Microsurgical Training 2020

New Zealand National Eye Centre

for

New Zealand Network

Royal Australian and New Zealand College of Ophthalmologists

Coordinated by:

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BASICS OF OPHTHALMIC SURGERY

Purpose

The RANZCO *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.

The 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 appropriate RANZCO clinical performance standards,

Structure

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

Core Reading (in conjunction with online resources and journal articles):

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.

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).

Educational elements, learning outcomes and performance criteria include:

BOS1 Standard operating protocols, sterile techniques and safety
BOS2 Operating theatre instruments and equipment
BOS3 Needles and sutures
BOS4 Anaesthesia
BOS5 Performing basic ophthalmic surgery

The following list (1-5) provides a *guideline* in relation to stages of learning cataract surgery as developed by the Victorian training program. © Dr Jacqueline Bietz

First Year – Novice to Beginner

1. Prior to Operating

- Be able to consent patients for routine cataract surgery
- Be able to identify names of all instruments on cataract instrument tray
- Describe steps of cataract surgery
- Describe basic principles of phacodynamics
- Describe common types of anaesthesia for ocular surgery
- Describe common complications of cataract surgery
- Demonstrate understanding of "time out procedure"
- Demonstrate ability to prepare and drape the eye
- Demonstrate ability to set up the operating microscope

BASIC microsurgical laboratory experience

A. Demonstrate ability to place multiple single sutures in the wet lab
B. Demonstrate ability to repeatedly perform continuous curvilinear capsulorhexis on Kitaro Kit, and describe rescue techniques
C. Have completed wet /dry /virtual reality training program with adequate assessments
D. Have completed all modules (CAT A-C) on EyeSi Simulator with successful grades
E. Have achieved consistently high grades on cataract challenge (EyeSi)

- Have been signed off by director of training as ready to progress to live surgery

2. Once Operating

- Demonstrate ability to perform team time-out and prep and drape the eye appropriately
- Demonstrate ability to place single sutures through clear corneal wound
- Demonstrate ability to remove viscoelastic and hydrate wounds
- Demonstrate ability to fold and insert IOL into capsular bag
- Demonstrate ability to safely remove cortex
- Demonstrate ability to disassemble and remove the nucleus
- Demonstrate ability to perform continuous curvilinear capsulorhexis
- Use viscoelatic as indicated to maintain AC depth and protect intraocular structures
- Demonstrate ability to perform hydro-dissection
- Demonstrate ability to construct wounds for entry into anterior chamber
- Begin to perform full cataract surgeries <45 minutes

- Perform continuous audit on performance, including complications and refractive outcomes

3. Second Year – Advanced Beginner

- Continue to perform uncomplicated phaco cases in <45 minutes
- Describe steps to convert to ECCE
- Describe technique for anterior vitrectomy
- Perform anterior vitrectomy on EyeSi simulator with successful grades on "anterior vitrectomy challenge"
- Describe steps for operating on more challenging cases
- Demonstrate ability to place sutures proficiently
- Demonstrate understanding of non-technical surgical skills such as forward planning and self-awareness
- Undertake "mind laboratory program"
- Apply principles of phacodynamics and adjust machine settings as required
- Understand selection of viscoelastic
- Understand IOL selection
- Demonstrate ability to perform sub-tenons and peribulbar anaesthesia
- Complete "cataract surgery and phacodynamics" online exam set by director of training and supervisors with adequate grades
- Perform continuous audit on performance, including complications and refractive outcomes

4. Third Year – Competent Surgeon

- Consent patients for complex cataract surgery
- Routinely perform cataract surgeries in <30 minutes
- Demonstrate or understand conversion to ECCE
- Demonstrate ability to perform anterior vitrectomy using EyeSi simulator and in vivo
- Demonstrate or describe principles of alternative IOL placement
- Demonstrate use of iris hooks and/or Malyugin ring
- Demonstrate or understand management of challenging cases such as dense/white cataract, pseudoexfoliation, zonular weakness, small pupil, iris defects, and deep or shallow anterior chambers
- Perform continuous audit on performance, including complications and refractive outcomes

5. Fourth Year – Competent Surgeon, developing Expertise

- Demonstrate ability to continuously improve technical and non-technical surgical skills
- Demonstrate ability to continuously improve and plan for complex cases
- Demonstrate ability to do very efficient cataract surgery
- Demonstrate ability to use capsular tension ring, and knowledge regarding this device
- Demonstrate understanding and ability to use phaco chop techniques
- Demonstrate ability to perform phacoemulsification under topical anaesthesia
- Demonstrate ability to manage a cataract list, including planning, team leadership, independent completion of cases and management of complications and post- operative follow-up.
- Perform continuous audit on performance, including complications and refractive outcomes

Microsurgical laboratory training opportunities

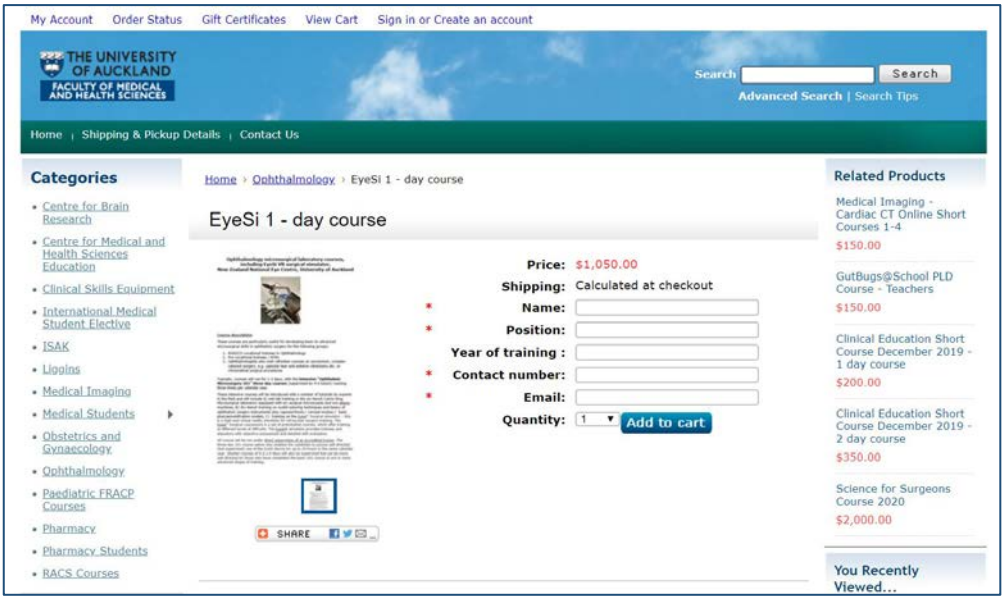
Surgical tutors and wet-lab opportunities are available at all major training sites in New Zealand. In addition structured 2-3 day training courses, augmented by ad-hoc individual training opportunities, will be provided several times per year in the Microsurgical Training Centre based in the Department of Ophthalmology, **New Zealand National Eye Centre, University of Auckland.**

These courses and individual training opportunities include access to, and supervision in the use of, the EyeSi microsurgical simulator for basic microsurgical training, in addition to advanced phacoemulsification and retinal surgical modules. All EyeSi training requires familiarization with equipment, the environment and the EyeSi system and therefore requires supervision by an accredited Tutor (vide infra).

Current tutors include:

TUTOR	LOCATION	EMAIL
Prof Charles McGhee	Auckland	<c.mcghee@auckland.ac.nz>
Dr Rachael Niederer	Auckland	<dr_rachnz@yahoo.co.nz>
Dr Sue Ormonde	Auckland	<sueormonde@xtra.co.nz>
Prof Dipika Patel	Auckland	<dipika.patel@auckland.ac.nz>
Dr Mo Ziaei	Auckland	<mahdi207@yahoo.com>
Dr Antony Bedggood	Christchurch	<abeyedr@gmail.com>
Dr James McKelvie	Hamilton	<james@mckelvie.co.nz>
Dr Michael Merriman	Hamilton	<bmerri05@gmail.com>
Dr Liz Insull	Hawkes Bay	<Liz.Insull@hawkesbaydhb.govt.nz>
Dr Rob Jones	Nelson	<robingjones@gmail.com>
Dr Kenneth Chan	Wellington	<dr.kenneth.chan@gmail.com>
Dr Steve Mackey	Wellington	<steve@mackey.co.nz>

Courses are described below and the link for booking EyeSi and microsurgical courses is: https://store.fmhs.auckland.ac.nz/eyesi-1-day-course/?ctk=53b4b49b-5dcb-4ae2-bf3a-556580411a62



Ophthalmology microsurgical laboratory courses, including EyeSi VR surgical simulator, New Zealand National Eye Centre, University of Auckland

Course description

These courses are particularly useful for developing basic-to-advanced microsurgical skills in ophthalmic surgery for the following groups:

1. RANZCO vocational trainees in Ophthalmology
2. Pre-vocational trainees / NTRs
3. Ophthalmologists who wish refresher courses on uncommon, complex cataract surgery, e.g. capsular tear and anterior vitrectomy etc. or vitreoretinal surgical procedures

Typically, courses will run for 1-3 days, with the **intensive "Ophthalmic Microsurgery 101" three-day courses** (supervised by 4-6 tutors) running three times per calendar year.

These intensive courses will be introduced with a number of tutorials by experts in the field and will include:

A) wet-lab training in the six-bench Calvin Ring Microsurgical laboratory equipped with six surgical microscopes and two phaco-machines,

B) dry-bench training on eyelid suturing techniques and basics of ophthalmic surgery instruments plus capsulorrhexis / corneal incision / basic phacoemulsification models,

C) training on the Eyesi® Surgical simulator – this is a high-end virtual reality simulator for intraocular surgery training. The Eyesi® Surgical courseware is a set of preinstalled courses, which offer training at different levels of difficulty. The Eyesi® simulator provides trainees and educators with objective assessment and detailed skill evaluation.

All courses will be run under direct supervision of an accredited trainer. The three-day 101 course option also enables the candidate to pursue self-directed (but supervised) use of the EyeSi device for up to 20 hours in the same calendar year.

Shorter courses of 0.5-2.0 days will also be supervised but can be more self-directed by those who have completed the basic 101 course or are in more advanced stages of training.

Booking process:

1. Confirm availability course and EyeSi unit:

    a. e-mail Maree McInerney m.mcinerney@auckland.ac.nz with date/time request
    b. Maree will send confirmation if EyeSi available as per request and reserve
    c. Book trainer/supervisor either from UoA or organise from your own region –trainer **must** be certified on EyeSi
    d. Register for course: advertised 2-3 day courses or individual 4-8 hour use.

2. On-line registration:

    a. https://store.fmhs.auckland.ac.nz/eyesi-1-day-course/?ctk=53b4b49b-5dcb-4ae2-bf3a-556580411a62
    b. Confirm chosen microsurgical or individual course 0.5, 1.0, 2.0 or 3.0 days
    c. Confirmation of payment is sent to Dept. of Ophthalmology and participant such that this can be reclaimed as a RANZCO related course
    d. Maree will also confirm booking

3. Required Participant information for course provision:

    Name:
    Position:
    Year of training if appropriate:
    Contact phone number:
    Contact e-mail

Microsurgical Course Options	Cost (incl. GST)
3 day (101A Microsurgery)*	$2970
2 day (101B Microsurgery	$1950
1 days (Individual)	$1050
0.5 day (individual)	$570
The 101 microsurgical course includes an additional 20 hours of individual access to the EyeSi simulator	

4. Access to EyeSi VR Simulator following appropriate registration:

    a. Available 9-5pm Monday to Friday, excluding public holidays
    b. Maximum number of users is eight for the 101 three day course
    c. Access will provided by U of A staff or by temporary access cards
    d. Parking is user's responsibility – there is no on-site parking available

In addition to tutor supervision technical support will be provided by:

Jie Zhang, Senior Postgraduate fellow: j.zhang@auckland.ac.nz
Joyce Mathan. Doctoral Research Fellow j.mathan@aucklan.ac.nz