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Curriculum Standards
April 2008

Anatomy



The Royal Australian and New Zealand
College of Ophthalmologists



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Purpose

These standards specify the knowledge of anatomy required for the safe practice of ophthalmology. It is expected that a specialist ophthalmologist has an advanced knowledge of FOUR key elements: (i) the anatomy of the eyeball, (ii) the anatomy of the orbit and ocular adnexa, (iii) neuroanatomy and (iv) anatomical imaging.

It is the objective that a standard of ophthalmic anatomical knowledge be learned and examined early within the ophthalmology training program, with this knowledge acting as a foundation upon which ophthalmic clinical practice and surgery develop.

The focus of each of these elements in the standard is to emphasise those anatomical concepts and details which are required for ophthalmic clinical practice. The breadth of study of anatomy focuses on its relevance to clinical ophthalmology.

Structure

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

Assessment Method

- 3 Hour Written Exam
- Ophthalmic Science Practical Examination (OSPE)

Including: Short answer questions, very short answer questions, essays and OSPE. Candidates will

be required to demonstrate how anatomical knowledge is applied in clinical practice through interpreting, connecting and extrapolating from information provided through:

- Anatomical specimens
- Cross sectional anatomy specimens
- Cross sectional specimens of head and neck and neuroanatomy
- Gross anatomy photographs
- Photo-micrographs
- Imaging studies (as describe in element 4 below)

Clinical scenarios will be utilised when appropriate

Core Reading

- Snell RS, Lemp MA. Clinical Anatomy of the Eye, 2nd ed. Malden, MA: Blackwell Science;1998.
- Jinkins JR. Atlas of neuroradiologic embryology, anatomy and variants, Philadelphia: Lippincott, Williams and Wilkins 2000.

Chapter 4 (pp. 427-455) The Orbit.



This chapter has been included as an Acrobat PDF file (OrbitImaging.pdf) on the CD-ROM sent to all trainees as part of the induction material

- Dutton JJ. Atlas of clinical and surgical orbital anatomy, Philadelphia: WB Saunders 1994.

Chapter 6: the connective tissue system.



This chapter has been included as an Acrobat PDF file (Connective.pdf) on the CD-ROM sent to all trainees as part of the induction material

Learning Outcomes	Performance Criteria
A1 The Eyeball (Snell Ch 1, 6, 7)	
<p>1.1 Apply knowledge of the gross anatomy, histology, embryology, vascular supply and innervation of the tunics of the eye</p>	<ul style="list-style-type: none"> • Cornea • Sclera • Limbus • Anterior chamber • Trabecular meshwork • Uveal tract • Bruch's membrane • Lens and zonules • Vitreous • Retina • Optic nerve head and nerve fibre layer
A2 Orbit and Ocular Adnexa (Snell Ch 1, 3, 4, 5, 8, 9; Dutton)	
Apply knowledge of the gross anatomy, histology and embryology of the orbit and its contents	
<p>2.1 Bony Orbit</p>	<ul style="list-style-type: none"> • Walls of orbit
<p>2.2 Orbital Contents</p>	<ul style="list-style-type: none"> • Nerves of the orbit • Vascular supply and venous drainage of the orbit and contents • Orbital fascia and ligaments (Ref: Dutton JJ)
<p>2.3 Extra Ocular Muscles and Movements</p>	<ul style="list-style-type: none"> • Extra-ocular muscles including specific aspects of structure, attachments and actions
<p>2.4 Eyelids</p>	<ul style="list-style-type: none"> • The anatomy of the eyelid, including vascular supply, innervation, lymphatics and accessory glands • Conjunctiva
<p>2.5 Lacrimal apparatus</p>	<ul style="list-style-type: none"> • Lacrimal glands • Lacrimal drainage

Learning Outcomes	Performance Criteria
<p>2.6 Periorbital Structures</p>	<ul style="list-style-type: none"> • Paranasal sinuses • Lateral wall of nose • Nerves and vessels of nose • Pterygopalatine fossa • Infra temporal fossa (communication with orbit) • Intracranial – extracranial arterial & venous anastomoses • Carotid artery system: common, external, internal carotid arteries and their principle branches • Scalp
<p>A3 Neuroanatomy (Snell 1, 10-13)</p>	
<p>3.1 Visual Pathways and associated structures Apply knowledge of the gross anatomy and blood supply of the visual pathways</p>	<ul style="list-style-type: none"> • Visual pathway: <ul style="list-style-type: none"> • Optic nerve • Chiasm • Optic tract and lateral geniculate nucleus • Optic radiations • Primary and associated visual cortices • Superior colliculus and connections • Other visual cortices • Effects of lesions on vision and visual fields • Cerebral hemisphere
<p>3.2 Cranial Nerves Apply knowledge of the gross anatomy of the cranial nerves</p>	<ul style="list-style-type: none"> • Cranial nerves <ul style="list-style-type: none"> • Olfactory • Optic • Oculomotor • Trochlear • Trigeminal • Abducens • Facial • Vestibulo-cochlear (as applied to ocular reflexes) • Accessory (as applied to ocular reflexes)
<p>3.3 Brain Stem and Ocular Reflexes Apply knowledge of the anatomy of the brain stem pathways</p>	<ul style="list-style-type: none"> • Control of eye movements • Ocular reflexes • Brain stem and cerebellum • Cervical Spinal cord

Learning Outcomes	Performance Criteria
<p>3.4 Autonomic Nervous System Apply knowledge of the gross anatomy of the autonomic nervous system</p>	<ul style="list-style-type: none"> • Central and peripheral autonomic nervous system
<p>3.5 Skull and Cranial Contents Apply knowledge of the gross anatomy of the skull and cranial contents.</p>	<ul style="list-style-type: none"> • Bones of the skull • Meninges • Dural venous sinuses • The cavernous sinus and its contents • Pituitary fossa and contents
<p>A4 Imaging (Snell Ch 2,3,7) (Jenkins JR Ch 4)</p>	
<p>4.1 Interpret clinical images of ocular-related anatomy</p>	<ul style="list-style-type: none"> • Angiography (cerebral and orbital) • X Ray • CT • MRI/MRA/MRV • Ultrasound of eye and orbit (A scan, B scan, ultrasound biomicroscopy (UBM))
<p>4.2 Interpret clinical images of the normal eye</p>	<ul style="list-style-type: none"> • Ocular photographs • Gonioscopy • Ocular Coherence Tomography (OCT) of the normal retina • Confocal Microscopy of the cornea • Retinal Fluorescein angiogram