RANZCO The Royal Australian and New Zealand College of Ophthalmologists

THE MEDICAL EYE SPECIALISTS

Basics of Ophthalmic Surgery Curriculum Standard

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Purpose

The *Basics of Ophthalmic Surgery* curriculum standard outlines the surgical competencies and knowledge that trainees must master within the first 12 to 18 months of training. It describes the protocols and techniques required to perform common ophthalmic surgical procedures.

Simulation-based training in a wetlab environment can help trainees develop their surgical skills, knowledge and attitudes, while protecting patients from unnecessary risk. This standard also outlines the basics of ophthalmic surgery which a trainee ophthalmologist must attain in preparation for their surgery on live patients.

This document should be viewed in conjunction with the RANZCO clinical performance standards.

Structure

This standard comprises five educational elements and their associated learning outcomes and performance criteria.

References

Core Reading:

- Arnold, A. C. (ed.) (2009) *Basic Principles of Ophthalmic Surgery*. American Academy of Ophthalmology: San Francisco, CA, USA.
- Dunn, J. P. and Langer, P. (eds.) (2009) *Basic Techniques of Ophthalmic Surgery*. American Academy of Ophthalmology: San Francisco, CA, USA.

On-line Resources:

A number of resources on basic ophthalmic surgery are available on the College's learning management system, Moodle. These include:

- Anatomy reading: Roidan-Eva, P and Witcher, J.P (eds.) (2008) *Vaughan and Asbury's General Ophthalmology* 'Chapter 1 Anatomy and Embryology of the Eye' pp. 1–23 McGraw-Hill: USA
- A self-assessment exercise on surgical instruments can assist trainees in learning to identify various surgical instruments and their use
- CD and booklet providing a step-by-step guide to practising phacoemulsification surgical skills in the wetlab, prior to surgery on patients
  [Caesar, R and Benjamin, L. (2003) *Phacoemulsification: Step by Step*. Butterworth Heinemann, © Elsevier]
- CD by JB Ruddle and DV Kaufman: *Basic Ocular Microsuregry – A Guide for RANZCO Trainees*, which is a basic guide to practising microsurgical skills in the wetlab.

There are also some useful resources available on the Internet, including:

- The *RANZCO Ocular Surgery Guidelines* for ensuring correct patient, correct eye, correct site and correct procedure [available at http://www.ranzco.edu/images/documents/policies/OCULAR_SURGERY_GUIDELINES_FOR_ENSURING_CORRECT_PATIENT.pdf]
- The World Health Organization's *Surgical Safety Checklists* [available at http://www.who.int/patientsafety/safesurgery/tools_resources/SSSL_Checklist_finalJun08.pdf and http://whqlibdoc.who.int/publications/2009/9789241598590_eng_Checklist.pdf]

- Oetting, TA (2005). Medrounds: Cataract Surgery for Greenhorns. *Chapter 2: Operating Microscope Basics* [available at http://www.medrounds.org/cataract-surgery-greenhorns/2005/09/chapter-2-operating-microscope-basics.html] Chapter 3: Phaco Machine Settings Primer [available at http://www.medrounds.org/cataract-surgery-greenhorns/2005/10/chapter-3-phaco-machine-settings.html]
- Nestel D and Kidd J. *Nurses' perceptions and experiences of communication in the operating theatre: a focus group interview*. BMC Nursing 2006, 5:1 [available at http://www.biomedcentral.com/content/pdf/1472-6955-5-1.pdf]
- The World Alliance for Patient Safety's Implementation Manual Surgical Safety Checklist *(First Edition)* [available at http://www.who.int/patientsafety/safesurgery/tools_resources/SSSL_Manual_finalJun08.pdf]

Audio-visual Library Resources:

The College has donated one copy of the following DVD resource on phacoemulsification for each training network:

- Benjamin, L., Little, B., Packard, R. (2005) *Phacoemulsification 1. Basic Techniques: A structured video-based training program for phacoemulsification surgery.* Eye Movies: UK.

Please contact your Director of Training to view a copy of this DVD, which contains narrated video extracts explaining the phacoemulsification surgical procedure.

Additional Reading:

Reading should be supplemented with appropriate articles from relevant ophthalmic journals, as well as manufacturers' manuals for various ophthalmic surgical instruments and equipment.

Teaching and Learning

The *Basics of Ophthalmic Surgery* curriculum standard assumes that candidates have a thorough knowledge and understanding of the anatomy of the eye, orbit and adnexa, as well as of common ocular conditions and ophthalmic surgical procedures.

The development of basic ophthalmic surgery skills and knowledge requires trainees to integrate:

- **Knowledge of the ophthalmic sciences** (particularly a basic knowledge of the anatomy and physiology of the eye), with
- **Clinical knowledge** (focusing on gaining a basic understanding of ophthalmic conditions and their associated surgical procedures), with
- **Familiarisation with aseptic techniques, safety, layout of the operating theatre and the equipment** (including ophthalmic anaesthesia, surgical instruments, needles and sutures, as well as the operating microscope and phaco machine), with
- **Social and professional responsibilities** (particularly a commitment to respect for the human eye and understanding of the rationale for initial surgical training in a wetlab environment, as well as the need to demonstrate effective communication, professional behaviour and a team-based approach to work in theatre and undertaking scenario planning related to surgery), with
- **Demonstration of surgical techniques** (including wound construction, as well as wound closure).

Trainees are required to practice their surgical skills in a wetlab environment in their training networks, particularly within the first few months of their training and prior to performing any new surgical procedure.

Surgical learning experiences will be negotiated with Directors of Training, supervisors and/or the wetlab coordinator in the training network, based on individual learning needs.

In working on live patients, trainees will work under close supervision of an experienced ophthalmic surgeon and trainer commencing with part procedures, and will incrementally be given more responsibility and independence as surgical competence is demonstrated.

Assessment Methods

Trainees' mastery of the basic competencies and knowledge described in this standard are initially assessed in the wetlab.

The *Wetlab Assessment Record (Form 1B)* must be completed by a trainee's supervisor and submitted to the College within the first three months of training. This assessment is important to help ensure patient care and safety.

There are also work-based assessments (WBA) through theatre performance assessments carried out once a month in each term that has a surgical component.

In addition to this, trainees are encouraged to utilise the self-assessment exercises on Moodle.

Learning outcomes and performance criteria

BOS1 STANDARD OPERATING PROTOCOLS, STERILE TECHNIQUES AND SAFETY			
LEARNING OUTCOMES	PERFORMANCE CRITERIA	ASSESSMENT	
		Wetlab	**WBA**
1.1 Understand and apply aseptic techniques and safety	• Apply appropriate Australian and New Zealand standards for sterilization, including single use instruments • Appropriately scrub, gown and glove • Appropriately prep and drape a sterile field	√	√
1.2 Understand and apply the principles of safe operating theatre protocols	• Prepare, select and care for equipment • Use the WHO surgical safety checklist with its stages of 'sign in', 'time out' and 'sign out' to guide communication interactions in the operating theatre • Comply with the RANZCO Correct Eye Surgery Guidelines to ensure correct patient, correct eye, correct site and correct procedure • Identify hazards in the surgical setting • Verify that the intraocular lens is correct for that patient	√	√
1.3 Plan and prepare appropriately prior to surgery	• Demonstrate scenario planning in surgery • Select the surgical technique relevant to the capacity of the theatre • Discuss with the patient the proposed surgical techniques • Obtain informed consent for surgery from patient • Undertake pre-anaesthetic referral as appropriate • Familiarise yourself with the equipment and layout of the operating theatre • Check operating theatre, ensuring: – Availability of appropriate equipment – Microscope prepared – Operating staff skilled in procedure – Acceptable positioning for surgeon and patient • Identify tasks required • Prepare patient and microscope (if applicable) • Understand the principles of biometry and intraocular lens selection	√	√

1.4 Demonstrate effective communication, professional behaviour and a team-based approach to work in theatre	• Follow current work place protocol for patient safety and communication • Demonstrate capacity to work as an effective team member • Demonstrate respect for the patient and the human eye		√
1.5 Self assess level of surgical competence	• Demonstrate awareness of limitations and act accordingly (including seeking assistance or referring appropriately) • Appropriately assess timing of referral	√	√

BOS2 OPERATING THEATRE INSTRUMENTS AND EQUIPMENT			
LEARNING OUTCOMES	PERFORMANCE CRITERIA	ASSESSMENT	
		Wetlab	**WBA**
2.1 Be familiar with the equipment and layout of the operating theatre	• Operating table • Operating microscope • Phaco machine		√
2.2 Be familiar with commonly used surgical instruments and devices	• Identify commonly used surgical instruments and devices • Explain the use of various instruments for cutting, grasping and manipulating • Demonstrate appropriate handling of each instrument or device	√	√
2.3 Set up and use a surgical microscope	• Switch on and set up the surgical microscope • Adjust the eyepieces and interpupillary distance • Control the zoom and focus, ensure focus is maintained throughout procedures • Centre the axes • Manoeuvre the scope in the X-Y axes • Control the lighting • Avoid the risk of retinal phototoxicity by minimising the length of exposure to the light source, using appropriate filters and tilting the operating microscope	√	√
2.4 Apply principles of ergonomics in operating the surgical microscope	• Consider the patient positioning as related to the microscope • Consider the surgeon positioning and posture • Consider the positioning of the bed		√
2.5 Understand the setup, use and function of phaco-emulsification	• Identify the components of the phaco machine • Demonstrate use and functions of the pedal, pumps, tubing and hand piece	√	√
2.6 Understand the theory and indication for use of ophthalmic lasers	• Explain the principles, use of and safety of ophthalmic lasers	√	√

BOS3 NEEDLES AND SUTURES			
LEARNING OUTCOMES	PERFORMANCE CRITERIA	ASSESSMENT	
		Wetlab	**WBA**
3.1 Be aware of the different properties and use of various sutures and needles	• Identify the properties and indications for specific sutures and needles	√	√

BOS4 ANAESTHESIA			
LEARNING OUTCOMES	PERFORMANCE CRITERIA	ASSESSMENT	
		Wetlab	**WBA**
4.1 Gain and overview of ophthalmic anaesthesia	• Understand the applications of anaesthesia for ophthalmic surgery • Describe the complications of anaesthesia for ophthalmic surgery	√	√
4.2 Perform anaesthesia in consultation with an anaesthetist as appropriate	• Select and administer an ocular anesthetic in consultation with an anesthetist • Apply topical anaesthetics • Administer intracameral anaesthetics • Administer regional anaesthetics		√

BOS5 PERFORMING BASIC OPHTHALMIC SURGERY			
LEARNING OUTCOMES	PERFORMANCE CRITERIA	ASSESSMENT	
		Wetlab	**WBA**
5.1 Perform surgical skills in a wetlab	• Understand the rationale for microsurgery in the wetlab • Show a commitment to practice surgical skills in safe conditions prior to surgery on live patients • Practice and build capability in: – Suturing of both ocular and extra ocular tissues – Wound construction – Tissue manipulation • Use appropriate wetlab models, instruments and sutures to demonstrate wound construction and incisions of 'skin', 'conjunctiva' and 'cornea' • Operate using loupe magnification	√	
5.2 Perform extra-ocular and intra-ocular surgery under supervision, following surgical principles	• Apply surgical requirements appropriate for each for the RANZCO clinical standards • Undertake surgical procedures in a stepwise manner • Respond appropriately to supervisor's interventions • Document surgery and maintain log book including details and management of complications		√
5.3 Demonstrate appropriate pre-, intra- and post-operative care	• Recognise and appropriately manage complications due to anaesthesia • Recognise and appropriately manage other intra-operative complications • If an intra-operative problem has occurred, at the earliest opportunity explain to the patient in plain language that a problem has been encountered and how you plan to deal with it. Involve a relative in the discussion • Appropriately document the surgical procedure • Prescribe appropriate post-operative actions and therapies as applicable • Recognise and appropriately manage complications of surgery in the post operative period • Develop a follow-up and continuing care plan with the patient, taking into consideration any complications		√

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