



RANZCO

The Royal Australian
and New Zealand
College of Ophthalmologists

Ocular Inflammation Curriculum Standard

September 2014

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Purpose

The Ocular Inflammation Clinical Performance Standard covers the specific knowledge, processes, skills and competencies required for the diagnosis and treatment of a patient with ocular inflammatory symptoms and signs.

As ocular inflammation is a potentially blinding condition, generally affecting a younger age group, it is important to be able to recognise ocular inflammation, its causes and associated systemic diseases, some of which can be life-threatening.

References

Ocular Inflammation Reading

In addition to the core texts, the following references are recommended:

- Jabs, D.A., Nussenblatt, R.B., Rosenbaum, J.T. (Standardization of Uveitis Nomenclature (SUN) Working Group) 2005, 'Standardisation of uveitis nomenclature for reporting clinical data. Results of the first international workshop', *Am. J. Ophthalmol.* vol. 140, pp. 509-516.

Additional Reading

- Current Opinion in Ophthalmology*: ocular manifestations of systemic disease. (access to full text articles 1990-present available via RANZCO website)
- Foster, C.S. & Vitale, A.T. 2002, *Diagnosis and treatment of uveitis*, 1st edn, W.B. Saunders, Philadelphia, PA.
- Gold, D.H. & Weingeist, T.A. 2001, *Color atlas of the eye in systemic disease (illustrated edition)*, Lippincott; Williams & Wilkins, Philadelphia, PA; London.
- Nussenblatt, R.B. & Whitcup, S.M. 2010, *Uveitis: fundamentals and clinical practice*, 4th edn, Mosby/Elsevier, Edinburgh.

It is recommended that reading be supplemented with appropriate articles from current and relevant peer-reviewed journals.

Level of Mastery

For each learning outcome, the level of mastery to be attained by the trainee at the end of training is indicated as follows:

***	Core knowledge of which trainees must be able to demonstrate understanding Skills and procedures that trainees must be able to perform autonomously
**	Knowledge of which trainees must have a good practical understanding Skills and procedures with which trainees should have assisted, and of which have good practical knowledge
*	Knowledge, skills and procedures of which trainees must have some understanding

Learning outcomes and performance criteria

UV1 GENERAL MEDICAL AND OCULAR HISTORY RELEVANT TO OCULAR INFLAMMATORY CONDITIONS		
<p><i>This element covers the processes for observing, prompting, and recording a general medical and ocular history in preparation for diagnosis and treatment of ocular inflammatory conditions.</i></p> <p><i>The trainee is expected to have obtained and recorded a general medical and ocular history (including family history) as outlined in the Ophthalmic Basic Competencies and Knowledge (OBCK) standard.</i></p>		
LEARNING OUTCOMES	LEVEL OF MASTERY	PERFORMANCE CRITERIA
1.1 Obtain and interpret correctly the significance of the ocular and systemic symptoms	***	1.1.1 Identify risk factors which are potentially sight and life threatening
1.2 Obtain details of ocular history including previous surgery, trauma, allergies and amblyopia	***	1.2.1 Identify risk factors that may have relevance to the cause of ocular inflammation
1.3 Determine and record any past and current topical, local and systemic therapies used to treat the eyes	***	1.3.1 Identify risk factors that may have relevance for ocular inflammatory conditions
1.4 Obtain an ocular and medical family history	***	1.4.1 Identify risk factors that may have relevance for ocular inflammation and systemic disorders with ocular manifestations
1.5 Identify general illnesses and medications that may have an impact on ocular disease or its treatment	***	1.5.1 Discuss the impact of any given medications or general illnesses on ocular inflammation 1.5.2 Identify risk factors arising from general history for ocular inflammation
1.6 Obtain travel history and where relevant sexual and vaccination history; and recreational drug use	***	1.6.1 Identify risk factors that may have relevance to the cause of ocular inflammation

UV2 PERFORM EYE EXAMINATIONS FOR OCULAR INFLAMMATORY CONDITIONS

This element covers the performance and interpretation of a range of eye examinations associated with the anterior and posterior segments and the adnexa applicable to ocular inflammation. It also covers the demonstration of judgement in selecting the appropriate examinations for particular patients.

The trainee is expected to have performed preliminary eye examinations as outlined in the Ophthalmic Basic Competencies and Knowledge (OBCK) standard.

LEARNING OUTCOMES	LEVEL OF MASTERY	PERFORMANCE CRITERIA
2.1 Identify and describe the general appearance of the eye and adnexa through an external ocular inspection	***	2.1.1 Interpret the relevance of any signs that may be found on external ocular inspection
2.2 Undertake ocular examinations appropriate for ocular inflammatory conditions	***	2.2.1 Accurately perform and interpret the results of these examinations and identify their relevance to the diagnosis of ocular inflammatory conditions: <ul style="list-style-type: none"> • visual acuity including refraction • pinhole acuity • pupillary reactions
2.3 Perform a slit lamp examination of the anterior segment and adnexa	***	2.3.1 Correctly perform and interpret the results of anterior segment and adnexa examinations, as applied to ocular inflammation – with special attention to the conjunctiva, cornea and sclera 2.3.2 Identify and grade signs of anterior chamber inflammation and flare according to SUN (Standardisation of Uveitis Nomenclature) criteria 2.3.3 Be able to identify iris abnormalities relevant to ocular inflammation
2.4 Undertake a comprehensive posterior segment examination	***	2.4.1 Accurately report the characteristics and clinical significance of posterior segment findings, particularly those of the vitreous (noting signs of inflammation and debris), optic nerve head, macula, retinal vasculature, retina and retinal pigment epithelium, choroid and pars plana

		<p>2.4.2 Accurately document severity of inflammation, according to SUN classification</p> <p>2.4.3 Use adjunctive techniques (such as indirect ophthalmoscopy and scleral indentation) as necessary</p>
<p>2.5 Perform a brief general medical examination relevant to ophthalmology, if appropriate</p>	<p>***</p>	<p>2.5.1 Recognising the variability of presentations of systemic conditions like connective tissue diseases and infections, identify their relevance, if any, to ocular inflammation and its potential management</p> <p>Examination should pay special attention to skin, hands, joints, mouth and posture</p>
<p>2.6 Identify cause of visual loss in an eye</p>	<p>***</p>	<p>2.6.1 Distinguish between various causes of visual impairment in the eye with inflammation – such as cataract, cystoid macular oedema, epiretinal membrane, macular pigmentary changes – and their respective treatments</p>

UV3 OCULAR INFLAMMATION DIAGNOSIS AND INVESTIGATION

This element covers the performance and interpretation of a range of specific uveitides and the relevant tests. Following examination, the provisional diagnosis and/or differential diagnosis is established. Further investigation may be required to establish the diagnosis.

The trainee is required to demonstrate judgement in selecting the appropriate tests for particular patients.

LEARNING OUTCOMES	LEVEL OF MASTERY	PERFORMANCE CRITERIA
3.1 Undertake investigations using fundus imaging	***	3.1.1 Identify the indications for, perform and interpret the results of: <ul style="list-style-type: none"> • fluorescein angiography • ultrasound (B-scan) • fundus and optic disc photos • ocular coherence tomography (OCT)
	**	3.1.2 Identify the indications for, and interpret the results of indocyanine green angiography
3.2 Undertake investigations using appropriate nerve imaging and visual field testing	***	3.2.1 Identify indications where optic nerve imaging and visual field tests are required 3.2.2 Undertake pupil testing; request and interpret appropriately other investigations of optic nerve function, including visual field testing, visually evoked potential (VEP), ultrasonography, computed tomography (CT), magnetic resonance imaging (MRI) or fluorescein angiography (FA), as indicated
3.3 Use laboratory testing to confirm diagnosis	***	3.3.1 Identify the indications for and interpret results from laboratory investigations, including: <ul style="list-style-type: none"> • haematology • immunology • biochemistry • microbiology • genetics

<p>3.4 Use radiological testing to establish diagnosis</p>	<p>***</p>	<p>3.4.1 Identify the indications for, and interpret the significance of the report results of:</p> <ul style="list-style-type: none"> • X-rays • computed tomography (CT) scans • magnetic resonance imaging (MRI) • carotid duplex studies
<p>3.5 Use electrophysiological testing to establish diagnosis</p>	<p>**</p>	<p>3.5.1 Identify the indications for, and interpret the results of retina and visual pathways tests using:</p> <ul style="list-style-type: none"> • electro-oculogram (EOG) • electro-retinogram (ERG) • multifocal and full field • visual evoked response (VER)
<p>3.6 Use biopsy testing to establish diagnosis</p>	<p>***</p>	<p>3.6.1 Identify the indications and contra-indications for, and interpret ocular tissue biopsies, including, but not limited to:</p> <ul style="list-style-type: none"> • aqueous biopsy • vitreous biopsy • conjunctival biopsy • scleral biopsy <p>3.6.2 Interpret results of ocular tissue biopsies including (but not limited to):</p> <ul style="list-style-type: none"> • infective (PCR, culture, stains) • autoimmune • masquerade (flow cytometry, immune cell composition)

UV4 IMPLEMENT A MANAGEMENT PLAN FOR OCULAR INFLAMMATORY DISORDERS

This element covers the management of uveitic and intra-ocular inflammatory conditions using observation, medical therapies and surgery, including postoperative care.

The trainee must adhere to the standards of practice, in particular those regarding informed consent and clinical record-keeping, described in the Ophthalmic Basic Competencies and Knowledge (OBCK) standard.

LEARNING OUTCOMES	LEVEL OF MASTERY	PERFORMANCE CRITERIA
4.1 Develop an informed, practical, probability-based differential diagnosis	***	<p>4.1.1 Identify diagnostic clinical triggers for suspecting infections and masquerade syndromes (such as age, increased IOP, retinal arteritis, rapid progression etc.)</p> <p>4.1.2 Differentiate infective, autoimmune and masquerade causes of ocular inflammation</p>
4.2 Determine and document in medical records an individualised management plan	***	<p>4.2.1 While waiting for results of clinical tests, develop a plan to initiate the most appropriate empirical therapy based on the worst case scenario, and the likely aetiology</p> <p>4.2.2 Review and revise treatment plan, if necessary, following interpretation of the results of diagnostic tests</p>
4.3 Discuss with patient the proposed management regimen	***	<p>4.3.1 Explain clearly the natural history, proposed management regimen, alternatives and the potential outcome with and without the management regimen proposed</p> <p>4.3.2 Obtain and document the patient's informed consent, where necessary, to the management regimen</p>
4.4 Obtain advice from other relevant medical specialties	***	<p>4.4.1 Consult with relevant medical specialties on the management plan</p>

<p>4.5 Manage ocular inflammatory conditions using medical therapies</p>	<p>***</p>	<p>4.5.1 Identify the indications and contraindications for pharmacological therapies</p> <p>4.5.2 Administer corticosteroids using the following routes:</p> <ul style="list-style-type: none"> • topical • subconjunctival • periocular • intravitreal • oral • intravenous <p>4.5.3 Monitor the efficacy of the therapy, identify complications of the therapy and make necessary adjustments to the management plan</p> <p>4.5.4 Be aware of how steroid-sparing drugs are used</p> <p>4.5.5 Be aware of how different biologics are used</p>
<p>4.6 Manage ocular inflammatory conditions using laser therapies</p>	<p>***</p>	<p>4.6.1 Use photocoagulation to manage ocular inflammatory conditions</p> <p>4.6.2 Demonstrate and understand the principles and safe use of laser techniques in management of ocular inflammation</p>

<p>4.7 Manage ocular inflammation using surgical techniques</p>	<p>***</p>	<p>4.7.1 Administer therapies for ocular inflammation using intravitreal injection</p> <p>4.7.2 Be able to execute changes in pre-, intra-, and postoperative procedures and care when undertaking cataract surgery in patients with ocular inflammation</p> <p>4.7.3 Be aware of modifications required when managing a patient with uveitic glaucoma</p> <p>4.7.4 Know the indications for a vitrectomy in patients with ocular inflammation</p> <p>4.7.5 Identify and describe common intraoperative complications</p> <p>4.7.8 Implement postoperative care and manage postoperative complications</p>
	<p>*</p>	<p>4.7.9 Be aware of the different drug implants available to treat ocular inflammation</p>
<p>4.8 Provide psychological support for patient</p>	<p>***</p>	<p>4.8.1 Counsel patient on condition, likely prognosis and progression</p> <p>4.8.2 Refer patient to relevant support services, genetic counselling when relevant</p>

Context

In order to fulfil the clinical performance standards, the trainee must apply the knowledge and skills described in the:

- Ophthalmic Sciences (Anatomy, Clinical Ophthalmic and Emergency Medicine, Optics, Physiology, Clinical Genetics and Microbiology, and Evidence-based Ophthalmic Practice);
- Ophthalmic Basic Competencies and Knowledge (OBCK); and,
- Basics of Ophthalmic Surgery (BOS) curriculum standards.

Clinical practice

The following list is provided to identify the conditions, their causes and sequelae, and the treatment approaches that may be encountered by the trainee in clinical practice. The list is not exhaustive; it is intended as a guide for the use of the trainee when planning his or her learning.

Ocular Inflammation Topic List

Explain the pathology, aetiology, genetics, epidemiology, clinical manifestations, systemic features, diagnostic criteria and natural history of the following ocular inflammatory conditions, as well as the various classifications of uveitis and their applications in clinical assessment (e.g. anatomical, temporal, aetiological)

- Cicatrising Conjunctivitis
- Keratitis
 - peripheral ulcerative keratitis
 - corneal melting
 - interstitial keratitis
 - corneal infiltrates
 - band keratopathy
- Scleritis / Episcleritis
 - anterior
 - posterior
 - necrotising and non-necrotising
 - diffuse and nodular
 - infective scleritis
- Associated systemic conditions
 - rheumatoid arthritis
 - juvenile idiopathic arthritis (JIA)
 - inflammatory bowel disease
 - spondyloarthropathies
 - systemic lupus erythematosus
 - polyangiitis with granulomatosis (Wegener granulomatosis)
 - polyarteritis nodosa
 - relapsing polychondritis
 - infection (syphilis, TB, herpes, fungal)
- Associated local causes
 - trauma

- surgery
- conjunctival disease
- lid disease
- Anterior uveitis:
 - (i) *Infectious*
 - syphilis
 - tuberculosis
 - leprosy
 - Lyme disease
 - toxoplasmosis
 - herpes zoster ophthalmicus
 - herpes simplex
 - cytomegalovirus
 - rubella
 - (ii) *Non infectious*
 - HLA B-27 and related conditions including:
 - ankylosing spondylitis
 - Reiter syndrome
 - psoriatic arthropathy
 - juvenile idiopathic arthritis (JIA)
 - inflammatory bowel disease
 - phacolytic and phacoantigenic uveitis
 - sarcoidosis
 - Behçet disease
 - Fuchs heterochromic cyclitis
 - Posner-Schlossman syndrome
 - nephritis (TINU)
 - multiple sclerosis
 - masquerade
- Intermediate uveitis:
 - pars planitis
 - multiple sclerosis
- Panuveitis / posterior uveitis:
 - (i) *Infectious*
 - toxoplasmosis
 - toxocara canis
 - viruses, e.g. herpes viruses (HSV, VZV, CMV, EBV), rubella
 - human immunodeficiency virus (HIV)
 - mycobacterial diseases
 - POHS
 - bartonella henselae
 - spirochetal diseases including syphilis, Lyme, cat scratch, leptospirosis
 - opportunistic infections, e.g. pneumocystis carinii, cryptococcus neoformans
 - candida, scedosporium and other fungal diseases
 - onchocerciasis and other parasitic diseases
 - (ii) *Non-infectious*
 - sarcoidosis
 - Behçets disease
 - multifocal choroiditis

- sympathetic ophthalmia
- Vogt-Koyanagi-Harada syndrome
- retinal vasculitis
- retained lens matter
- birdshot choroidopathy
- multiple evanescent white dot syndrome
- punctuate inner choroidopathy
- serpiginous choroidopathy
- acute posterior multifocal placoid pigment epitheliopathy
- acute zonal occult outer retinopathy
- subretinal fibrosis and uveitis syndrome
- Optic neuritis
 - infections
 - autoimmune
 - masquerade (paraneoplastic)
- Endophthalmitis
 - endogenous
 - exogenous
 - outline the epidemiology and clinical presentations (both ocular and non-ocular)
 - describe the organism in detail, including method(s) of transmission
 - describe the pathology and immunology of the disease including natural history
 - describe diagnostic tests
 - provide detailed descriptions of treatment modalities, including their rationale, relevant clinical trials and possible complications
- Uveitis diagnosis and management in special case scenarios
 - paediatrics
 - pregnancy
 - breast-feeding women
 - immunocompromised
 - elderly
- Explain the prognosis to the patient
- Masquerade syndromes:
 - neoplastic and paraneoplastic conditions (CAR, MAR)
 - ocular ischaemia
 - intraocular foreign body
 - chronic retinal detachment
 - aqueous / vitreous haemorrhage
 - juvenile xanthogranuloma
 - amyloidosis
 - retinitis pigmentosa
 - pigment dispersion syndrome
 - UGH syndrome
- Drug induced
 - topical agents
 - systemic agents

- Principles of therapy
 - explain the philosophy, goals, approaches and potential complications of treatment of infectious causes and immunosuppression
- Complications and their management
 - list potential complications of ocular inflammatory processes and explain their management