Surrey and Sussex Healthcare
NHS Trust

Acute Ophthalmological Emergencies

Alexandra Brant (PA-MVR, BSc, MSc)
Physician Associate in General Surgery
East Surrey Hospital

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Introduction

Why?

- Two!
- Increased demand on services
- Capacity reduction

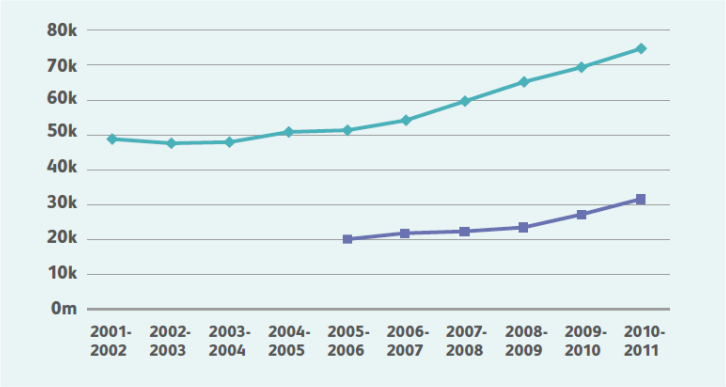


Figure 2: Eye Casualty attendances in two large London walk-in services 1

Capacity Reduction	Demand Growth
• Less confident clinicians see patients more slowly • More tests, treatments and more sub-specialisation • No expansion of trainee numbers	• Main A&E de-skilled in eyes and under pressure of 4 hour target • Shift in health seeking behaviour to favour emergency secondary care • Reduced access to GP out-of-hours • More people / increased life expectancy

Figure 9: the capacity demand disequilibrium

Intended learning outcomes

- Define “ocular emergency”
- Develop a safe diagnostic approach when faced with emergency presentations
- Recognise and implement immediate management decisions required to prevent clinical deterioration
- Establish an effective referral protocol

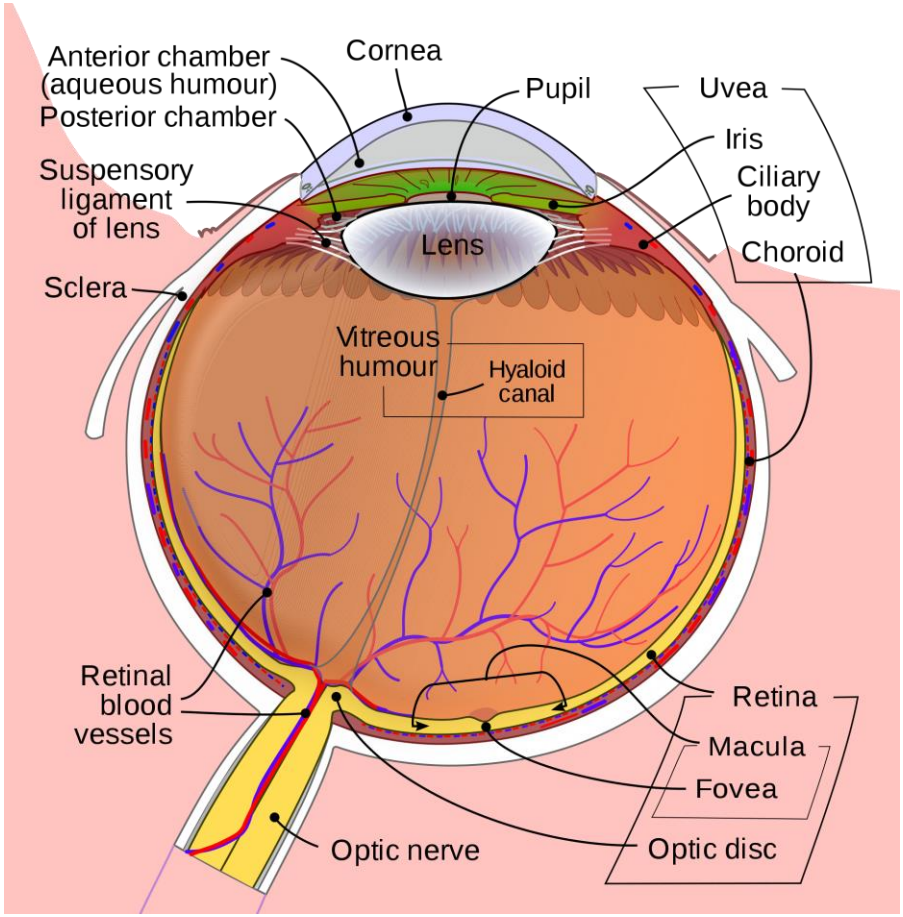
LEARNING OUTCOME

IF UNSURE

REFER

Overview

- Definition of ophthalmic emergency
- Ocular terminology
- History and examination skills
- Case presentations and their management/referral:
  - **Red eye**
  - **Painful eye**
  - **Visual symptoms**
  - Trauma
  - Post-operative complications
- Questions



Definition

The Royal College of Ophthalmologists

Ophthalmic Services Guidance

EMERGENCY EYE CARE

An eye condition is an emergency if its occurrence is unpredictable and it requires treatment or admission at short notice to avoid damage to the eye or eyesight.

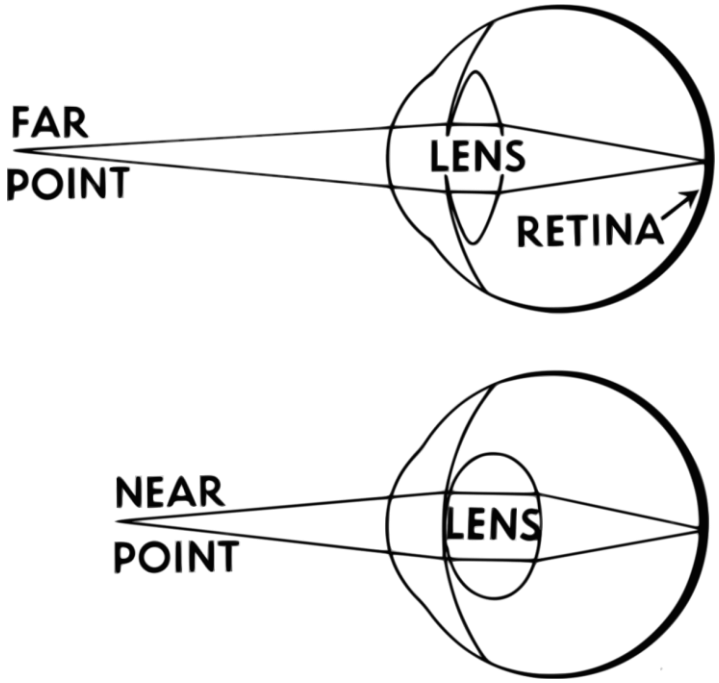
The College will not attempt to identify every type of case that falls into the emergency category: it is the responsibility of the Consultant under whose care the patient is registered to identify those cases and ensure timely delivery of care. However, examples would be bacterial endophthalmitis, upper bullous retinal

Ocular terminology 1

- Emmetropia: the normal refractive condition of the eye in which with accommodation relaxed parallel rays of light are all brought accurately to a focus upon the retina
- Refractive error: Common eye disorder whereby the eye cannot clearly focus images from the outside world resulting in blurred vision (may cause visual impairment in its severest form)
  - Myopia (nearsightedness): difficulty in seeing distant objects clearly
  - Hypermetropia (farsightedness): difficulty in seeing close objects clearly
  - Astigmatism: distorted vision resulting from an irregularly curved cornea, the clear covering of the eyeball
  - Presbyopia: difficulty in reading or seeing at arm's length, linked to ageing and occurs almost universally
- Visual acuity (VA): acuteness or clearness of vision, it is dependent on the sharpness of the retinal focus within the eye, the sensitivity of the nervous elements, and the interpretative faculty of the brain
- Fundus: aka retina, the interior surface of the eye opposite the lens and includes the retina, optic disc, macula, fovea, and posterior pole

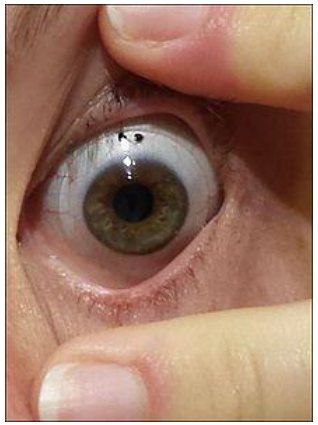
Ocular terminology 2

- Accommodation: the process by which the vertebrate eye changes optical power to maintain a clear image or focus on an object as its distance varies
- Aphakia: is the absence of the lens of the eye, due to surgical removal, a perforating wound or ulcer, or congenital anomaly
- Pseudophakia: having an artificial lens implanted after the natural eye lens has been remove
- Uveal tract: layer of tissue located between the outer layer (cornea and sclera) and the inner layer (the retina) of the eye consisting of the iris the choroid and the stroma of the ciliary body
- Perimetery: measurement of a person's field of vision
- OD: oculus dextrus the right eye
- OS: oculus sinister the left eye



Ocular history

- PC/HPC
- PMHx
- POHx
- Medications
- Allergies
- SH
- FH
- RoS



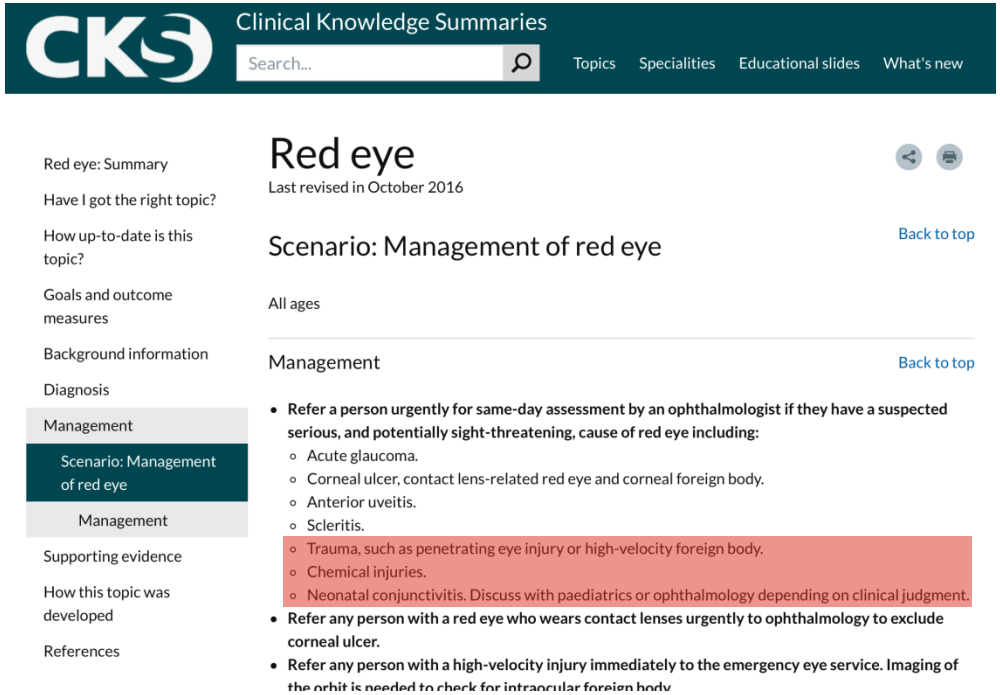
Ophthalmic examination

- Visual Acuity (VA)
- Visual fields
- Eye Movements
- Face, lids and orbit
- Conjunctiva and sclera
- Cornea
- Pupils
- Retina (aka Fundus)
- Miscellaneous (colour vision, bionocular vision etc.)

Case Presentations

Case presentations

- **Red eye**
- **Painful eye**
- **Visual symptoms**
- Trauma
- Contact lens problems
- Post-operative complications



Red Eye

Red eye

- **Acute onset, painful**
  - **Unilateral**
  - **Bilateral**
- **Acute onset, painless**
  - **Unilateral**
  - **Bilateral**
- Chronic
- Trauma

Red eye, Case 1

Acute onset, painful, unilateral

Red eye (acute onset, painful, unilateral)
Case 1

30 year old

HPC: acute onset pain/redness in RE, constant worse when eye open

Associated Sx: tearing and sensitivity to light OD and states it “feels as if there is something in it.”

PMHx: asthma, eczema, depression

POHx: myopic, monthly disposable contact lenses

Medications & allergies: citalopram 20mg OM, Salbutamol 200 micrograms PRN QDS, hydrocortisone cream. NKDA.

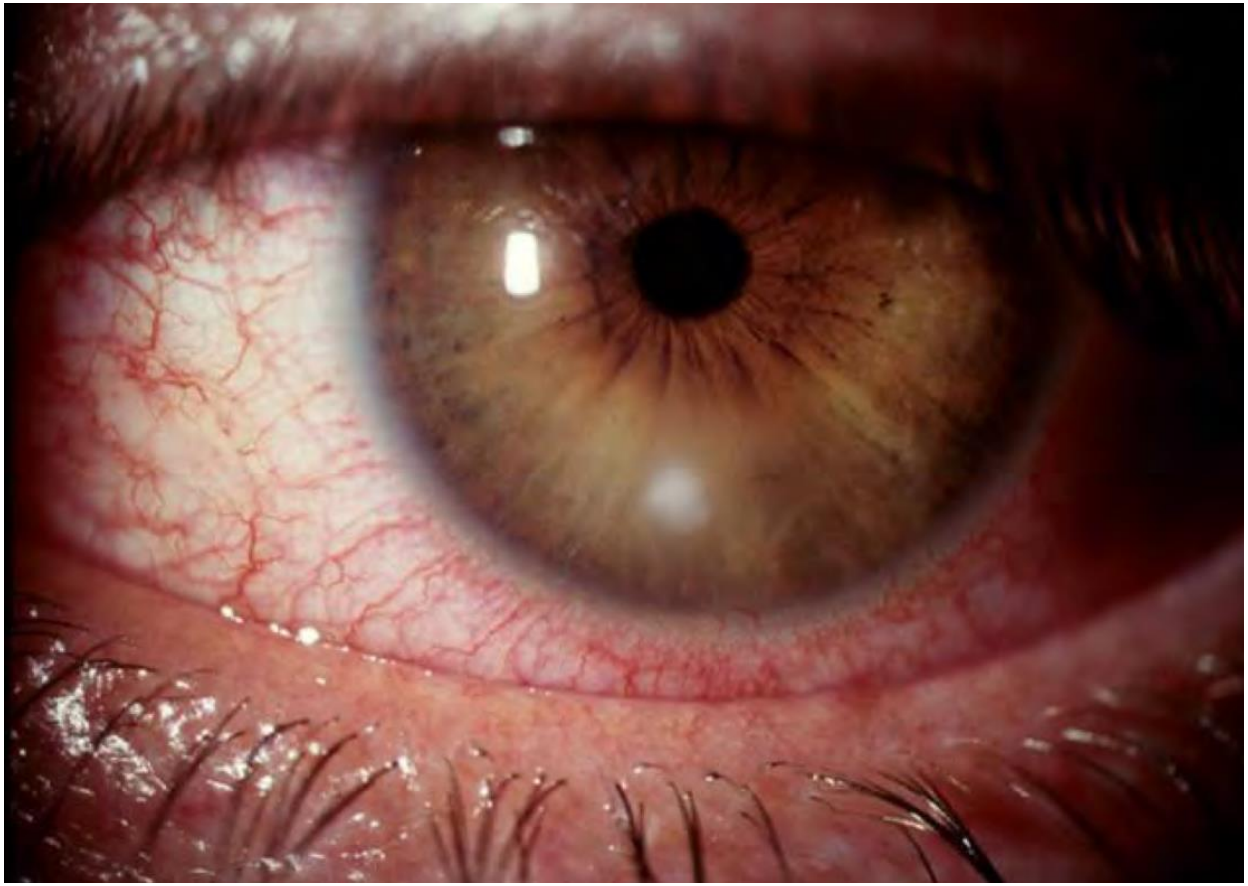
SHx: non smoker, minimal EToH, legal secretary, lives alone, no assistance required with ADLs

FHx: nil significant

RoS: systemically well

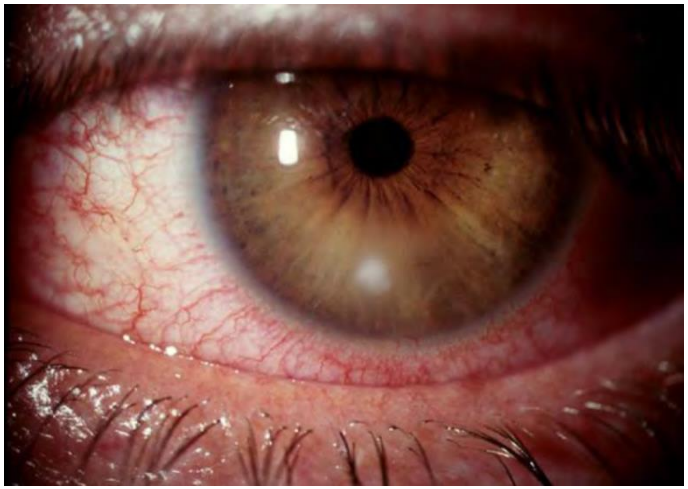
O/E: 6/5 LE, 6/9 RE, PERRLA, no gross visual field defect, full ROM in extraocular muscles

Red eye (acute onset, painful, unilateral)
Case 1



POLL OPEN

Red eye (acute onset, painful, unilateral)
Case 1



What is the most appropriate management?

1 Provide reassurance and discharge the patient
0%

2 Topical artifical tears and analgesia
0%

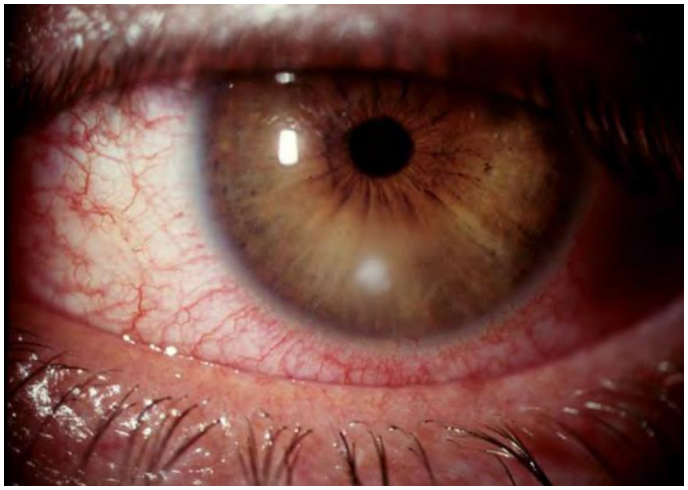
3 Non urgent referral to Opthalmology
0%

4 Urgent, same day referral to Opthalmology
0%

5 Topical chloramphenicol 1 drop BE every 2 hours
0%

POLL OPEN

Red eye (acute onset, painful, unilateral)
Case 1



What is the most likely diagnosis?

1 Acute angle closure glaucoma
0%

2 Corneal ulcer
0%

3 Scleritis
0%

4 Corneal abrasion
0%

5 Conjunctivitis
0%

Red eye (acute onset, painful, unilateral)

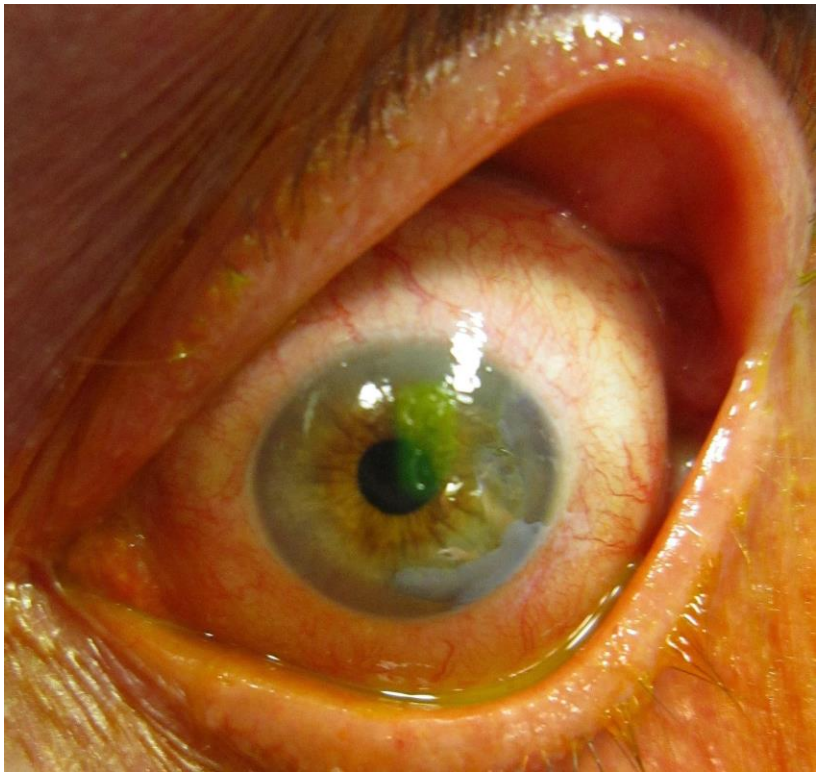
Commonly

- Corneal abrasion
- Corneal Foreign body/Subtarsal foreign body
- Penetrating/blunt injury
- Ingrowing lashes (**En**tropian)
- Contact lens related

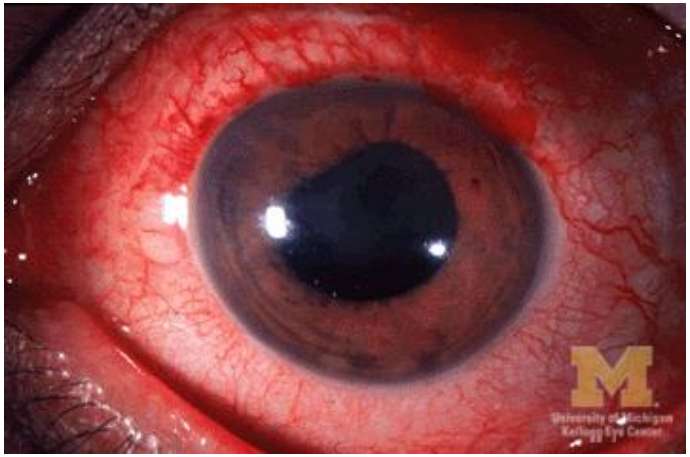
Less commonly

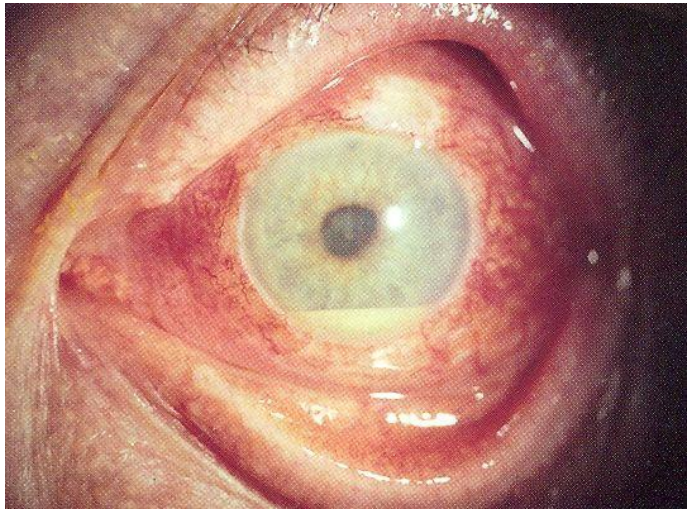
- Acute glaucoma
- Uveitis
- Orbital cellulitis
- Scleritis/episcleritis
- Previous surgery
- Corneal ulcer
- Shingles
- Thyroid eye disease

Red eye (acute onset, painful, unilateral)

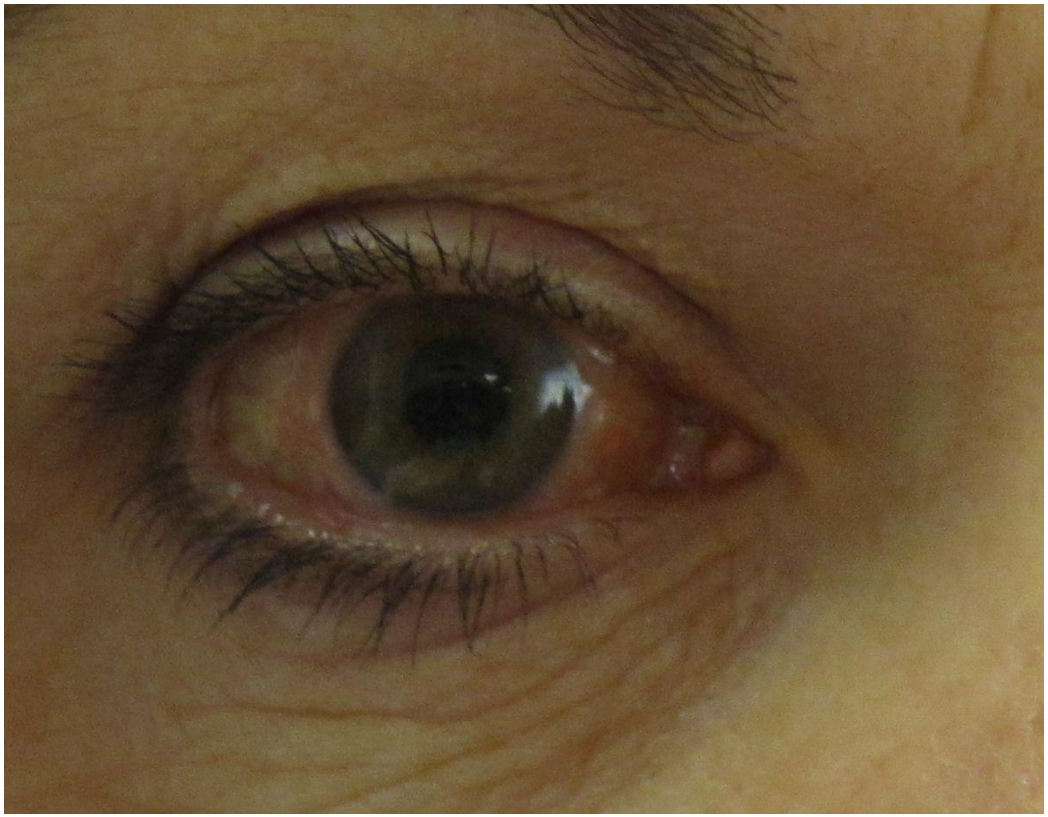


Red eye (acute onset, painful, unilateral)





Red eye (acute onset, painful, unilateral)



Red eye, red flags

- **Indications of a serious, and potentially sight-threatening, cause of the person's red eye include:**
  - Reduced visual acuity.
  - Deep pain within the eye.
  - Unilateral red eye.
  - Contact lens use.
  - Photophobia. This can be a symptom of acute uveitis, corneal ulcer, contact lens-related red eye or corneal foreign body. Systemic causes of photophobia, such as meningitis should also be considered. For further information, see the CKS topic on Meningitis.
  - All high-velocity injuries (for example injuries occurring while hammering or chiseling), or injuries involving glass.
  - Chemical eye injury.
  - Ciliary injection. This pattern of redness may be seen in corneal ulcer, contact lens related red eye, corneal foreign body and anterior uveitis.
  - Fluorescein staining. This can indicate corneal ulcer or abrasion.
  - Unequal or misshapen pupils, or abnormal pupillary reactions. Abnormal pupil reactions are seen in acute glaucoma and anterior uveitis.
  - Pain on pupillary constriction. This can be elicited on testing the direct light reaction, consensual light reaction or finger-to-nose convergence test.
  - Conjunctivitis in an infant in the first 28 days of life.

Red eye, Case 2

Acute onset, painful, bilateral

Red eye (acute onset, painful, bilateral) Case 2

28 year old male, presenting to A&E 9pm

HPC: acute onset pain BE, constant

Associated Sx: “feels like sand poured in my eyes”, refusal to open eyes

PMHx: nil

POHx: nil

Medications & allergies: nil regular medications, NKDA

SHx: smokes 10/day, welder, moderate EtOH 12-14 units/week

FHx: mother - acute angle closure glaucoma

RoS: Systemically well

O/E: clenching eyes closed

Red eye (acute onset, painful, bilateral)
Case 2

POLL OPEN

What is the most appropriate management?

1 Provide reassurance, analgesia and discharge the patient
0%

2 Urgent referral to ophthalmologist within 24 hours
0%

3 Non urgent referral to ophthalmologist
0%

4 Timolol, one drop BE ON
0%

5 Topical chloramphenicol 1 drop BE every 2 hours
0%

Red eye (acute onset, painful, bilateral)
Case 2

POLL OPEN

What is the most likely diagnosis?

1 Acute angle closure glaucoma
0%

2 Dry eyes
0%

3 Photokeratitis
0%

4 Thyroid eye disease
0%

5 Conjunctivitis
0%

Red eye (acute onset, painful, bilateral)

Commonly

- Conjunctivitis
- Allergy
- Chemical injury
- Welding
- Trauma
- Contact lens wear

Consider

- Dry eyes
- Thyroid eye disease
- Carotico-cavernous fistula

Red eye, Case 3

Acute onset, painless, unilateral

Red eye (acute onset, painless, unilateral) Case 3

46 year old female

2-3 week Hx of painless right red eye

Associated Sx: nil

PMHx: nil

POHx: Hyperopic, wears glasses, “lazy eye” as child patch therapy

Medications & allergies: citalopram 20mg OM, Salbutamol 200 micrograms PRN QDS, hydrocortisone cream

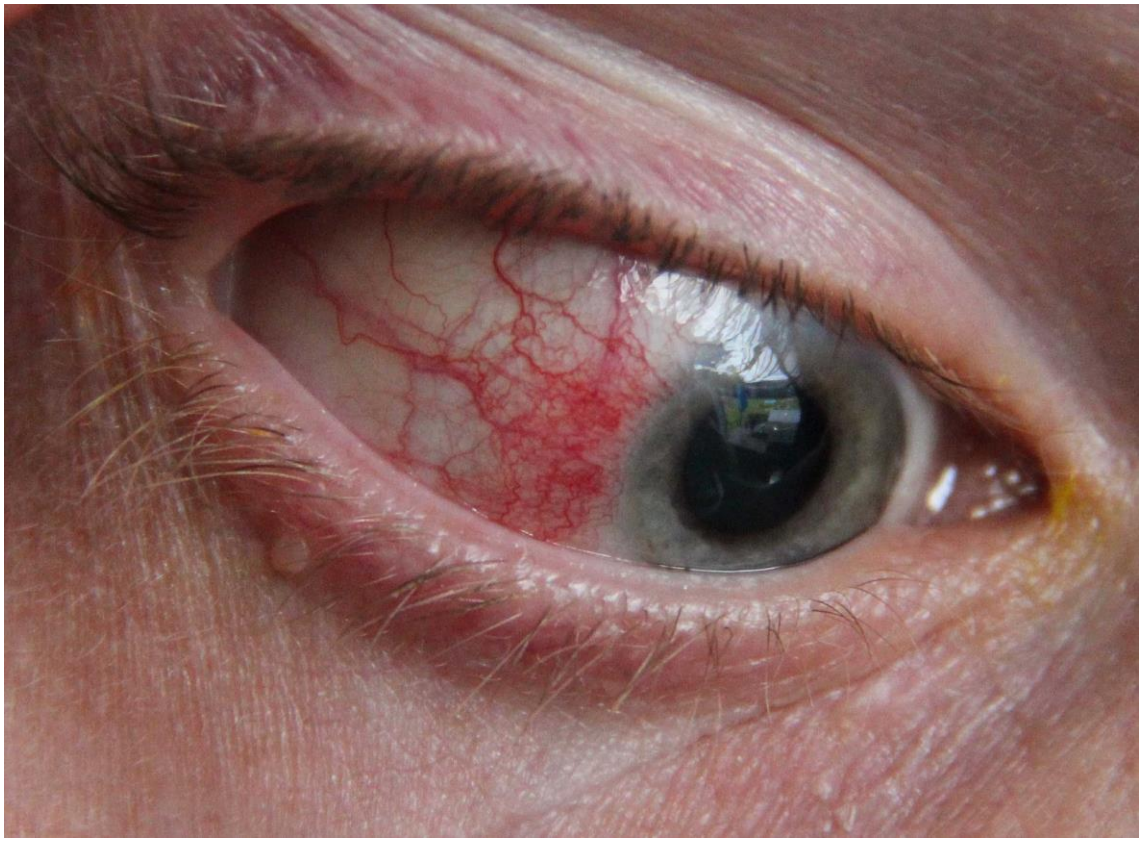
SHx: non smoker, homemaker, minimal EtOH 4 units/week

FHx: aunt – thyroid eye disease

RoS: Systemically well

O/E: V/A 6/6 (OS & OD), no field defect, PERRLA, full ROM in extraocular muscles

Red eye (acute onset, painless, unilateral) Case 3



Red eye (acute onset, painless, unilateral)
Case 3

POLL OPEN

What is the most appropriate management?

1 Provide reassurance and discharge the patient

0%

2 Urgent, same day referral to ophthalmologist

0%

3 Non urgent referral to ophthalmologist

0%

4 Commence thyroid hormone replacement therapy and refer to ophthalmologist

0%

5 Topical chloramphenicol 1 drop BE every 2 hours

0%

Red eye (acute onset, painless, unilateral)
Case 3

POLL OPEN

What is the most likely diagnosis?

1 Episcleritis
0%

2 Subconjunctival haemorrhage
0%

3 Allergic reaction
0%

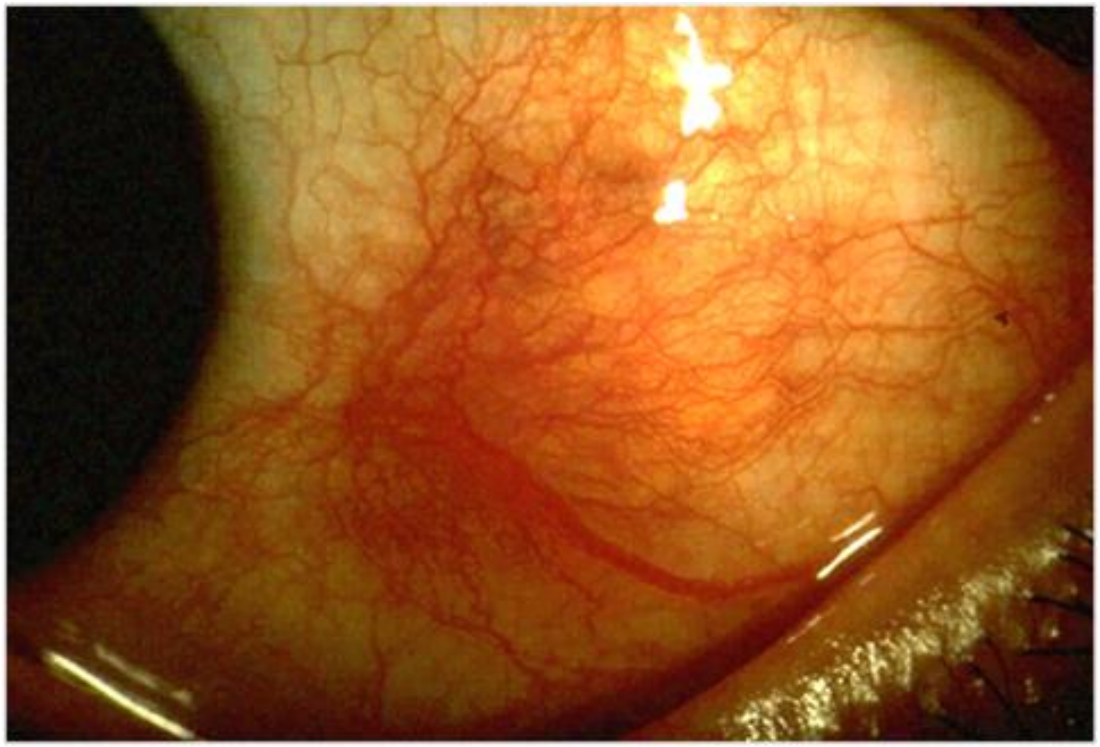
4 Thyroid eye disease
0%

5 Scleritis
0%

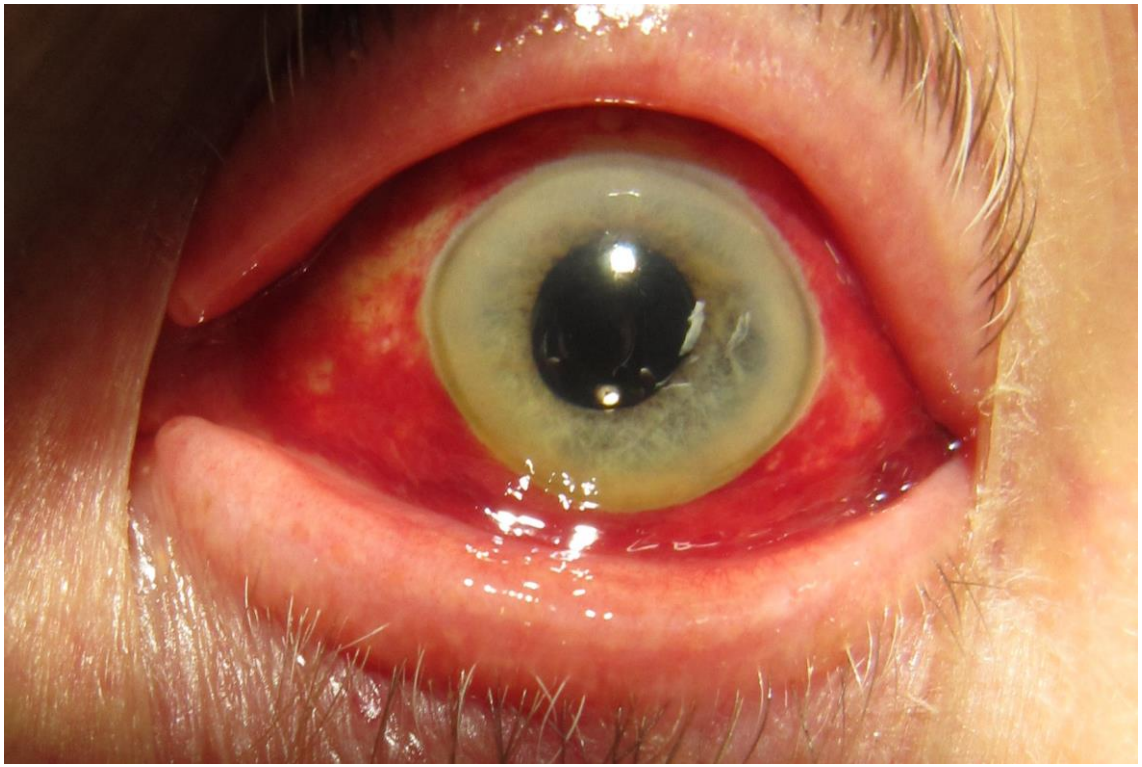
Red eye (acute onset, painless, unilateral)

- Conjunctivitis
- Subconjunctival haemorrhage
- Episcleritis
- Allergic reaction

Red eye (acute onset, painless, unilateral)



Red eye (acute onset, painless, unilateral)



Red eye, Case 4

Acute onset, painless, bilateral

Red eye (acute onset, painless, bilateral)
Case 4

22 year old male

1 week Hx of painless red eyes

Associated Sx: dry, itchy

PMHx: nil

POHx: nil, emmetropic, can't remember last eye test

Medications & allergies: nil regular medications, NKDA

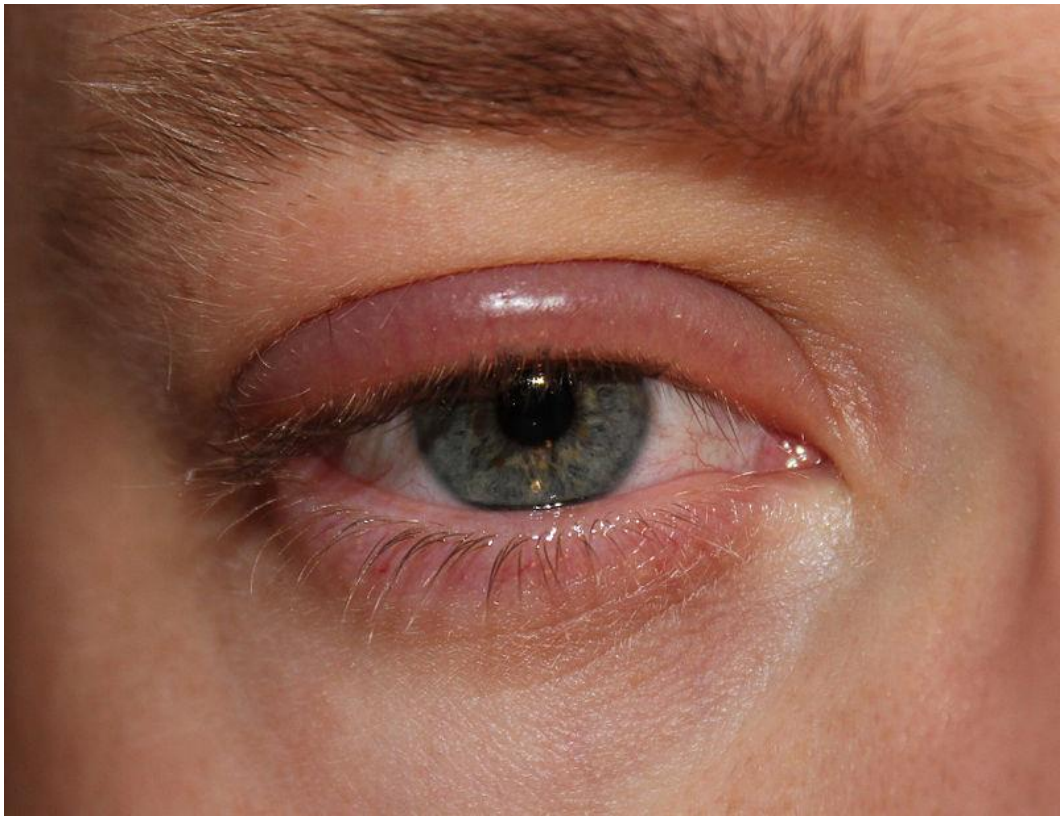
SHx: non smoker, officeworker, teetotal

FHx: grandmother cataract

RoS: Systemically well

O/E: V/A 6/6 (OS & OD), no field defect, PERRLA, full ROM in extraocular muscles

Red eye (acute onset, painless, bilateral)
Case 4



Red eye (acute onset, painless, bilateral)
Case 4

POLL OPEN

What is the most appropriate management?

1 Provide reassurance and discharge the patient
0%

2 Urgent, same day referral to ophthalmologist
0%

3 Non urgent referral to ophthalmologist
0%

4 Provide advice on lid hygiene and discharge the patient
0%

5 Topical ocular lubricants and refer to ophthalmologist
0%

Red eye (acute onset, painless, bilateral)
Case 4

POLL OPEN

What is the most likely diagnosis?

1 Blepharitis
0%

2 Conjunctivitis
0%

3 Allergic reaction
0%

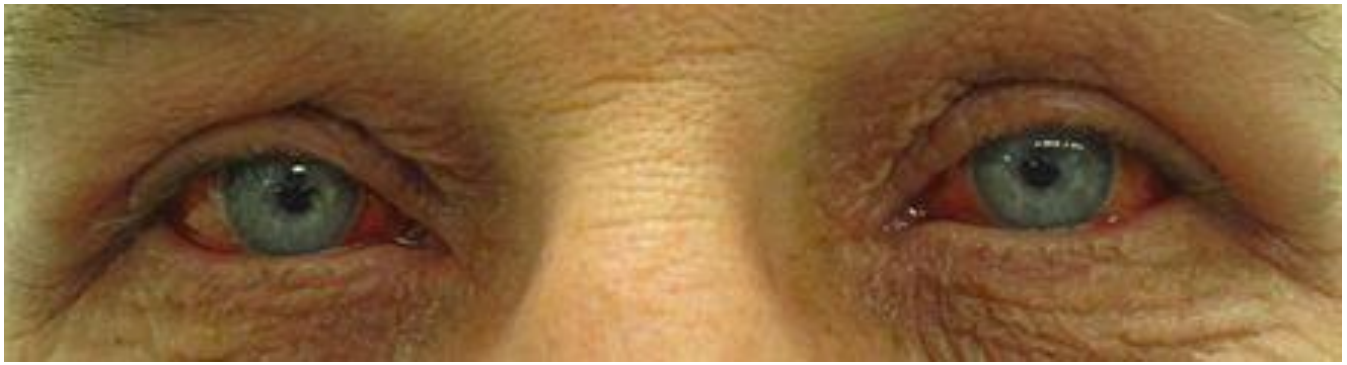
4 Thyroid eye disease
0%

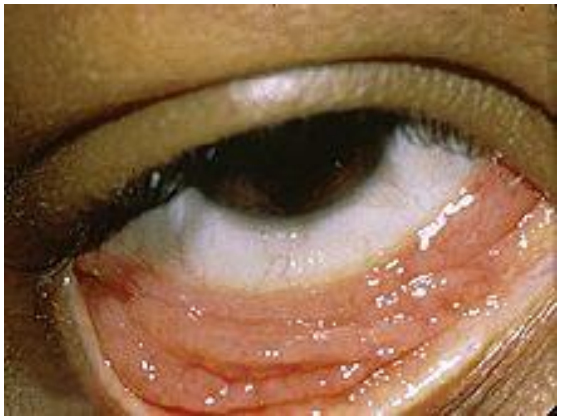
5 Orbital cellulitis
0%

Red eye (acute onset, painless, bilateral)

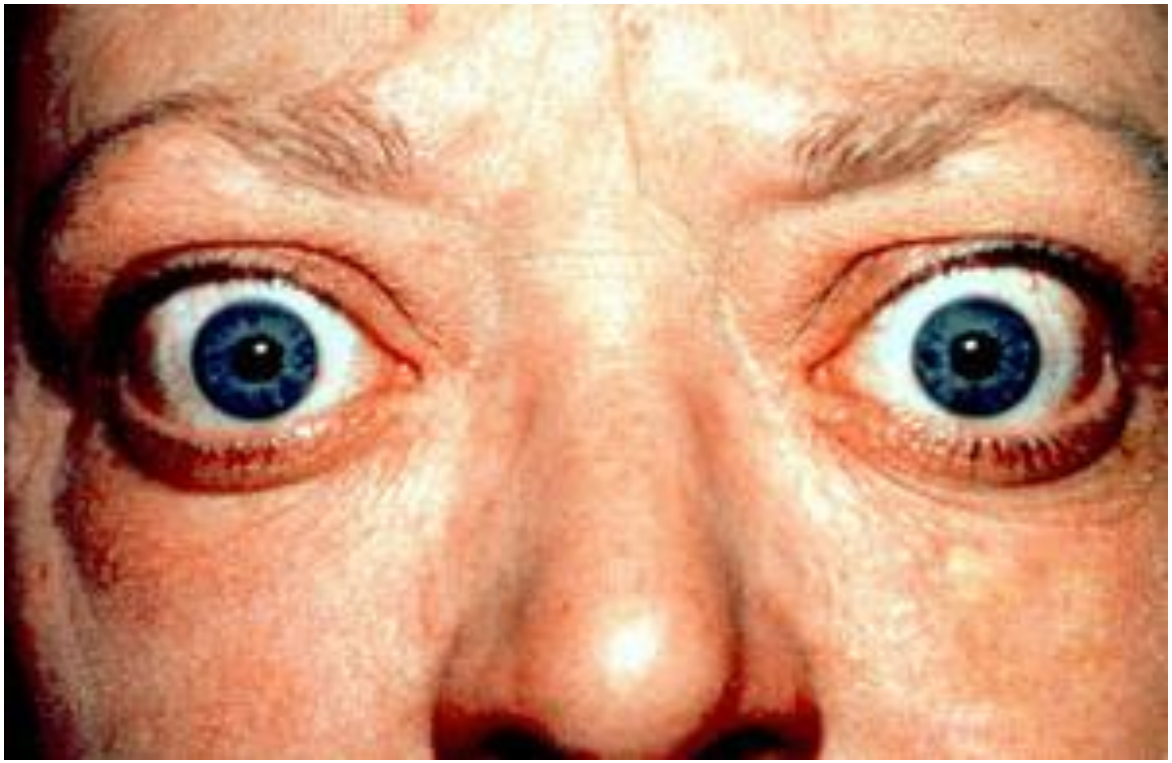
- Conjunctivitis
- Blepharitis
- Allergy
- Thyroid eye disease

Red eye (acute onset, painless, bilateral)





Red eye (acute onset, painless, bilateral)



Painful eye

Painful eye

- Painful eye normal appearance
- Painful red eye
  - Already covered!

Painful eye, Case 5

Painful eye, normal appearance
Case 5

50 year old female

2/52 Hx of painful left eye, gradual onset, pain located behind eye, worse on movement

Associated Sx: blurred vision in LE

PMHx: T2DM, hypothyroidism

POHx: refractive surgery in 20s

Medications & allergies: metformin 1g BD, levothyroxine 125 micrograms OM, codeine – “nausea and vomiting”

SHx: smokes 20/day (60 pack years), teacher, teetotal

FHx: father - wet AMD

RoS: Systemically well

O/E: V/A 6/6 OD, 6/9 OS, no gross field defect, PERRLA, full ROM in extraocular muscles, pain in LE reported on movement

Painful eye, normal appearance
Case 5

POLL OPEN

What is the most appropriate management?

1 Provide reassurance and discharge the patient
0%

2 Urgent, same day referral to ophthalmologist
0%

3 Non urgent referral to ophthalmologist
0%

4 Commence corticosteroid therapy and refer to neurology
0%

5 Recheck TFTs and increase levothyroxine
0%

Painful eye, normal appearance
Case 5

POLL OPEN

What is the most likely diagnosis?

1 Temporal arteritis
0%

2 Optic neuritis
0%

3 Incorrect refractive correction
0%

4 Ocular migraine
0%

5 Sinusitis
0%

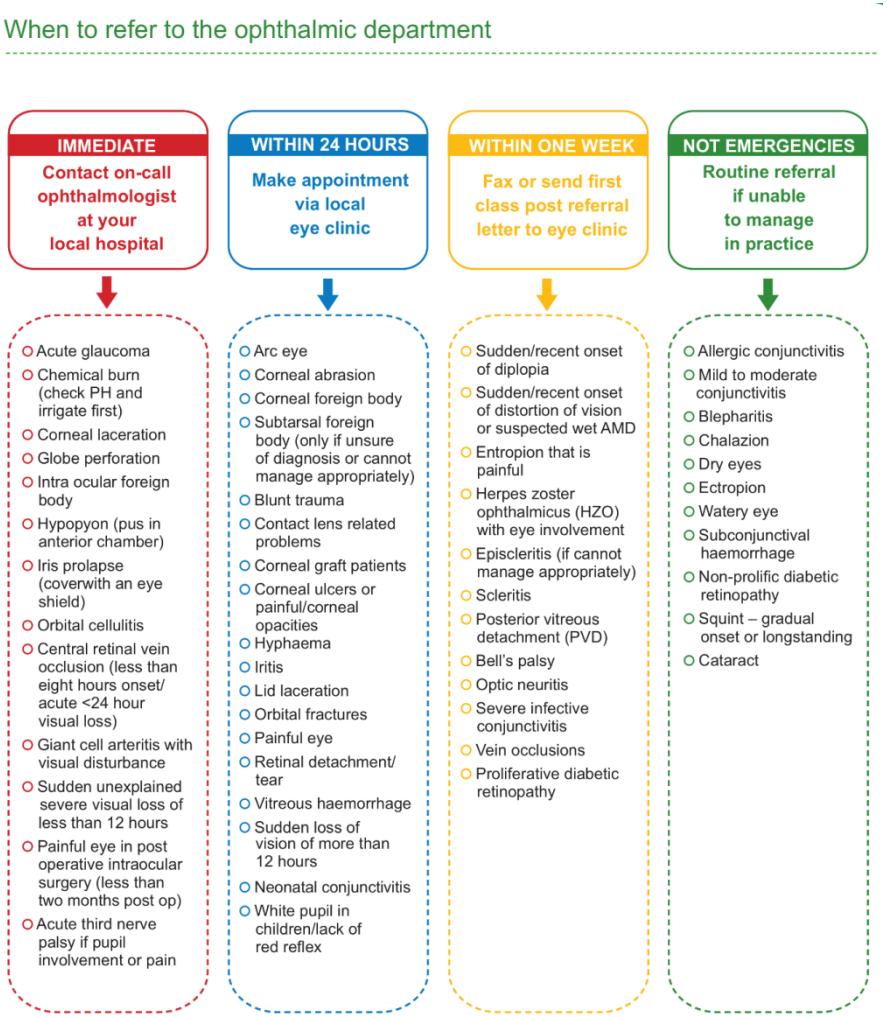
Painful eye, normal appearance

- Temporal arteritis
- Sinusitis
- Neuralgia
- Incorrect refractive correction
- Migraine
- Ischemia
- Optic neuritis

Visual symptoms

Visual symptoms

- Loss or reduction of vision
  - **Acute total loss of vision**
  - **Acute partial loss of vision**
  - Chronic loss of vision
- Flashes, floaters and cobwebs
- Diplopia (double vision)



Visual symptoms, Case 6

Visual symptoms, Case 6

80 year old male

2 hour history of decreased vision RE

Associated Sx: nil significant, denies pain

PMHx: T2DM, HTN, dyslipidemia

POHx: cataract surgery RE ~ 10 years ago

Medications & allergies: metformin 1g BD, amlodipine 5mg ON, atorvastatin 40mg ON, NKDA

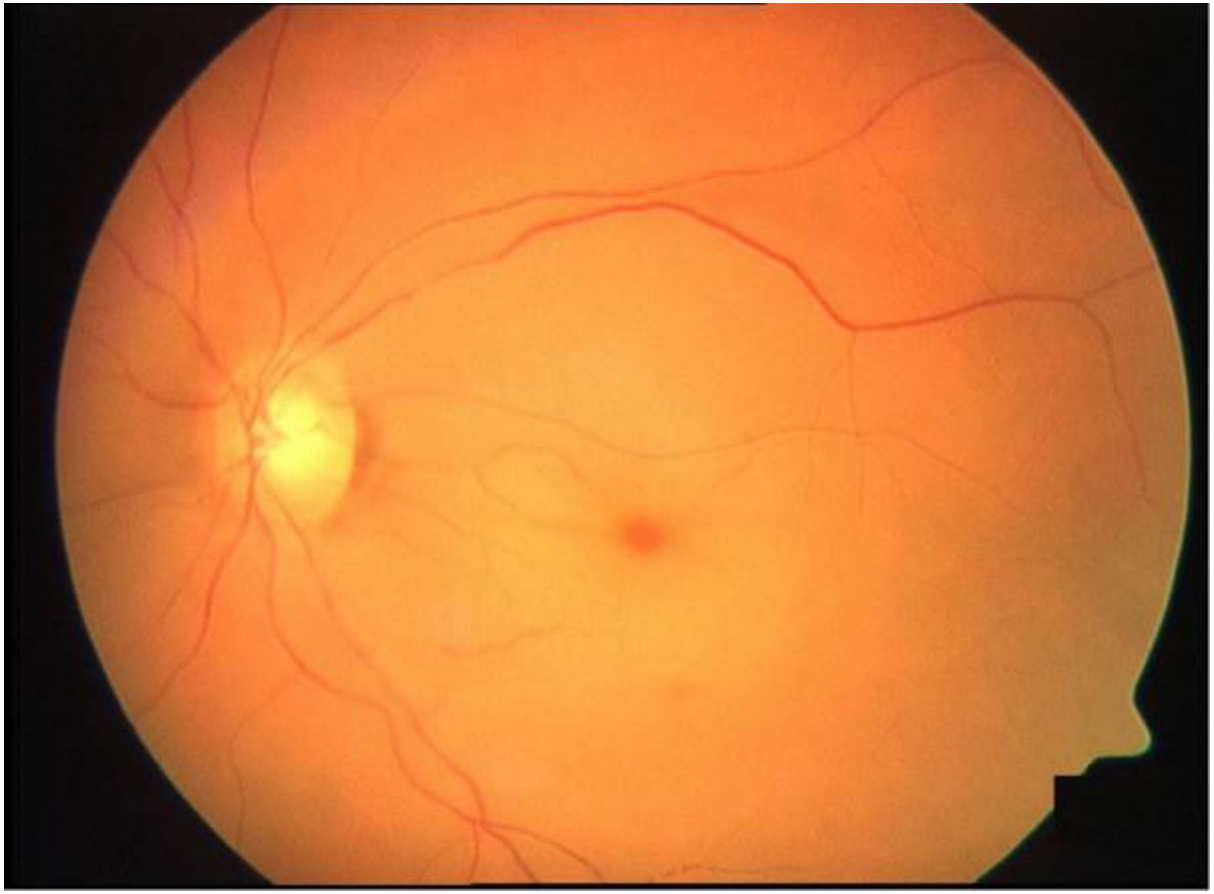
SHx: non smoker, retired naval officer, 7 units/week EtOH, lives alone

FHx: nil significant

RoS: Systemically well

O/E: V/A HM OD, 6/9 OS, unable to assess fields, RAPD RE, full ROM in extraocular muscles

Visual symptoms, Case 6



Visual symptoms, Case 6

POLL OPEN

What is the most appropriate management?

1 Provide reassurance and discharge the patient

2 Urgent, same day referral to ophthalmologist

3 Non urgent referral to ophthalmologist

4 Commence corticosteroid therapy and refer to neurology

5 Measure ESR and CRP, consider commencement of steroid therapy

Painful eye, normal appearance
Case 5

POLL OPEN

What is the most likely diagnosis?

1 Non-arteritic ischaemic optic neuropathy

2 Temporal arteritis

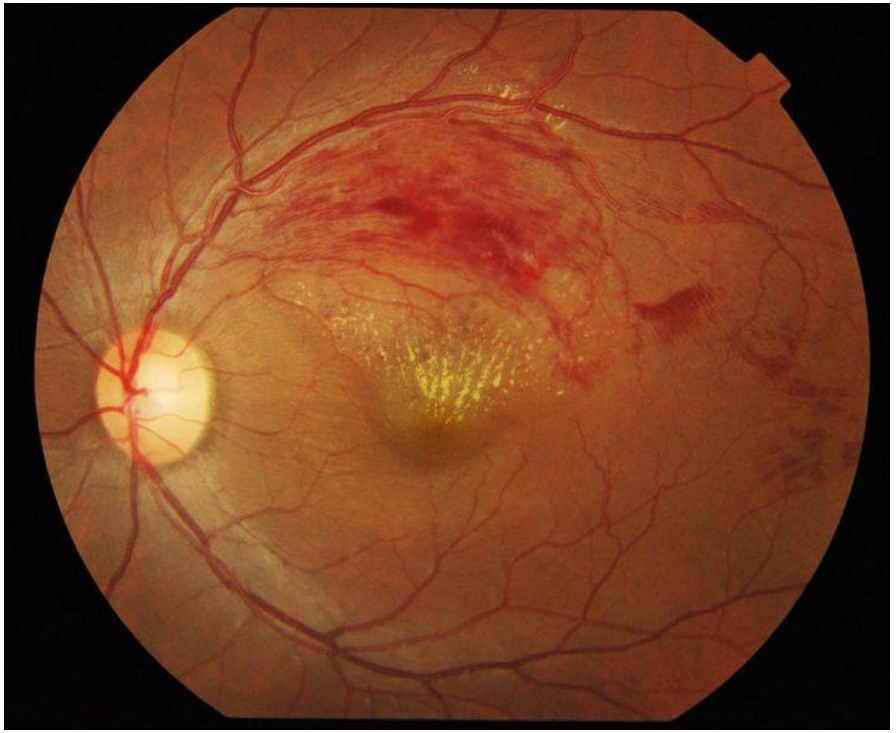
3 Central retinal vein occlusion

4 Central retinal artery occlusion

5 Retinal detachment

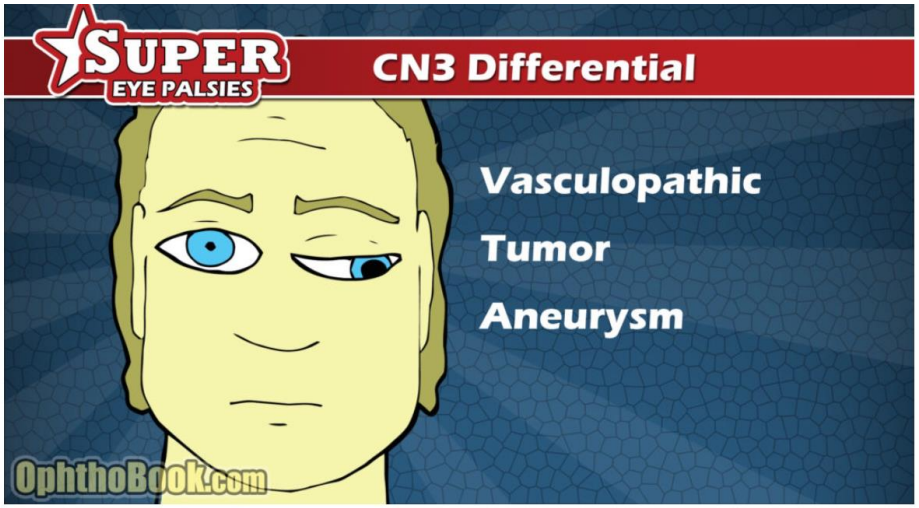
Visual symptoms, Case 6

- Differential diagnosis:
- giant cell arteritis
- Central or branch retinal artery occlusion
- Non-arteritic ischaemic optic neuropathy
- Retinal detachment
- Central or branch retinal vein occlusion
- Vitreous haemorrhage



Visual symptoms (diplopia)

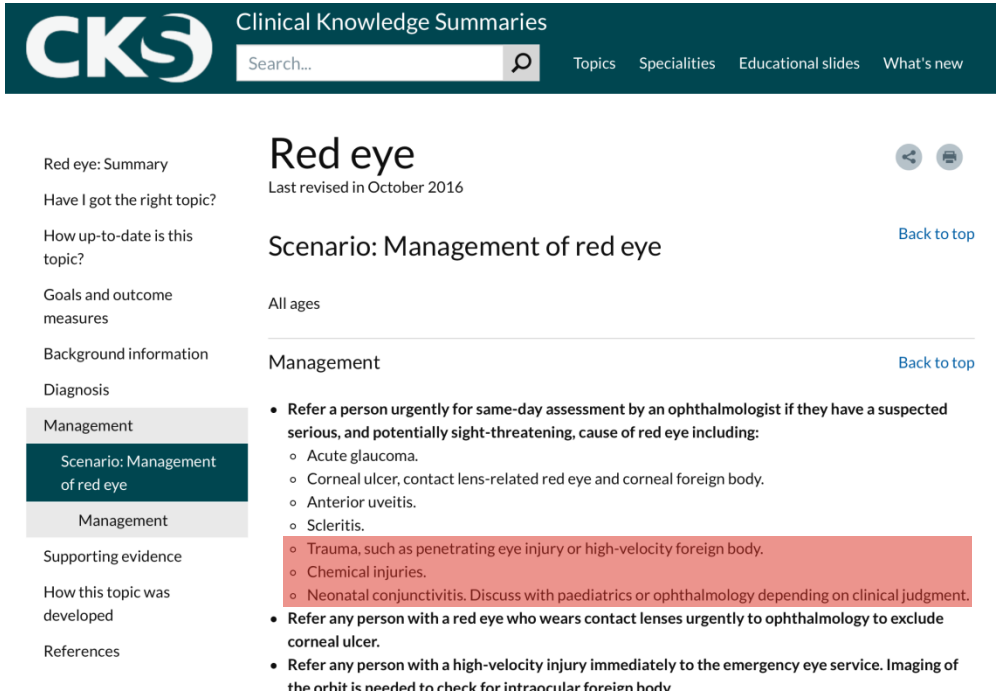
- Refer all acute third nerve palsies if pupil involvement or pain
- Tim root: super eye palsies; https://youtu.be/FKrCh6BnTR4



A 3rd nerve palsy has specific pattern … a down and out eye, combined with a droopy eyelid and blown pupil. The underlying differential is extensive, but tends to be from vasculopathic problems (diabetes and hypertension), tumor, or aneurysm.

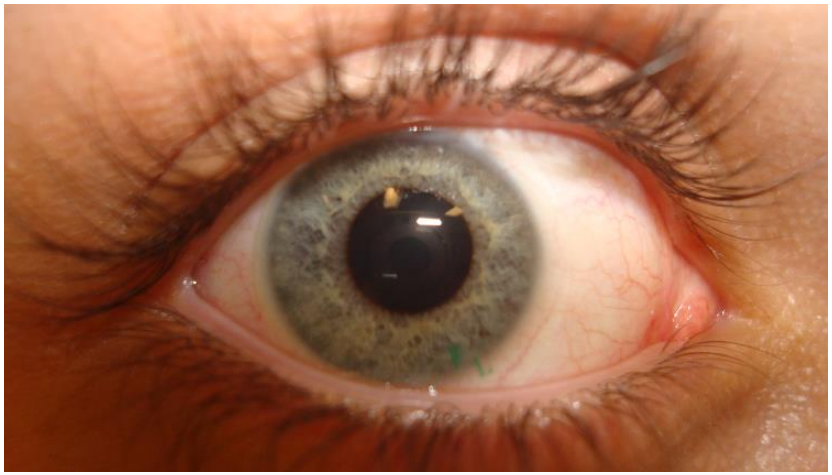
Trauma

- Chemical injury
  - Acid vs alkali
- Foreign body/abrasion
- Thermal injury
- Blunt injury
  - Globe rupture
  - Orbital haematoma (with/without view of eye)
  - Blow out fracture
  - Hyphema
- Sharp injury



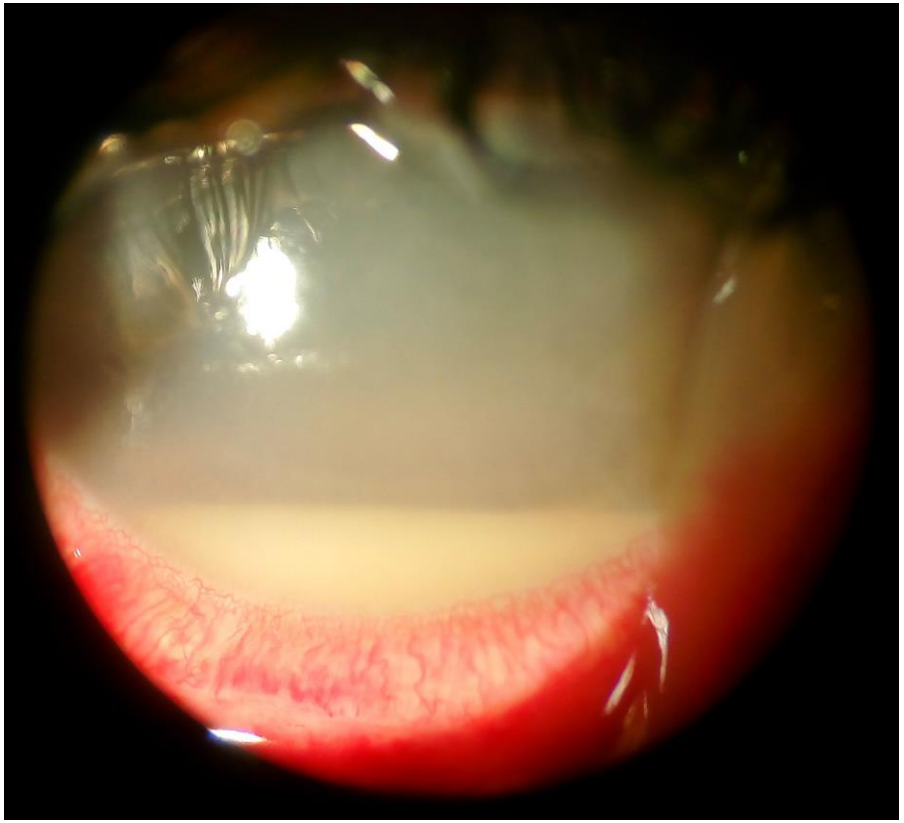
Contact lens problems

- Overwear
- Accidental instillation of cleaning fluid into eye
- “Lost lenses”



Post-operative complications

- Discomfort/pain
- Visual disturbance
- Reduced vision
- Red eye
- Foreign body sensation
- Gradual blurring



Referral summary

Common eye condition management

When to refer to the ophthalmic department

IMMEDIATE	WITHIN 24 HOURS	WITHIN ONE WEEK	NOT EMERGENCIES
Contact on-call ophthalmologist at your local hospital	Make appointment via local eye clinic	Fax or send first class post referral letter to eye clinic	Routine referral if unable to manage in practice
Acute glaucoma	Arc eye	Sudden/recent onset of diplopia	Allergic conjunctivitis
Chemical burn (check PH and irrigate first)	Corneal abrasion	Sudden/recent onset of distortion of vision or suspected wet AMD	Mild to moderate conjunctivitis
Corneal laceration	Corneal foreign body	Entropion that is painful	Blepharitis
Globe perforation	Subtarsal foreign body (only if unsure of diagnosis or cannot manage appropriately)	Herpes zoster ophthalmicus (HZO) with eye involvement	Chalazion
Intra ocular foreign body	Blunt trauma	Episcleritis (if cannot manage appropriately)	Dry eyes
Hypopyon (pus in anterior chamber)	Contact lens related problems	Scleritis	Ectropion
Iris prolapse (coverwith an eye shield)	Corneal graft patients	Posterior vitreous detachment (PVD)	Watery eye
Orbital cellulitis	Corneal ulcers or painful/corneal opacities	Bell's palsy	Subconjunctival haemorrhage
Central retinal vein occlusion (less than eight hours onset/ acute <24 hour visual loss)	Hyphaema	Optic neuritis	Non-prolific diabetic retinopathy
Giant cell arteritis with visual disturbance	Iritis	Severe infective conjunctivitis	Squint – gradual onset or longstanding
Sudden unexplained severe visual loss of less than 12 hours	Lid laceration	Vein occlusions	Cataract
Painful eye in post operative intraocular surgery (less than two months post op)	Orbital fractures	Proliferative diabetic retinopathy	
Acute third nerve palsy if pupil involvement or pain	Painful eye		
	Retinal detachment/ tear		
	Vitreous haemorrhage		
	Sudden loss of vision of more than 12 hours		
	Neonatal conjunctivitis		
	White pupil in children/lack of red reflex		

Intended learning outcomes

- Define “ocular emergency”
- Develop a safe diagnostic approach when faced with emergency presentations
- Recognise and implement immediate management decisions required to prevent clinical deterioration
- Establish an effective referral protocol

Resources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VIRTUAL EYE PROFESSOR
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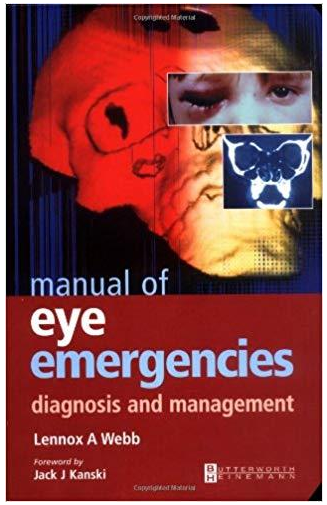
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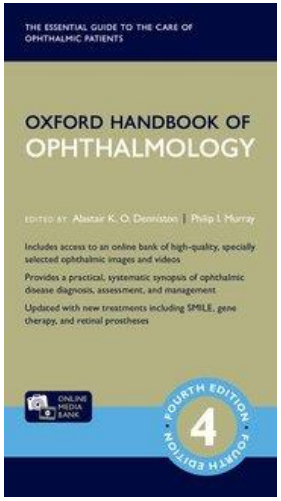
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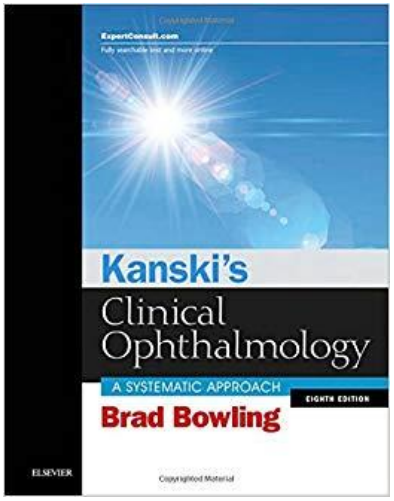
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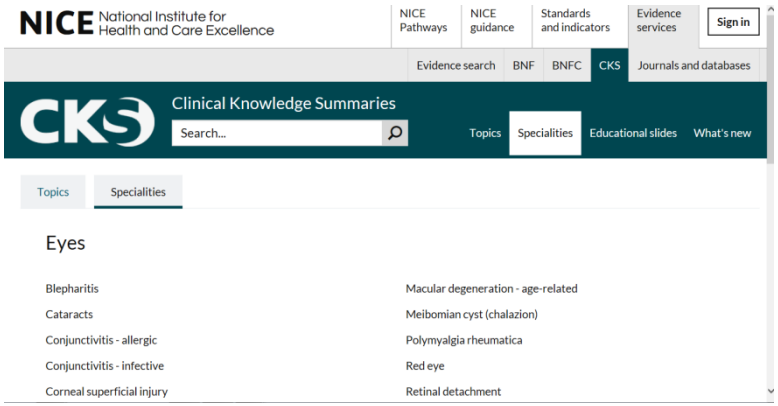
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Evidence services
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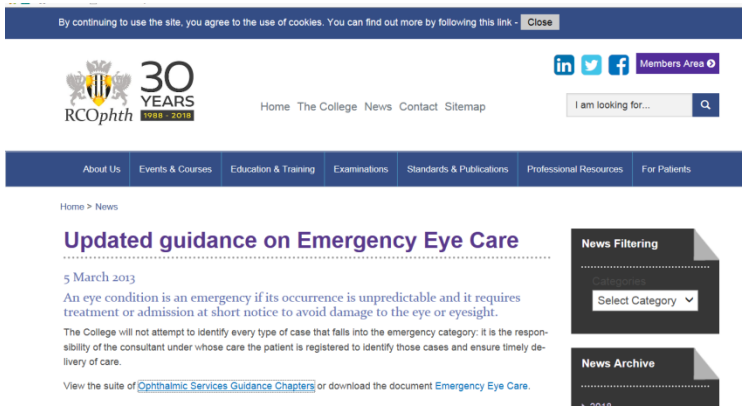
Search...
Topics
Specialities
Educational slides
What's new
Topics
Specialities
Eyes
Blepharitis
Cataracts
Conjunctivitis - allergic
Conjunctivitis - infective
Corneal superficial injury
Macular degeneration - age-related
Meibomian cyst (chalazion)
Polymyalgia rheumatica
Red eye
Retinal detachment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5 March 2013
An eye condition is an emergency if its occurrence is unpredictable and it requires treatment or admission at short notice to avoid damage to the eye or eyesight.
The College will not attempt to identify every type of case that falls into the emergency category: it is the responsibility of the consultant under whose care the patient is registered to identify those cases and ensure timely delivery of care.
View the suite of Ophthalmic Services Guidance Chapters or download the document Emergency Eye Care.
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Questions?

Email: alexandra.brant@nhs.net