



**The Royal Australian and New Zealand
College of Ophthalmologists**

A.C.N. 000 644 404

94 – 98 Chalmers Street, Surry Hills, N.S.W. 2010
AUSTRALIA

Telephone: +61 2 9690 1001

Facsimile: +61 2 9690 1321

E-mail: ranzco@ranzco.edu

<http://www.ranzco.edu>

Paediatric Standards

August 2004

This standard has been prepared by the College and is in the public domain. Please acknowledge authorship when using or quoting from material contained in this document.

Table of Contents

Acknowledgements.....	3
Curriculum Committee.....	3
Working Party Members.....	4
HOW TO READ AND USE THE CLINICAL CURRICULUM PERFORMANCE STANDARDS.....	6
What Are Clinical Curriculum Performance Standards?.....	6
Format and Style of Clinical Curriculum Performance Standards.....	6
Sample Curriculum Performance Standard.....	7
P1 Paediatric Eye Examination.....	8
P2 Retinoblastoma.....	11
P3 Uveitis.....	13
P4 Paediatric Glaucoma.....	16
P5 Lens Abnormalities – Cataracts and Subluxation of the Lens.....	19
P6 Paediatric Retinal Diseases.....	24
P7 Paediatric Neuro-ophthalmology.....	26
P8 Paediatric Systemic Diseases with Ocular Involvement.....	28
P9 Amblyopia.....	30
P10 The Apparently Blind Infant.....	31
P11 Accidental and Non-Accidental Eye Injury.....	32
P12 Learning Disabilities.....	34
P13 Visual Electro Physiology.....	35
Range of Variables.....	36
Scope of Work.....	36
Evidence Guide.....	37
A Critical Aspects of Assessment Evidence.....	37
B Interdependency of Units.....	37
C Knowledge and Skills.....	37
D Resource Implications.....	39
Core Reading.....	40
E Consistency of Performance.....	40

Acknowledgements

The College thanks the members of the Curriculum Committee who co-ordinated this two year standards development project. The College also thanks all members of working parties and peer reviewers who gave their time to work on this project.

Curriculum Committee

Dr Con Moshegov (Chairman)

Dr James La Nauze

Dr Simon Permezel

Dr Mark Renehan

Working Party Members

Dr Allan Bank	Dr Michael Goggin	Professor Anthony Molteno
Dr Ross Bengier	Associate Professor Glen Gole	Dr Justin Mora
Dr Michael Branley	Dr Ken Gullifer	Dr Con Moshegov
Dr Malcolm Capon	Dr Bruce Hadden	Dr Phillip Myers
Dr Theresa Casey	Dr Anthony Hall	Dr Justin O'Day
Dr Mark Chegade	Dr Ralph Higgins	Dr Simon Permezel
Dr Peter Cohen	Dr Alan Hilton	Dr Con Petsoglou
Dr Doug Cox	Dr Alex Hunyor Jnr	Dr Joe Reich
Dr Peter Cranstoun	Dr Margaret Kearns	Dr Mark Renehan
Dr Guy D'Mellow	Dr Ian Kennedy	Dr Peter Ring
Dr Mark Daniell	Dr Peter Macken	Dr Gary Schiller
Dr John Dickson	Associate Professor David Mackey	Dr Diana Semmonds
Dr Craig Donaldson	Dr Wendy Marshman	Dr James Smith
Dr Anthony Dunlop	Associate Professor Frank Martin	Dr Denis Stark
Dr David Ehrlich	Dr Peter Martin	Dr Mark Steiner
Dr Sid Finnigan	Professor Charles McGhee	Dr Walford Thyer
Dr Ross Fitzsimons	Dr David McKay	Dr Michael Waldie
Dr Graham Fraenkel	Dr Kerrie Meades	Dr Kristen Wells
Dr Fiona Fullerton	Dr Robyn Meusemann	Dr Stephanie Young
Dr Raf Ghabrial	Dr John Milverton	

Peer Reviewers

Dr Ross Agnello	Dr Diane Hartley	Dr Rob Paul
Dr Andrew Apel	Dr Oded Hauptman	Dr Simon Permezel
Dr Maged Atalla	Dr Tim Henderson	Dr Alex Poon
Dr Andrew Atkins	Dr Greg Horowitz	Dr Grant Raymond
Dr Paul Badenoch	Dr Alex Hunyor Snr	Dr Tim Roberts
Dr Sara Booth-Mason	Dr Ian Hurley	Dr David Robinson
Dr Fabian Burgess	Dr Chris Kennedy	Dr Chris Rogers
Dr Malcolm Burvill	Dr Geoff Lam	Dr Julian Sack
Dr Susan Carden	Dr Sam Lerts	Dr Jennifer Sandbach
Dr Dharmendran Chelvanayagam	Dr Cecilia Ling	Dr Allan Simpson
Dr James Chen	Dr Ross Littlewood	Dr Richard Smith
Dr Michael Coote	Dr Pat Lockie	Dr Grant Snibson
Associate Professor Helen Danesh-Meyer	Dr Jeff Long	Dr Rick Stawell
Dr Mark Daniell	Dr Michael Loughnan	Associate Professor Tim Sullivan
Dr John Dickson	Dr Wendy Marshman	Dr Gerard Sutton
Dr Catherine Dunlop	Dr Peter Martin	Dr Christine Tangas
Dr John Elder	Dr Kathy McClellan	Dr Mei-Ling Tay-Kearney
Dr Dick Galbraith	Dr Peter McCluskey	Dr Dzung Vu
Dr William Gillies	Dr Alan McNab	Dr Mark Walland
Dr Antonio Giubilato	Dr Richard Mills	Dr William Ward
Dr Bruce Hadden	Dr William Morgan	Dr Steve Wiffen
Dr Geoff Harley	Dr Con Moshegov	Dr David Workman

Project Manager

Victoria Baker-Smith

Workshop Facilitators

Victoria Baker-Smith
Dario Tomat

HOW TO READ AND USE THE CLINICAL CURRICULUM PERFORMANCE STANDARDS

What Are Clinical Curriculum Performance Standards?

Clinical Curriculum Performance Standards are a written statement of the competencies required for effective performance in the workplace. A competency specifies the knowledge, skills, and behaviours required for ophthalmology, and the application of these at the standard required in the clinical or hospital setting.

Format and Style of Clinical Curriculum Performance Standards

Clinical curriculum performance standards use a particular format and style of language. This document will assist you to understand the various terms used in the documents.

RANZCO has used the following format to document its standards:

Item	What is it?	Example from Glaucoma Standards (see following page where these items have been labelled on a sample standard)
Unit Title	A unit title refers to a competency that can logically stand alone when applied in the work setting.	Characterise Glaucoma
Unit Number	The number of the unit of competency	GL 4
Unit Description	The unit description expands on the information provided in the unit title.	Description: This standard covers the classification of types of glaucoma, and making a working and differential diagnosis. Work is to be performed with total autonomy.
Elements	Elements of competency provide more information about the key purpose of the unit. They describe actions or outcomes that are demonstrable and assessable.	GL 4.1 Characterise risk factors for glaucoma.
Performance Standards	Performance standards specify what is assessed and the required level of performance. They specify the activities, skills, knowledge and understanding that provide the evidence of competent performance.	GL 4.1.1 Identify and prioritise risk factors including ocular hypertension and distinguish these from glaucoma.
Range of Variables	The Range of Variables specifies the range of contexts and conditions to which the performance criteria apply.	See back section of Glaucoma standards.
Evidence Guide	The evidence guide guides assessment of the unit of competency. It relates directly to the performance standards and range statement.	See back section of Glaucoma standards.

Reference: Information in the table above is based on the Australian National Training Authority's *Training Package Development Handbook*.

Sample Curriculum Performance Standard

Unit Number

GL 4

Unit Title

Characterise Glaucoma

Description**Description**

This standard covers the classification of types of glaucoma, and making a working and differential diagnosis. Work is to be performed with total autonomy.

Elements***Performance Standards***

Elements		Performance Standards	
GL 4.1	Characterise risk factors for glaucoma	GL 4.1.1	Identify and prioritise risk factors including ocular hypertension and distinguish these from glaucoma.
GL 4.2	Characterise primary glaucoma	GL 4.2.1	Identify primary open and closed angle glaucomas.
GL 4.3	Characterise secondary glaucoma	GL 4.3.1	Identify the causes and varieties of secondary glaucoma.
GL 4.4	Characterise congenital and developmental glaucoma	GL 4.4.1	Identify congenital glaucoma
		GL 4.4.2	Identify glaucoma associated with developmental disorders
GL 4.5	Perform a differential diagnosis	GL 4.5.1	Differentiate between glaucoma and other conditions causing visual field loss or optic nerve abnormalities including congenital anomalies.

P1 Paediatric Eye Examination

Description

This unit covers the processes for observing, prompting and recording an adequate medical history as the preliminary preparation for diagnosis and treatment of paediatric eye conditions. The practitioner is to perform this work with a high degree of autonomy and responsibility for accuracy and completeness.

Elements		Performance Standards	
P1.1	Obtain a general and ocular history from parents	P1.1.1	Demonstrate capacity to build rapport with parents and the child
		P1.1.2	During history taking provide prompts or questioning to elicit: <ul style="list-style-type: none"> • What problem prompted the referral? • Do the parents feel there is a problem with the child's vision? • Is the child otherwise healthy? • Were there pre or peri natal problems? • What has the child's general developmental history been? • Have the various visual development millstones been achieved?

Elements	Performance Standards
P1.2 Assess visual acuity	<p>P1.2.1 Undertake tests appropriate for the child's age and condition</p> <p>Infants/preverbal children:</p> <ul style="list-style-type: none"> • Nystagmus • Quality of fixation with large and small objects • Preferential looking • Smiling • Involuntary movement • Vestibular ocular reflex <p>Toddlers:</p> <ul style="list-style-type: none"> • 100's and 1000's and smarties • Lea symbols • Fixation • 6 prism dioptre base down test or 20 dioptre base out <p>Preschool:</p> <ul style="list-style-type: none"> • Sheridan-Gardner test • Stereopsis • Kay pictures <p>Primary School</p> <ul style="list-style-type: none"> • Stycar letters • Snellen visual acuity chart
P1.3 Assess visual fields	<p>P1.3.1 Undertake confrontational testing for visual fields using behavioural techniques</p> <p>P1.3.2 Identify field defects and infer anatomical location of defect</p>
P1.4 Assess colour vision	<p>P1.4.1 Test for colour vision using aids appropriate to age:</p> <ul style="list-style-type: none"> • Ishihara pseudoisochromatic plates (winding lines and numbers)
P1.5 Assess ocular motility	<p>P1.5.1 Observe motility and detect abnormal responses using tests suitable for the age of the child:</p> <ul style="list-style-type: none"> • Cover tests: including cover-uncover, alternate, prism-alternate, simultaneous prism • Krimsky test • Supra nuclear reflexes (doll's head) • Bruckner reflex test • Hirshberg test • 4 dioptre base out test • Ductions and versions in 9 positions of gaze • Eye alignment in right and left forced head tilt.

Elements		Performance Standards	
P1.6	Assess binocular vision	P1.6.1	Test binocular vision by undertaking tests appropriate for the child's age and condition: <ul style="list-style-type: none"> • Lang and Firsby (< 5 years) • Titmus fly, Randot stereopsis (5 to 8 years) • Worth 4 dot, Bagolini glasses and synoptophore (> 8 years) • Fusional amplitudes
P1.7.	Undertake ocular examination	P1.7.1	Examine the ocular adnexa to detect: <ul style="list-style-type: none"> • Pseudostrabismus • Ptosis • Pseudoptosis
P1.8	Undertake pupil examination	P1.8.1	Detect abnormalities on pupil examination including: <ul style="list-style-type: none"> • Pupil shape • Iris colour • Direct and consensual light reflexes • Paradoxical pupil reaction • Anisocoria
P1.9	Assess intraocular pressure	P1.9.1	Use suitable testing techniques (including EUA) to measure IOP and determine whether normal or abnormal: <ul style="list-style-type: none"> • Tonopen • Perkins tonometer (< 12 months) • Keeler pulse air tonometer (<5 years) • Goldmann tonometer (> 5 years)
P1.10	Examine eye	P1.10.1	Perform slit lamp examination to detect: <ul style="list-style-type: none"> • Anterior segment defects • Iris transillumination • Cataract type/position
		P1.10.2	Use indirect ophthalmoscope and suitable illumination to detect abnormalities in the retina optic nerve, eg. Hypoplasia)

P2 Retinoblastoma

Description

This unit covers the processes for recognizing, treating and counselling paediatric patients with retinoblastoma. The practitioner is to perform this work with a high degree of autonomy and responsibility for accuracy and completeness. A demonstration of appropriate interpersonal skills in interacting with the patient and family is required.

Elements		Performance Standards	
P 2.1	Recognise potential cases of retinoblastoma	P2.1.1	Identify common presentations of retinoblastoma including the significance of leukocoria
		P2.1.2	Differentiate retinoblastoma from the following: <ul style="list-style-type: none"> • Persistent hyperplastic primary vitreous (PHPV) • Cataract • Retinopathy of prematurity • Toxocariasis • Retinochoroidal coloboma • Uveitis • Coats disease • Vitreous haemorrhage • Retinal dysplasia • Tumours other than retinoblastoma • Retinal detachment • Myelinated nerve fibres
		P2.1.3	Demonstrate capacity to identify each entity that might be present and choose the correct management techniques for that entity
P2.2	Undertake investigation of potential retinoblastoma	P2.2.1	Conduct or order examinations under anaesthesia including: <ul style="list-style-type: none"> • CT scan • MRI • Lumbar puncture • Bone marrow aspiration • B Scan Ultra sound
		P2.2.2	Conduct examination of other family members
		P2.2.3	Recognise histopathological features of retinoblastoma

Elements		Performance Standards	
P2.3	Apply appropriate treatment	P2.3.1	Follow hospital policies and procedures to obtain informed consent from the parent/guardian
		P2.2.2	Evaluate and select appropriate treatment including: <ul style="list-style-type: none"> • Chemotherapy • Laser surgery • Cryotherapy • Radiation <ul style="list-style-type: none"> plaque external beam • Enucleation
P2.4	Counsel carers and child	P2.4.1	Provide prognosis including: <ul style="list-style-type: none"> • Mortality • Secondary tumour potential • Morbidity due to treatment
		P2.4.2	Provide preliminary genetic counselling to family
		P2.4.3	Refer family to an expert eg. clinical geneticist
		P2.4.4	Follow up for patient and other family members

P3**Uveitis****Description**

This unit covers the processes for identifying and managing uveitis of the anterior, intermediate and posterior segments. The practitioner is to perform this work with a high degree of autonomy and responsibility for accuracy and completeness.

A demonstration of appropriate interpersonal skills in interacting with the patient and family is required

Elements		Performance Standards	
P3.1	Assess factors associated with onset of anterior uveitis.	P3.1.1	Identify risk factors from patient history: <ul style="list-style-type: none"> • Juvenile rheumatoid arthritis • Family history • Positive anti nuclear antibodies (ANA) test (esp in females) • Negative rheumatoid factor • Trauma • Sarcoidosis • Herpes • Kawasaki disease • Systemic disease • Extra-ocular manifestations of immune disease
P3.2	Identify clinical signs/complications of anterior uveitis	P3.2.1	Correctly diagnose indicators of uveitis: <ul style="list-style-type: none"> • Anterior chamber cells and flare • Keratic precipitates • Posterior synechiae • Band keratopathy • Cataract • Hypotony • Glaucoma
P3.3	Monitor at risk children	P3.3.1	Know recommended follow up intervals
		P3.3.2	Identify evidence of improvement or deterioration in the patient and revise management plan accordingly.
P3.4	Assess factors associated with presentation of intermediate uveitis	P3.4.1	Identify risk factors from patient history: <ul style="list-style-type: none"> • Family history • Multiple sclerosis • Sarcoidosis • Inflammatory bowel disease • Lyme disease • Toxocariasis • Intraocular lymphoma • Whipple's disease • Amyloidosis

Elements	Performance Standards
P3.5 Identify clinical signs of intermediate uveitis	P3.5.1 Identify indicators of intermediate uveitis: <ul style="list-style-type: none"> • Pars planitis • Cells in vitreous • Snowbanking • Cystoid macular oedema • Posterior sub-capsular cataract • Glaucoma • Optic nerve swelling
P3.6 Assess factors associated with presentation of posterior uveitis	P3.6.1 Identify source of posterior uveitis: <ul style="list-style-type: none"> • Toxoplasmosis: • Congenital or acquired toxocariasis <ul style="list-style-type: none"> Posterior pole granuloma Other parasitic infections (eg POHS) • VKH (Vogt Koyanagi-Harada Syndrome)
P3.7 Identify clinical signs of posterior uveitis	P3.7.1 Optic neuritis: <ul style="list-style-type: none"> • Macular oedema • Vitreous opacities P3.7.2 Differentiate: <ul style="list-style-type: none"> • Toxoplasmosis • Toxocariasis • VKH
P3.8 Undertake relevant investigations for uveitis	P3.8.1 Select, initiate and assess the results from the appropriate investigations for uveitis: <ul style="list-style-type: none"> • Anti-nuclear factor • Full blood count • ESR • ACE • Calcium • C-reactive protein • HLA status • Toxocara antibodies • Toxoplasmosis antibodies • HIV screening • Syphilis screening • Mantoux test • Diagnostic imaging • Eosinophil count • Mantoux test • HIV serology

Elements		Performance Standards	
P3.9	Implement appropriate management	P3.9.1	Follow standard protocols to obtain informed consent from the parent/guardian
		P3.9.2	Evaluate and select appropriate treatment including: <ul style="list-style-type: none"> • Topical steroids • Topical or periocular steroids • Mydriatics • Treatment for band keratopathy • Treatment for cataracts • Non-steroidal anti-inflammatory drugs • Systemic treatment including: <ul style="list-style-type: none"> steroids immunosuppressants cryotherapy referral to immunologist
		P3.9.3	Monitor patient for side effects of treatment including glaucoma
P3.10	Counsel carers and child	P3.10.1	Provide prognosis for vision
		P3.10.2	Follow up for patient and other family members where appropriate

P4 Paediatric Glaucoma

Description

This unit covers the processes for identifying, diagnosing and managing paediatric glaucoma using either surgical or non-surgical treatment. The practitioner is to perform this work with a high degree of autonomy and responsibility for accuracy and completeness. A demonstration of appropriate interpersonal skills in interacting with the patient and carers is required.

Elements	Performance Standards
P4.1 Identify clinical signs of paediatric glaucoma	P4.1.1 Diagnose signs of congenital glaucoma: Infants: <ul style="list-style-type: none"> • Buphthalmos • Enlargement/clouding/opacity/oedema of the cornea • Photophobia • Epiphora • Blepharospasm • Syndromes: <ul style="list-style-type: none"> Sturge Weber syndrome Aniridia Neurofibromatosis P4.1.2 Diagnose indicators of juvenile glaucoma: Older Children: <ul style="list-style-type: none"> • Visual failure • Syndromes: <ul style="list-style-type: none"> Sturge Weber syndrome Aniridia Neurofibromatosis

Elements	Performance Standards
	<p>P4.1.3 Differentiate childhood glaucoma from:</p> <ul style="list-style-type: none"> • Congenital nasolacrimal duct obstruction • Corneal epithelial defect/abrasion • Ocular inflammation (uveitis, trauma) • Corneal dystrophy especially congenital hereditary endothelial dystrophy • Birth trauma with Descemet's tears • Storage disease (Mucopolysaccharidosis) • Cystinosis • Congenital anomalies • Sclerocornea • Peter's anomaly • Maternal rubella • Herpetic keratitis • Axial myopia • Megalocornea • Physiologic optic nerve cupping • Optic nerve coloboma • Optic atrophy • Optic nerve hypoplasia
<p>P4.2 Undertake relevant investigations for glaucoma</p>	<p>P4.2.1 Perform eye examinations, interpret the results and identify their relevance to the diagnosis of glaucoma</p> <p>P4.2.2 Obtain and interpret the results of IOP results taken under anaesthetic</p>

Elements		Performance Standards	
P4.3	Develop and implement a management plan	P4.3.1	Identify the indications and contra-indications of treatment options including: Medical: <ul style="list-style-type: none"> • Beta blockers • Carbonic anhydrase inhibitors • Prostaglandin analogues Surgical: <ul style="list-style-type: none"> • Goniotomy • Trabeculotomy • Trabeculectomy • Implant surgery • Cycloablation
		P4.3.2	Consult as appropriate with other paediatric specialists and geneticist
		P4.3.3	Determine a management plan appropriate for the age and condition of patient
		P4.3.4	Explain proposed management plan to patient/parents
		P4.3.5	Follow standard protocols to obtain informed consent from the parent/guardian
		P4.3.6	Implement plan observing the following: Non surgical: <ul style="list-style-type: none"> • Monitor patient to identify changes in condition or detect side effects of medications and adjust plan as appropriate Surgical: <ul style="list-style-type: none"> • Choose appropriate procedures • Observe the correct steps throughout the operation • Anticipate and deal with peri-operative problems • Conduct operation to successful conclusion
		P4.3.7	Undertake post-operative care and check for the potential of short-term or long-term complications
		P4.3.8	Manage visual rehabilitation
		P4.3.9	Provide counseling for parents
		P4.3.10	Provide on-going follow up

P5 Lens Abnormalities – Cataracts and Subluxation of the Lens

Description

This unit covers the processes for identifying, diagnosing and managing childhood cataracts and subluxation of the lens using surgical and non-surgical treatments. The practitioner is to perform this work with a high degree of autonomy and responsibility for accuracy and completeness. A demonstration of appropriate interpersonal skills in interacting with the patient and family is required.

Elements	Performance Standards
P5.1 Assess aetiology of cataract	<p>P5.1.1 Identify possible aetiology of paediatric cataracts from patient history, ocular examination findings and laboratory studies:</p> <p>Bilateral cataracts</p> <ul style="list-style-type: none"> • Idiopathic • Hereditary without systemic disease <ul style="list-style-type: none"> Autosomal dominant Autosomal recessive X-linked • Genetic, metabolic and systemic disease and syndromes <ul style="list-style-type: none"> Hallermann–Streiff syndrome Lowe oculocerebrorenal syndrome Smith-Lemli-Opitz syndrome Galactosaemia Hypoglycaemia Down syndrome Edward syndrome Patau syndrome Alport syndrome Myotonic dystrophy Fabry disease Hypoparathyroidism Marfan syndrome Pseudo hypoparathyroidism Conradi syndrome Diabetes mellitus Peroxisomal disorders Wilson's disease

Elements	Performance Standards
	<ul style="list-style-type: none"> • Maternal infection <ul style="list-style-type: none"> Rubella Cytomegalovirus Varicella Toxoplasmosis Herpes simplex • Ocular abnormalities <ul style="list-style-type: none"> Aniridia Anterior segment dysgenesis Microphthalmia PHPV Posterior lenticonus
	<p>Unilateral cataracts</p> <ul style="list-style-type: none"> • Idiopathic • Ocular abnormalities <ul style="list-style-type: none"> Posterior lenticonus Persistent hyperplastic primary vitreous Anterior segment dysgenesis Posterior pole tumours • Traumatic • Intrauterine infection (rubella)
P5.2 Classify and describe paediatric cataracts	<p>P5.2.1 Correctly document the location and morphologic characteristics of cataracts to establish a specific diagnosis and identify types of cataracts that may progress including:</p> <ul style="list-style-type: none"> • Posterior lenticonus • Persistent hyper plastic primary vitreous • Lamellar • Anterior and posterior sub capsular
P5.3 Undertake relevant systemic investigations for paediatric cataracts	<p>P5.3.1 Select, initiate and assess the results from the appropriate investigations:</p> <ul style="list-style-type: none"> • Ocular physical examination • Paediatric physical examination • Pathology tests (if indicated): <ul style="list-style-type: none"> TORCH titre Syphilis serology Urine (reducing substances and amino acids) Red Cell galactokinase and GIP uridyl transferase Calcium and phosphorus

Elements	Performance Standards
<p>P5.4 Implement appropriate management of paediatric cataract</p>	<p>P5.4.1 Follow standard protocols to obtain informed consent from the parent/guardian</p> <p>P5.4.2 Assess the risk of amblyopia associated with delaying surgery</p> <p>P5.4.3 Consult as appropriate with other paediatric specialists and geneticist</p> <p>P5.4.4 Evaluate and select appropriate treatment and precautions</p> <p>P5.4.5 Awareness of age in relation to implantation of IOL's into children</p> <p>P5.4.6 Non-surgical treatments:</p> <ul style="list-style-type: none"> • Patching • Pupil Dilatation <p>P5.4.7 Surgery:</p> <ul style="list-style-type: none"> • Lensectomy • Vitrectomy • Intra-ocular lens implantation • Choose appropriate procedures <p>Observe the correct steps throughout the operation</p> <p>Anticipate and deal with peri-operative problems</p> <p>Conduct operation to successful conclusion</p> <p>Undertake post-operative care and check for the potential for short-term or long-term complications</p> <p>Monitor refractive changes in pseudophakic eyes</p> <p>P5.4.8 Manage visual rehabilitation including contact lens fitting and management of contact lens related problems</p> <p>P5.4.9 Provide counselling for parents</p> <p>P5.4.10 Understand need for life long surveillance for glaucoma after infantile cataract surgery</p>

Elements	Performance Standards
P5.5 Assess aetiology of lens subluxation	P5.5.1 Identify aetiology of subluxation from patient history, ocular examination findings and laboratory studies: <ul style="list-style-type: none"> • Ocular causes: <ul style="list-style-type: none"> Autosomal dominant Trauma Aniridia Ecotopia lentis et pupillae Idiopathic Coloboma • Systemic syndromes: <ul style="list-style-type: none"> Marfan syndrome Homocystinuria Weill-Marchesani syndrome Sulfite oxidase deficiency Hyperlysinemia
P5.6 Undertake relevant systemic investigations for lens subluxation	P5.6.1 Select, initiate and assess the results including evaluation of significance of subluxation from the appropriate investigations: <ul style="list-style-type: none"> • Ocular physical examination: <ul style="list-style-type: none"> Visual acuity External ocular examination Anterior segment including measurement of anterior chamber depth and iridocorneal angle Retinoscopy/refraction Ultrasound Keratometry Posterior segment • Paediatric physical examination <ul style="list-style-type: none"> Referral to cardiologist when appropriate • Pathology tests: <ul style="list-style-type: none"> Urine (amino acids) X-ray measurement of hands (brachydactyly)

Elements	Performance Standards
P5.7 Implement appropriate management of lens subluxation	P5.7.1 Follow hospital policies and procedures to obtain informed consent from the parent/guardian P5.7.2 Assess the risk of amblyopia associated with delaying surgery P5.7.3 Consult as appropriate other paediatric specialists including geneticist and/or cardiologist P5.7.4 Evaluate and select appropriate treatment and precautions including: <ul style="list-style-type: none"> • Non-surgical treatments <ul style="list-style-type: none"> Phakic correction Contact lenses • Laser treatment • Surgery <ul style="list-style-type: none"> Lensectomy/vitreotomy Intra-ocular lens implantation Choose appropriate procedures <ul style="list-style-type: none"> • Observe the correct steps throughout the operation • Anticipate and deal with peri-operative problems • Conduct operation to successful conclusion • Undertake post operative care and check for the potential of short-term or long-term complications P5.7.5 Manage visual rehabilitation P5.7.6 Provide counseling for parents including understanding contact lens fitting and management of contact lens related problems P5.7.7 Provide long term follow up

P6 Paediatric Retinal Diseases

Description This unit covers the processes for identifying and managing retinal diseases using non-surgical treatments, laser and surgery. The practitioner is to perform this work with a high degree of autonomy and responsibility for accuracy and completeness. A demonstration of appropriate interpersonal skills in interacting with the patient and carers is required.

Elements	Performance Standards
P6.1 Assess aetiology of paediatric retinal disease	P6.1.1 Identify aetiology from patient history, ocular examination findings and laboratory studies: <ul style="list-style-type: none"> • Retinopathy of prematurity • Coats' disease • Retinal hemorrhages • Stargardt disease • Best disease • Retinitis pigmentosa • Leber congenital amaurosis • Choroideremia • Gyrate atrophy • Cone disorders (including rod monochromatism) • Congenital stationary night blindness • Vitreoretinal dystrophies
P 6.2 Undertake relevant investigations for retinal diseases	P 6.2.1 Select, initiate and assess the results from the appropriate investigations including observing appropriate precautions with dilation: <ul style="list-style-type: none"> • Ocular physical examination • ERG/EOG • Fluorescein angiogram • Genetic testing • Testing for metabolic disease

Elements	Performance Standards
P6.3 Implement appropriate management	P6.3.1 Follow standard protocols to obtain informed consent from the parent/guardian P6.3.2 Consult as appropriate with other paediatric specialists including geneticist P6.3.3 Evaluate and select appropriate treatment and precautions including: <ul style="list-style-type: none"> • Non-surgical treatments • Laser treatment • Cryotherapy • Retina/vitreous surgery P6.3.4 Follow visual development P6.3.5 Review advances in treatment P6.3.6 Counselling and support services P6.3.7 Provide counselling for parents P6.3.8 Understand need for support of parents and child by low vision support agencies

P7 Paediatric Neuro-ophthalmology

Description

This unit covers the processes for identifying and managing optic neuropathies and nystagmus. This list is not exhaustive. The practitioner is to perform this work with a high degree of autonomy and responsibility for accuracy and completeness. A demonstration of appropriate interpersonal skills in interacting with the patient and family is required.

Elements	Performance Standards
<p>P7.1 Assess aetiology of neuro-ophthalmic disease</p>	<p>P7.1.1 Identify optic nerve disease from patient history, ocular examination findings and laboratory studies:</p> <ul style="list-style-type: none"> • Optic nerve abnormalities: <ul style="list-style-type: none"> Optic nerve hypoplasia Morning glory disc anomaly Optic disc coloboma Optic pit Aicardi syndrome Hereditary optic neuropathies including Behr optic atrophy and Leber hereditary optic neuropathy (LHON) Optic neuritis Optic atrophy (including list of causes) Papilloedema and pseudopapilloedema • Nystagmus: <ul style="list-style-type: none"> Congenital idiopathic nystagmus Spasmus nutans Retinal dystrophies Vertical Upbeat Downbeat Ocular dysmetria Ocular flutter Others
<p>P7.2 Undertake relevant systemic investigations for neuro-ophthalmic disorders</p>	<p>P7.2.1 Select, initiate and assess the results including diagnosis and evaluation of significance of disorders from the appropriate investigations:</p> <ul style="list-style-type: none"> • Ocular physical examination • Paediatric physical examination • Genetic testing • Neuro-imaging • ERG • VER

Elements	Performance Standards
P7.3 Implement appropriate management	<p>P7.3.1 Follow hospital policies and procedures to obtain informed consent from the parent/guardian.</p> <p>P7.3.2 Consult as appropriate with other paediatric specialists including a geneticist</p> <p>P7.3.3 Evaluate and select appropriate treatment and precautions</p> <p>P7.3.4 Manage visual rehabilitation or low vision support</p> <p>P7.3.5 In event of genetic aetiology provide counseling for parents</p> <p>P7.3.6 Provide follow up for patient and other family members where appropriate</p>

P8 Paediatric Systemic Diseases with Ocular Involvement

Description This unit covers the processes for identifying ocular and non-ocular manifestations of systemic diseases with ocular involvement. The practitioner is to perform this work with a high degree of autonomy and responsibility for accuracy and completeness. A demonstration of appropriate interpersonal skills in interacting with the patient and family is required.

Elements		Performance Standards	
P8.1	Identify the ocular and non-ocular manifestations of the phakomatoses	P8.1.1	Ability to diagnose: <ul style="list-style-type: none"> • Neurofibromatosis I and II • Sturge-Weber syndrome • Tuberous sclerosis • Von Hippel-Lindau disease • Ataxia telangiectasia • Racemose haemangioma
P8.2	Identify the ocular and non-ocular manifestations of neuro-metabolic disorders	P8.2.1	Ability to suspect diagnosis: <ul style="list-style-type: none"> • Mucopolysaccharidosis 1 H • Mucopolysaccharidosis 1 S • Mucopolysaccharidosis 11 • GM 2 Type 1 Gangliosidosis • Fabry Disease • Wilson Disease • Cystinosis
P8.3	Identify the ocular and non-ocular manifestations of chromosomal anomalies	P8.3.1	Apply diagnostic criteria for: <ul style="list-style-type: none"> • Trisomy 13 • Trisomy 21
P8.4	Identify the ocular and non-ocular manifestations of connective tissue disorders	P8.4.1	Ability to diagnose: <ul style="list-style-type: none"> • Marfan syndrome • Pseudoxanthoma Elasticum • Juvenile Xanthogranuloma
P8.5	Identify the ocular and non-ocular manifestations of albinism	P 8.5.1	Ability to diagnose: <ul style="list-style-type: none"> • Oculocutaneous albinism • Ocular albinism
P8.6	Identify the ocular and non-ocular manifestations of leukaemia	P8.6.1	Ability to identify the various ocular manifestations of leukaemia

Elements		Performance Standards	
P8.7	Identify the ocular and non-ocular manifestations of congenital infections	P8.7.1	Ability to identify disease pattern of congenital: <ul style="list-style-type: none"> • Syphilis • Toxoplasmosis • CMV • Herpes simplex
P8.8	Identify the ocular and non-ocular manifestations of foetal alcohol syndrome	P8.8.1	Optic nerve hypoplasia, ptosis, telecanthus, narrow palpebral fissures, epicanthus, strabismus high refractive errors and poor acuity. Flat philtrum, thin upper lip

P9 Amblyopia

Description This unit covers the processes for identifying and managing amblyopia using refractive, non-surgical and surgical treatments. The practitioner is to perform this work with a high degree of autonomy and responsibility for accuracy and completeness.

Elements		Performance Standards	
P9.1	Assess the aetiology of amblyopia	P9.1.1	Identify unilateral and bilateral amblyopia
		P9.1.2	Embryology of visual cortex and retina
P9.2	Diagnose amblyopia	P9.2.1	Test visual acuity and interpret result
		P9.2.2	Conduct and interpret binocular fixation test (infants)
P9.3	Manage amblyopia	P9.3.1	Follow standard protocols to obtain informed consent from the parent/guardian
		P9.3.2	Select appropriate treatments that may include: <ul style="list-style-type: none"> • Removal of obstacles to vision eg cataracts • Implementation of an occlusion program appropriate to the causative condition and circumstances of patient • Correction of refractive errors • Use and risks of atropine in management • Patching protocols
		P9.3.3	Assessment and review of emerging treatments such as modulators of neurotransmitter release

P10 The Apparently Blind Infant

Description

This unit covers the processes for evaluating and managing the apparently blind infant. The practitioner is to perform this work with a high degree of autonomy and responsibility for accuracy and completeness. A demonstration of appropriate interpersonal skills in interacting with the patient and family is required.

Elements	Performance Standards
P10.1 Evaluation of the apparently blind child	P10.1.1 Obtain history including: <ul style="list-style-type: none"> • Perinatal • Maternal • Family P10.1.2 Conduct examinations for: <ul style="list-style-type: none"> • Fixation behaviour and nystagmus • Cerebral visual impairment • Delayed visual maturation
P10.2 Undertake relevant investigations for the causes of poor vision in children	P10.2.1 Conduct relevant examinations including: <ul style="list-style-type: none"> • Characteristise nystagmus • Paradoxical pupil reaction • Iris trans illumination • Cataract • Refractive error • Fundus examination (esp look for Optic nerve hypoplasia, peripheral pigmentary retinopathy, albinotic fungus, macular abnormality) • Visual electro-physiology • Select appropriate neuro imaging • Genetic testing • Biochemical testing
P10.3 Implement appropriate management	P10.3.1 Counselling and support P10.3.2 Appropriate glasses both distant and bifocals, with tinted lenses if necessary P10.3.3 Refer to paediatrician for examination to exclude cerebral palsy, developmental delay, autism P10.3.4 Refer to appropriate support agencies

P11 Accidental and Non-Accidental Eye Injury

Description

This unit covers the processes for assessment and investigations of eye injuries. The standard includes the record requirements and reporting of non-accidental injuries (NAI). The practitioner is to perform this work with a high degree of autonomy and responsibility for accuracy and completeness. A demonstration of appropriate interpersonal skills in interacting with the patient and family is required.

Elements	Performance Standards
P11.1 Assessment of eye injuries	P11.1.1 Natural history of birth-related retinal haemorrhage P11.1.2 Understand urgency of clearing blood from visual pathway before deprivation amblyopia develops P11.1.3 Examination under anesthetic and removal of foreign bodies P11.1.4 Index of suspicion of non-accidental injuries eg. Direct impact – bruising, haemorrhage and laceration, retinal detachment, subluxated lenses; indirect – shaking, retinal haemorrhage, optic atrophy P11.1.5 Understand diagnostic significance of traumatic retinoschisis P11.1.6 Understand eye injuries as manifestation of 'Munchausen syndrome by proxy'
P11.2 Investigation of eye injuries	P11.2.1 Understand differential diagnosis of retinal haemorrhages in infants: <ul style="list-style-type: none"> • Terson syndrome • Birth trauma • Systemic diseases including leukaemia and bleeding disorders • Traumatic • Retinoschisis P11.2.2 Physical assessment including skeletal scan P11.2.3 Neurological assessment P11.2.4 Electrophysiology P11.2.5 Documentation—photographs, diagnosis and classification P11.2.6 Record negative findings as well as positive findings

Elements	Performance Standards
P11.3 Management of eye injuries – non-accidental	P11.3.1 Know appropriate regional/national laws relating to mandatory reporting. P11.3.2 Consultation with appropriate local paediatric unit dealing with child abuse P11.3.3 Follow up appointments and visual prognosis P11.3.4 Management of permanent ocular damage
P11.4 Management of eye injuries – accidental	P11.4.1 Preservation of vision P11.4.2 Undertake counseling under supervision including: <ul style="list-style-type: none"> • Providing core knowledge of injury • Precise diagnosis • Maintain hope for what's available P11.4.3 Direction to ancillary services <ul style="list-style-type: none"> • Education • Support groups • Self-help groups P11.4.4 Discuss steps in grieving – reactions P11.4.5 Select appropriate language – avoid jargon P11.4.6 Apply personal coping strategies by interacting with: <ul style="list-style-type: none"> • Peers • Families • Other health professionals

P12 Learning Disabilities

Description This unit covers the processes for identifying and managing learning disabilities in children. The practitioner is to perform this work with a high degree of autonomy and responsibility for accuracy and completeness.

Elements	Performance Standards
P 12.1 Aetiology of learning disabilities (in absence of neurologic disorder)	P12.1.1 Identify factors that may be associated with learning disabilities: <ul style="list-style-type: none"> • Environment • Culture • Physical disabilities • IQ • Attention deficit disorder P12.1.2 Lack of evidence of ocular disease causing learning disabilities
P 12.2 Management of learning disabilities	P12.2.1 Perform complete eye examination to exclude eye disorders as cause of learning problems including testing accommodation, convergence, eye movements, refractive errors. P12.2.2 Counsel parents on issues P12.2.3 Refer to appropriate assessment agencies/support groups P12.2.4 Discuss irrelevance of minor ocular abnormalities to disabilities

P13 Visual Electro Physiology

Description This unit covers the processes for identifying the application of visual electro-physiology in diagnosis and interpreting the output of electro-physiological tests.

Elements	Performance Standards
P13.1 Understand electro-physiological tests and their use/limitations for testing retinal and visual pathway function	P13.1.1 Outline physiology of visual response and the application of ERG, pattern ERG, multifocal ERG, EOG and VEP
P13.2 Know clinical indications for requesting electro-physiological tests	P13.2.1 Retinal function testing in suspected functional vision loss P13.2.2 Diagnosis of retinal dystrophies P13.2.3 Apparently blind infant with nystagmus P13.2.4 Diagnosis of optic nerve disorders P13.2.5 Assessing function of visual pathways P13.2.6 Objective measurement of vision
P13.3 Understand electro-physiological testing procedures	P13.3.1 Discuss the process involved in conducting tests: <ul style="list-style-type: none"> • ERG, multi focal ERG • Electro-oculogram • VEP • Multi focal VEP
P13.4 Interpret abnormal test results	P13.4.1 ERG <ul style="list-style-type: none"> • A Wave • B Wave • Photopic and Scotopic wave forms • Oscillatory potentials P13.4.2 EOG – Arden index – significance P13.4.3 VEP <ul style="list-style-type: none"> • Amplitude • Latency • Waveform P₁₀₀ wave

Range of Variables

The range of variables explains the scope and context of the standard allowing for differences amongst workplaces. The scope of variables chosen for assessment will depend on the requirements of the particular work situation.

Scope of Work

Practitioners are to:

- demonstrate an appropriate attitude, and appropriate cultural sensitivities, in dealing with patients
- perform work with a diverse range of patients, including patients of any age range, patients with language barriers or verbal disabilities, and patients with diminished mental faculties
- obtain information from patients using appropriate communication/interpretive services
- obtain and evaluate information from third party sources present with the patient
- distinguish information that may indicate non-organic illness, and adequately manage the subsequent consultation process
- work with restricted access to diagnostic equipment

The equipment practitioners are expected to use to perform the scope of work will vary greatly in its relevance to the problem at hand and availability. The following applies to all of the RANZCO Curriculum Standards:

Visual acuity charts

Trial lens sets

Slit lamps

Tonometers: Goldmann, Tonopen

Gonioscopy lenses: Goldmann, Zeiss and Koeppe

Biomicroscopy lenses: 60, 78, 90D and others

Ophthalmoscopes: direct and indirect

Topical anaesthetics, fluorescein, mydriatics

Placido disc

Corneal pachymeters: optical and ultrasound

Ultrasound: A and B scans

IOL Master

Keratometers

Corneal topographers

Wavefront analyser (aberrometer)

Specular and confocal microscopes

Hoskins suturelysis lens

Iridotomy lens

Bandage contact lens

Simmon's shell

Visual field analysers

Fundus cameras

External clinical photographic apparatus

Torches

Argon and YAG lasers
Surgical microscopes
Surgical instruments, prostheses and disposables

Evidence Guide

The evidence Guide reflects the critical aspects of assessment including the essential elements of knowledge and skill that need to be demonstrated to confirm competency in the standards. The Evidence Guide should be read in conjunction with the Range of Variables, elements and performance standards.

A Critical Aspects of Assessment Evidence

How is the *standard* to be achieved?

To achieve this standard, the practitioner is to meet each of these conditions:

- complete, on more than one occasion, each *element* autonomously and achieve the *performance standards* in each case
- for each element, demonstrate adequate understanding and performance of the *knowledge and the skills* outlined in Part C of this evidence guide
- demonstrate the *performance standards* for each *element* on all items listed in the *range of variables*.

B Interdependency of Units

Each of the *units* in this group compliments the others.

C Knowledge and Skills

In order to fulfill the *performance standards*, the practitioner requires the following *knowledge and skills*:

Basic Sciences

Anatomy of the eye and visual pathways
Physiology of the eye and visual pathways
Pathology of the eye and visual pathways
Medical physiology
Medical pharmacology, ocular pharmacology
Microbiology
Immunology
Biochemistry
Embryology
Genetics
Epidemiology
Optics and refraction
Occupational health and safety

Clinical literature review and evidence based medicine
Ophthalmic instrumentation

Clinical

Milestones of the embryology of the ocular muscles and visual pathway and their importance to visual acuity: corneal diameters, globe size and axial length, extra ocular muscles, embryology of retina and visual cortex, visual development.

Presenting signs, differential diagnosis, treatment procedures and prognosis for retinoblastoma: clinical features and manifestations, differential diagnosis, inheritance factors, pathology and natural history, evaluation, classifications, treatment, regression patterns, prognosis.

Presenting signs, differential diagnosis, treatment procedures and prognosis for childhood uveitis.
Clinical feature and diagnosis:

Anterior: JRA, sarcoidosis, spondyloarthropathies, herpetic iridocyclitis

Intermediate: clinical features and diagnosis

Posterior: toxoplasmosis, toxocariasis, VKH syndrome

Sympathetic ophthalmia: pathology and natural history, evaluation, treatment, prognosis

Presenting signs, differential diagnosis, treatment procedures and prognosis for paediatric glaucoma:

Congenital glaucoma: clinical, investigations, measurement of intraocular pressure, treatment - surgical and non-surgical

Juvenile glaucoma

Ocular and systemic conditions associated with glaucoma

Presenting signs, differential diagnosis, treatment procedures and prognosis for paediatric cataracts and lens subluxation: lens anatomy: morphologic classification, aetiology, evaluation – unilateral and bilateral cataracts, management – patching, surgery, aphakia, prognosis

Presenting signs, differential diagnosis, treatment procedures and prognosis for retinal diseases in children:

Retinopathy of prematurity: risk factors, pathogenesis, clinical features and grading, screening and examination, treatment

Coats disease

Retinal haemorrhage

Retinitis pigmentosa

Cone disorders

Congenital night blindness

Vitreoretinal dystrophies

Presenting signs, differential diagnosis, and prognosis for optic nerve and related disorders in children: optic nerve disorders such as hypoplasia, morning glory disc anomaly, optic disc coloboma, optic pit, aicardi syndrome, optic neuritis

Nystagmus: congenital, spasmus nutans, pathology and natural history, evaluation, treatment, prognosis

Ocular manifestations of systemic disease in children: metabolic disorders, chromosomal anomalies, connective tissue disorders, albinism, leukaemia and congenital infections

Clinical features and diagnosis of : phakomatoses, congenital toxoplasmosis, congenital syphilis, congenital rubella, congenital CMV and foetal alcohol syndrome

Presenting signs, differential diagnosis, treatment procedures and prognosis for amblyopia:

Pathophysiology, common forms of amblyopia, unilateral, form deprivation, strabismic, anisometropic, bilateral, metropic (including meridional), form deprivation

Treatment: occlusion techniques including patching, contact lenses and pharmacological, prognosis for treatment

Evaluation and management of the apparently blind infant: fixation behaviours, nystagmus, pupil reaction, fundus features

Application and interpretation of visual electro-physiological tests:

Electro-retinogram (ERG)

Electro-oculogram (EOG)

Visually evoked cortical potentials, visual evoked response (VEP/VER)

General

Meet specific requirements of specialist practice including:

- applying ethical principles
- exercising professional judgement
- communicating effectively with patients, colleagues and staff
- consulting, collaborating or referring as necessary to provide appropriate ophthalmic care
- following protocols and complying with legal requirements
- modifying the examination of patients with physical or intellectual disabilities
- using interpreter services when dealing with people who are Deaf or who are from a non-English speaking background
- using, calibrating and maintaining ophthalmic equipment
- keeping appropriate comprehensive medical records
- using documentation and record systems including, where appropriate, the use of computer, information systems and technologies
- observing occupational health and safety requirements including disinfection and sterilisation
- ensuring patients have a realistic understanding of anticipated outcomes of treatment
- adhering to patient confidentiality and privacy protocols and legislation
- participating in and promoting continuing professional development and competency enhancement
- adhering to ethical standards in advertising

D Resource Implications

The practitioner requires access to resources and equipment that are normally available in a practice or hospital setting. Where knowledge and skills development is considered to be best acquired away from the practice/hospital, then appropriate learning resources and facilities are to be available at the non-practice/hospital location.

Core Reading

The most recent edition of the following reference texts are prescribed:

Wilson EM, Buckley EG, et al. *Pediatric Ophthalmology and Strabismus*. St Louis: Mosby

American Academy of Ophthalmology, *Basic and Clinical Science Course: Section 6 - Paediatric Ophthalmology and Strabismus*, San Francisco, American Academy of Ophthalmology

Taylor D, editor. *Paediatric Ophthalmology*. Oxford: Blackwell Science

Additional Reading

More A M, Lightman S. *Fundamentals of Clinical Ophthalmology: Paediatric Ophthalmology*. BMJ Books: London

Tasman W, ed. *Duane's Clinical Ophthalmology*. Philadelphia: JB Lippincott

Wright KW, ed. *Pediatric Ophthalmology and Strabismus*. St Louis: Mosby Inc

E Consistency of Performance

The practitioner's competence should be assessed from evidence collected across the whole range of activities covered by this unit. This entails the assessment of each element of competence across the range of variables, and evidence of the basic and clinical knowledge underpinning performance, to ensure all performance standards are met.

The practitioner should maintain a surgical log book, and make it available to assessors and examiners. Maintenance of a case diary is strongly encouraged.