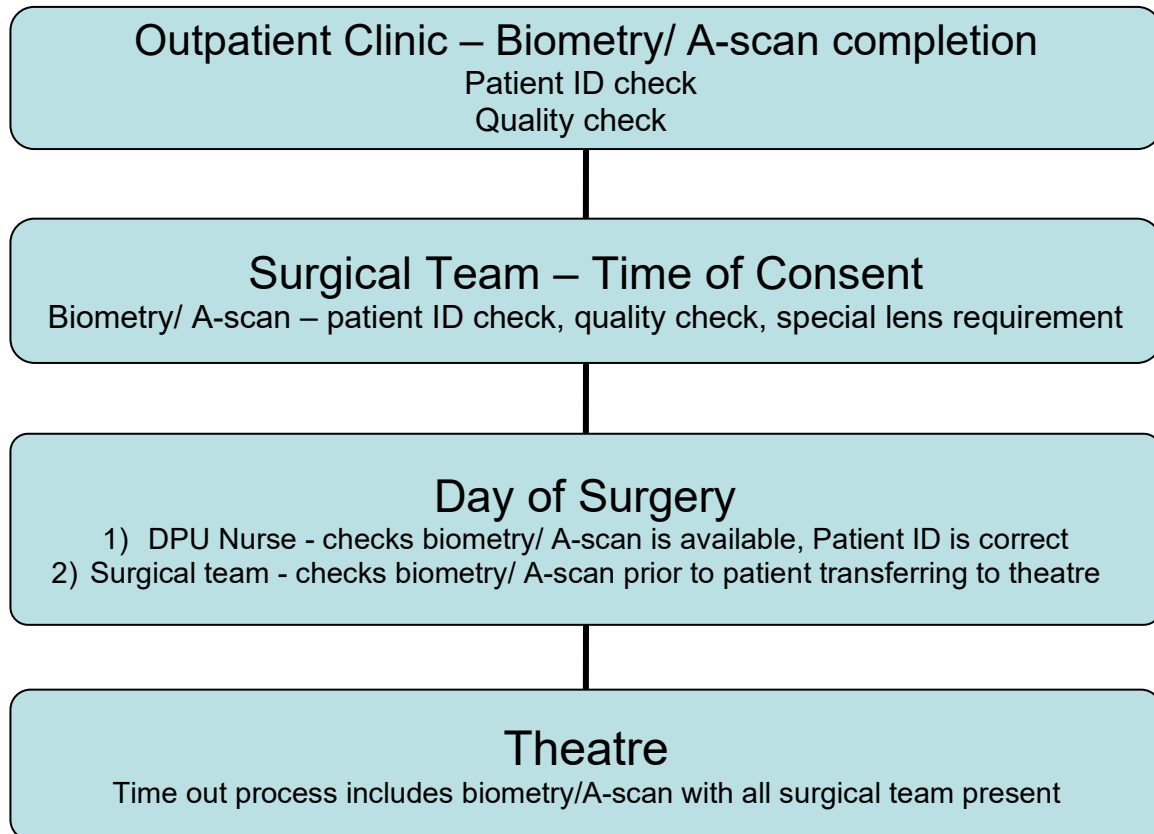
An entry should also be made into the progress notes of the patient's electronic or paper-based healthcare record, documenting:

- Biometry completed (including method/device used e.g., contact A-scan or IOL Master)
- Comment on the quality of the scan when appropriate (e.g., when quality of scan is poor on repeat attempts)
- Difficulties experienced with the procedure if appropriate (e.g., patient moving, manual manipulation of eyelids, poor fixation)
- If ocular lubricants are administered, the name of lubricant administered and time between administration and when IOL Master Keratometry measurements are taken (if less than 5 minutes)
- Changes to standard settings of the scan (e.g., change of lens choices, target refraction as per ophthalmic surgical team, formulas, etc)
- Changes to patient parameters (e.g., lens state, vitreous state, refractive state)
  - In the case of subluxed lens/dropped nucleus, clarification with the ophthalmic surgical team of what lens state was chosen for the scan (phakic, aphakic, pseudophakic) should also be documented.
- Any biometry measurements outside normal parameters – these should be discussed with the appropriate ophthalmic surgical team (where possible).



**7. AUDIT**

Specific quality checks of the biometry results are to be undertaken as outlined in the flowchart below.



Other audits and evaluations include:

- Review of incidents (IMS+) relating to biometry and ocular ultrasonography (monthly)
- Healthcare record audit of biometry printouts
- QARS audits – documentation audits (monthly)

Results of audits are to be disseminated as follows:

- Results of audits at SSEH to be submitted to IOL Unit and Ophthalmology M & M and feedback provided to clinical staff through safety huddles.
- Results of audits at POWH to be submitted to Ophthalmology unit and clinical staff.

**8. REFERENCES**

**RELATED POLICIES/PROCEDURES/GUIDELINES/BUSINESS RULES**

<b>Number</b>	<b>Policy/Procedure/Guideline/Business Rule</b>
1	<a href="#">NSW Health Policy Directive PD2017_032 - Clinical Procedure Safety</a>
2.	<a href="#">NSW Health Policy Directive PD2012_069 - Health Care Records - Documentation and Management</a>
3	<a href="#">NSW Health Safety Notice – SN 008/09 Recommended Intraocular Lens Insertion Process</a>
4	<a href="#">SSEH Biometry and Ultrasonography SSEH CLIN097</a>

**EXTERNAL REFERENCES**

<b>Number</b>	<b>Reference</b>
1	<a href="#">Australian Orthoptic Board – Competency Standards</a> (July 2015)
2	<a href="#">Orthoptics Australia - Orthoptic Scope of Practice</a>
3	The Royal Australian and New Zealand College of Ophthalmologists – <a href="#">Preferred Practice Patterns: Cataract and Intraocular Lens Surgery - 2021</a>
4	<a href="#">Cataracts in adults: management, NICE Guideline</a> , No. 77, National Institute for Health and Care Excellence (UK). London: National Institute for Health and Care Excellence (UK); 2017 Oct.
5	UK Ophthalmology Alliance (UKOA) <a href="#">Correct IOL implantation in cataract surgery</a>
6	<a href="#">Registered Nurse Standards for Practice - NMBA</a>
7	Rögglä, Veronika et al. "Influence of Artificial Tears on Keratometric Measurements in Cataract Patients." <i>American Journal of Ophthalmology</i> vol. 221 (2021): 1-8. <a href="https://doi.org/10.1016/j.ajo.2020.08.024">https://doi.org/10.1016/j.ajo.2020.08.024</a>

**9. REVISION AND APPROVAL HISTORY**

Date	Revision No.	Summary of changes, Author and Approval
January 2023	DRAFT	Creation of guideline and Draft for Comments page Melanie Lai (SESLHD Orthoptic Advisor/ Orthoptic Department Head SSEH) Christina Peterson (Acting SESLHD Orthoptic Advisor/ Orthoptic Department Head SSEH) Kyaran Butler (Orthoptic Department Head/ Clinical specialist POWH) Joanna McCulloch (Clinical Nurse Consultant Ophthalmology SSEH) Clare Hafner Acting (Clinical Nurse Educator Ophthalmology SSEH)
March 2023	DRAFT	Final version approved by Executive Sponsor.
May 2023	1	Approved at SESLHD Clinical and Quality Council.

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### Appendix 1: Competency Assessment Forms

#### SSEH IOL Master Competency Assessment Form

PERFORMING AN ASCAN (IOLMASTER 700®)	COMPETENCY RATING				
PROFESSIONAL PRACTICE	I	S	A	M	D
<ul style="list-style-type: none"> <li>Complies with the principles of infection prevention and control throughout the procedure</li> <li>Performs the appropriate moment(s) of Hand Hygiene</li> <li>Cleanses the equipment pre and post procedure</li> </ul>					
<ul style="list-style-type: none"> <li>Introduces self to patient</li> </ul>					
<ul style="list-style-type: none"> <li>Implements patient ID and procedure matching</li> </ul>					
<ul style="list-style-type: none"> <li>Explains the procedure to the patient and obtains consent</li> </ul>					
<ul style="list-style-type: none"> <li>Reviews the patient's relevant history including chief complaint, general health, ocular history, including previous refractive surgery &amp; retinal surgery, and social history</li> </ul>					
<ul style="list-style-type: none"> <li>Acknowledges and actions the particular needs of the patient undergoing a procedure including patient comfort, safety and privacy throughout procedure</li> </ul>					
PROVISION AND COORDINATION OF CARE					
<ul style="list-style-type: none"> <li>Positions the patient and performs the IOLMaster 700 scan in the correct sequence:               <ul style="list-style-type: none"> <li>Whilst entering the patient's details, implements a second patient ID check</li> <li>Ensures information related to the patient's ocular history is accurately entered into the devices parameters i.e. vitreous state, laser vision correction (LVC), and lens state</li> <li>Positions the patient according to height and level of the device</li> <li>Correctly instructs the patient, which should include importance of looking at the fixation target</li> <li>Performs the scan, completing the three measurements (manual or automatic)</li> <li>Reviews the results page of the scan, to confirm reliability and accuracy of readings before completing scan, any variabilities are within the clinically recommended variances.</li> <li>Repeats any measures that are outside the recommended clinical variability</li> <li>Clinician selects appropriate formula/Intraocular lenses/refractive outcome in relation to the LVC state as per Medical Officers request.</li> </ul> </li> </ul>					
<ul style="list-style-type: none"> <li>Demonstrates an understanding of the measurements, and the clinical implications on IOL lens power if axial length between the two eyes differs by more than 0.3mm</li> <li>Verbalises the assessor a clinical understanding of ocular parameters and the relationship to other diagnostic tests</li> </ul>					
<ul style="list-style-type: none"> <li>Identifies acceptable quality indicators and standard deviation</li> <li>Verbalises what action is required if the quality indicators or SD is not within acceptable parameters</li> <li>Verbalises to the assessor the possible reasons why some patients may have poor A-scan results</li> <li>Demonstrates a basic understanding of all major formulae</li> </ul>					
<ul style="list-style-type: none"> <li>Terminates the patient encounter appropriately after the procedure including responding to the patient's enquiries</li> </ul>					
COLLABORATIVE AND THERAPEUTIC PRACTICE					

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<ul style="list-style-type: none"> <li>Documents the procedure and findings and files readings/printout in the patient's record.</li> <li>Prints the A-scan result</li> <li>Print out has documented confirmation of patient ID matching, and this is filed in the patients record</li> <li>Complies with local Policy regarding A-scan management</li> </ul>						
<ul style="list-style-type: none"> <li>Implements the appropriate follow-up action if abnormal or changed clinical findings are evident</li> </ul>						
<b>STAFF NAME:</b>	<b>WARD:</b>	<b>INDEPENDENT</b>	<b>SUPERVISED</b>	<b>ASSISTED</b>	<b>MARGINAL</b>	<b>DEPENDENT</b>
<b>ASSESSOR:</b>	<b>DATE:</b>					
<b>COMPETENCY LEVEL:</b>						
<b>COMMENTS:</b>						

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**POWH/SSEH Ultrasound Biometry - Contact A-scan competency assessment**

PERFORMING ULTRASOUND BIOMETRY – CONTACT A-SCAN	COMPETENCY RATING				
	I	S	A	M	D
<b>PROFESSIONAL PRACTICE</b>					
<ul style="list-style-type: none"> <li>Complies with the principles of infection prevention and control throughout the procedure</li> </ul>					
<ul style="list-style-type: none"> <li>Introduces self to patient and implements patient ID and procedure matching</li> </ul>					
<ul style="list-style-type: none"> <li>Explains the procedure to the patient and obtains patient consent</li> </ul>					
<ul style="list-style-type: none"> <li>Reviews the patient’s general health, allergies and ocular history including all previous ocular surgery</li> <li>Verbalises to the assessor the clinical rationale for performing Ultrasound Biometry</li> <li>Verbalises to the assessor the differences between an IOLMaster and an Ultrasound Biometry measurement</li> </ul>					
<ul style="list-style-type: none"> <li>Acknowledges and actions the particular needs of patients undergoing the procedure including patient comfort, safety and privacy</li> </ul>					
<b>PROVISION AND COORDINATION OF CARE</b>					
<ul style="list-style-type: none"> <li>Sets up the Ultrasound Biometer and enters the patient’s information into the device.                             <ul style="list-style-type: none"> <li>Enters the appropriate Keratometry readings</li> </ul> </li> </ul>					
<ul style="list-style-type: none"> <li>Demonstrates to the assessor an understanding of anatomy, and the clinical rationale of how eye disorders, diseases and previous surgery may affect the results of the scan</li> </ul>					
<ul style="list-style-type: none"> <li>Performs the scan using the correct technique:</li> <li>Instils local anaesthetic eye drops as charted/Standing Order (OPD only)                             <ul style="list-style-type: none"> <li>Instructs the patient to fixate at a distant object</li> <li>Holds the probe horizontally</li> <li>Gently places the probe on patient’s anaesthetised cornea</li> <li>Ensures the machine takes the set of 10 readings (when possible)</li> <li>Evaluates all readings taken for quality</li> </ul> </li> </ul>					
<ul style="list-style-type: none"> <li>Demonstrates an understanding of the measurements, and the clinical implications on IOL lens power if axial length between the two eyes differs by more than 0.3mm</li> <li>Verbalises to the assessor a clinical understanding of ocular parameters and the relationship to other diagnostic tests</li> </ul>					
<ul style="list-style-type: none"> <li>Terminates the patient encounter appropriately after the procedure including responding appropriately to patient’s enquiries</li> </ul>					
<b>COLLABORATIVE AND THERAPEUTIC PRACTICE</b>					
<ul style="list-style-type: none"> <li>Correctly documents procedure and incidental findings in the patient’s record</li> <li>Prints the A-scan result and files in patients record</li> <li>Complies with local Policy regarding A-scan management</li> </ul>					
<ul style="list-style-type: none"> <li>Implements appropriate follow up action if abnormal results are evident</li> </ul>					
<b>STAFF NAME:WARD:</b>	<b>DEPENDENT</b>	<b>INDEPENDENT</b>	<b>SUPERVISOR</b>	<b>ASSISTANT</b>	<b>MARGIN</b>
<b>ASSESSOR: DATE:</b>					
<b>COMPETENCY LEVEL:</b>					

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COMMENTS:					
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**ASSESSMENT OF COMPETENCE EVALUATION CRITERIA**

COMPETENCY RATING	STANDARD PROCEDURE	PERFORMANCE QUALITY	ASSISTANCE
<b>INDEPENDENT 1</b>	Safe Accurate	Proficient, coordinated, confident. Expedient use of time	Without direction, maintains support
<b>SUPERVISED 2</b>	Safe Accurate	Efficient, coordinated, confident. Expedient use of time	With occasional physical or verbal direction
<b>ASSISTED 3</b>	Mostly safe and accurate	Partial demonstration of skills. May be uncoordinated, and inefficient. Delayed time expenditure. Requires further practice	Frequent verbal and/or physical direction
<b>MARGINAL 4</b>	Questionable safety and questionable accuracy	Tends to be unskilled and inefficient. Considerable and prolonged time	Continuous verbal and/or physical direction
<b>DEPENDENT 5</b>	Unsafe Inaccurate	Unable to demonstrate procedures. Lacks confidence, coordination and efficiency.	Continuous verbal and/or physical direction

Reference: Bondy KN (1983). 'Criterion referenced definitions for rating scales in clinical evaluation'. *Journal of Nursing Education*, volume 2, pages 376-382.

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### POWH IOL Master Competency Checklist

PERFORMING AN ASCAN (IOLMASTER 700®)	COMPETENCY RATING				
	I	S	A	M	D
<b>PROFESSIONAL PRACTICE</b>					
<ul style="list-style-type: none"> <li>Complies with the principles of infection prevention and control throughout the procedure</li> </ul>					
<ul style="list-style-type: none"> <li>Performs the appropriate moments of hand hygiene</li> </ul>					
<ul style="list-style-type: none"> <li>Cleanses the equipment pre and post procedure</li> </ul>					
<ul style="list-style-type: none"> <li>Introduces self to patient</li> </ul>					
<ul style="list-style-type: none"> <li>Establishes patient ID and procedure matching</li> </ul>					
<ul style="list-style-type: none"> <li>Explains the procedure to the patient and obtains consent</li> </ul>					
<b>PROVISION AND COORDINATION OF CARE</b>					
<ul style="list-style-type: none"> <li>Able to calibrate IOL Master</li> </ul>					
<ul style="list-style-type: none"> <li>Whilst entering the patient details, implements a second patient ID check correctly checking entered details</li> </ul>					
<ul style="list-style-type: none"> <li>Ensure information related to patients ocular history are accurately entered into the devices parameters</li> </ul> <ol style="list-style-type: none"> <li>Lens state</li> <li>Vitreous body state</li> <li>Laser vision correction ( LVC)</li> </ol>					
<b>Performing Scan</b>					
<u>Coarse Alignment</u> Patient setup <ul style="list-style-type: none"> <li>ensure patients comfort and safety</li> <li>adjust table height, chin rest height</li> </ul> <ul style="list-style-type: none"> <li>Align patient eye and Instruct patient to look at red fixation target</li> <li>ensure centre green cross hairs on pupil centre</li> <li>Understand green, orange and red traffic lights</li> </ul>					
<u>IOL Measurement</u> <ul style="list-style-type: none"> <li>Fine alignment – 18 dot reflective pattern focused and centred with X and Y axis dots are placed in yellow boxes</li> <li>Able to acquire good scans ( 2 ) as demonstrated when traffic light icon is green</li> <li>Instruct patient to blink prior to each measurement taken</li> <li>Able to determine if tear film affecting scan capture</li> </ul>					



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## Biometry and Ocular Ultrasonography

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<p><u>Quality check of scans</u></p> <ul style="list-style-type: none"> <li>• Able to perform Quality check using green ticks/ red crosses</li> <li>• Determine accuracy of scans and able to determine any further action required</li> <li>• Check fixation alignment</li> </ul>					
<p><u>Analysis</u></p> <ul style="list-style-type: none"> <li>• Check plausibility of measurement values and understand when to repeat</li> <li>• Biometry scan</li> <li>• Keratometry scan</li> <li>• WTW image</li> <li>• Sclera image</li> <li>• Fixation check- check for macula dip</li> </ul>					
<p><u>IOL Calculation</u></p> <p>Able to make judgement regarding measurements</p> <ul style="list-style-type: none"> <li>• accuracy of measurements</li> <li>• need to delete inaccurate measurements</li> </ul> <p>Understand when to:</p> <ul style="list-style-type: none"> <li>• Perform Pentacam</li> <li>• Perform OCT</li> <li>• Perform B scan</li> <li>• Perform contact A scan</li> <li>• Request 2nd Orthoptist to repeat measurements</li> <li>• Notify consultant</li> </ul>					
<ul style="list-style-type: none"> <li>• Able to change formula</li> <li>• Acknowledge that the Target formula does not have a default and must remain at ZERO ( POW)</li> <li>• Have an understanding of the implications of adding and removing lenses from the system ( They do not default back to the original selections)</li> </ul>					
<b>COLLABORATIVE AND THERAPEUTIC PRACTICE</b>					
<p><u>POW Validation Checklist and documentation</u></p> <ul style="list-style-type: none"> <li>• Understand to complete validation checklist and what must be checked on the IOL Master printout prior to filing the results in the patient medical records</li> <li>• Understand documentation and signing of printout and validation checklist in medical record notes</li> <li>• Understand process when printout is requested independent to performing the measurements</li> </ul>					
<b>STAFF NAME:</b>		<b>WARD:</b> Z - = S P > > M P U			

# SESLHD PROCEDURE

## Biometry and Ocular Ultrasonography

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<b>ASSESSOR:</b>					
<b>DATE:</b>					
<b>COMPETENCY LEVEL:</b>					
<b>COMMENTS:</b>					

### ASSESSMENT OF COMPETENCE EVALUATION CRITERIA

COMPETENCY RATING	STANDARD PROCEDURE	PERFORMANCE QUALITY	ASSISTANCE
<b>INDEPENDENT 1</b>	Safe Accurate	Proficient, coordinated, confident. Expedient use of time	Without direction, maintains support
<b>SUPERVISED 2</b>	Safe Accurate	Efficient, coordinated, confident. Expedient use of time	With occasional physical or verbal direction
<b>ASSISTED 3</b>	Mostly safe and accurate	Partial demonstration of skills. May be uncoordinated, and inefficient. Delayed time expenditure. Requires further practice	Frequent verbal and/or physical direction
<b>MARGINAL 4</b>	Questionable safety and questionable accuracy	Tends to be unskilled and inefficient. Considerable and prolonged time	Continuous verbal and/or physical direction
<b>DEPENDENT 5</b>	Unsafe Inaccurate	Unable to demonstrate procedures. Lacks confidence, coordination and efficiency.	Continuous verbal and/or physical direction

Reference: Bondy KN (1983). 'Criterion referenced definitions for rating scales in clinical evaluation'. *Journal of Nursing Education*, volume 2, pages 376-382.

**Biometry and Ocular Ultrasonography**

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**Appendix 2 - IOL Master Printout Validation checklist**

<b>IOL Master Checklist</b>	N/A	YES	NO	DONE
Name		<input type="checkbox"/>	<input type="checkbox"/>	
DOB		<input type="checkbox"/>	<input type="checkbox"/>	
MRN		<input type="checkbox"/>	<input type="checkbox"/>	
IOL Master Calibration		<input type="checkbox"/>	<input type="checkbox"/>	
Correct lens Status		<input type="checkbox"/>	<input type="checkbox"/>	
Vitreous Status		<input type="checkbox"/>	<input type="checkbox"/>	
LVC		<input type="checkbox"/>	<input type="checkbox"/>	
Target refraction is Zero		<input type="checkbox"/>	<input type="checkbox"/>	
<b>AXL: 2 eye comparison</b>	<input type="checkbox"/>			
Difference equal or less than 0.7mm		<input type="checkbox"/>	<input type="checkbox"/>	
if unexplained ,repeat by 2nd Orthoptist/ notify consultant				<input type="checkbox"/>
ACD more than 2mm ( for phakic eye)		<input type="checkbox"/>	<input type="checkbox"/>	
Notify Dr prior to dilation				<input type="checkbox"/>
<b>Keratometry</b>				
<b>Individual eye</b>				
K1K2 difference less than 1.5D		<input type="checkbox"/>	<input type="checkbox"/>	
Pentacam				<input type="checkbox"/>
<b>2 eye comparison</b>	<input type="checkbox"/>			
difference in average Ks between 2 eyes < or equal to 1D		<input type="checkbox"/>	<input type="checkbox"/>	
Pentacam				<input type="checkbox"/>
repeat by 2nd Orthoptist / notify consultant				<input type="checkbox"/>
<b>Calculations</b>				
Difference less than 1.5D in IOL Calculations between 2 eyes		<input type="checkbox"/>	<input type="checkbox"/>	
repeat by 2nd Orthoptist / notify consultant				<input type="checkbox"/>
Formula		<input type="checkbox"/>	<input type="checkbox"/>	
Pentacam Performed				<input type="checkbox"/>
OCT performed				<input type="checkbox"/>
B Scan performed				<input type="checkbox"/>
Ultrasound A-scan performed				<input type="checkbox"/>
Calculation sheets printed and filed in medical progress notes		<input type="checkbox"/>	<input type="checkbox"/>	
Name:	Date			
Signature:				