Ophthalmology

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Acknowledgment of Country

We acknowledge the traditional custodians of the many lands on which we all meet today. We acknowledge this is Aboriginal land.

We pay our respect to Elders, past, present and emerging, extending that respect to Aboriginal and Torres Strait Islander people here today.

We respectfully recognise the continuing relationship Aboriginal and Torres Strait Islander peoples have with this land.

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Learning objectives

By the end of this session, you will be able to

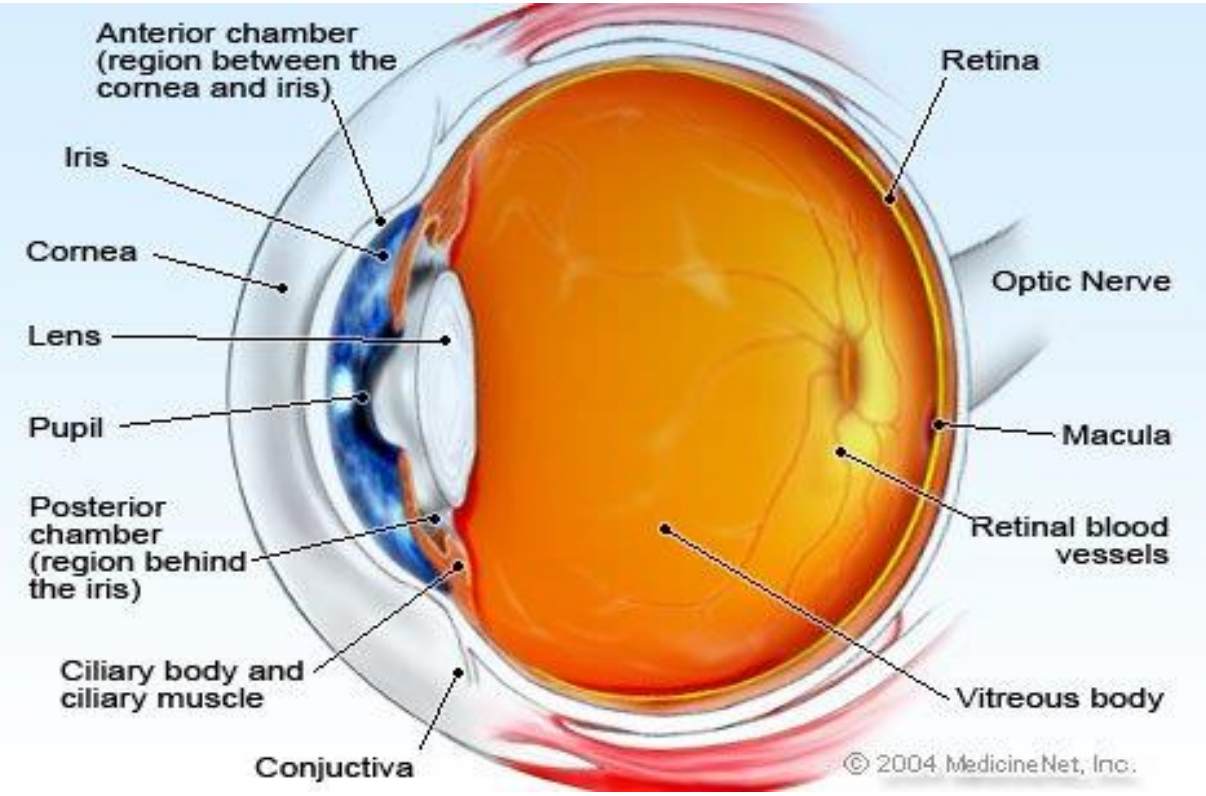
1. Confidently **identify essential eye equipment** required to perform an **eye examination and** practice **basic eye examinations**
2. Understand the **assessment of the red eye** and the **management of common eye** presentations
3. Develop a **concise ophthalmology toolkit**

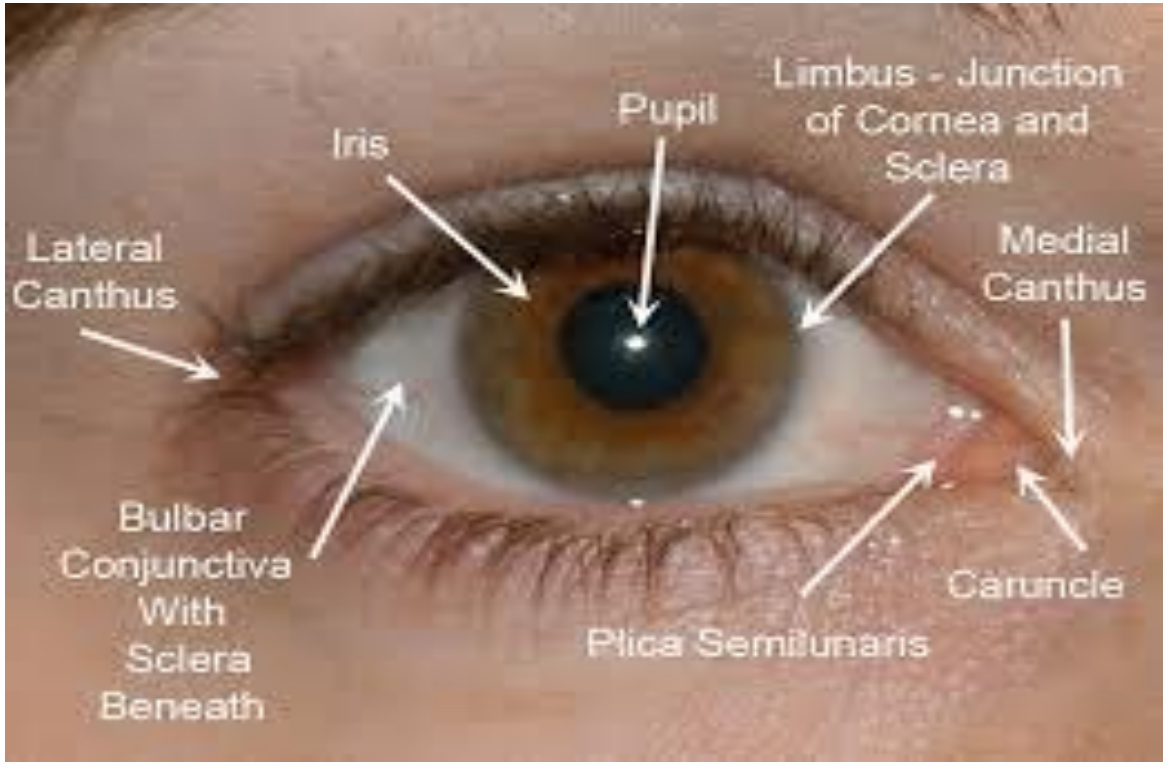
Obligatory quote:

“The eyes are the window of the soul”

- *The Bible / Cicero / Leonardo Da Vinci / Gillaume de Salluste Du Bartas / William Shakespeare*
- *At some point between 50 BCE to 1580 CE*

Anatomy refresher





What are the key questions on history you'd ask if someone presents with an eye problem?

Five key questions

Do you have **pain?**

Are you **sensitive to the light?**

Has your **vision been affected ?**

Does it **hurt** when you **move** your eyes?

Do you wear **contact lenses**?

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Follow up questions

1. **Do you have pain?**
2. **Are you sensitive to the light?**
3. **Has your vision been affected?**
4. **Does it hurt when you move your eyes?**
5. **Do you wear contact lenses?**

6. Leisure activities / occupational history / trauma
7. Other symptoms: itch, grittiness, tearing, soreness,
8. Do you have any medical problems check medication / OTC
9. Any history of intraocular surgery

Five pieces of equipment

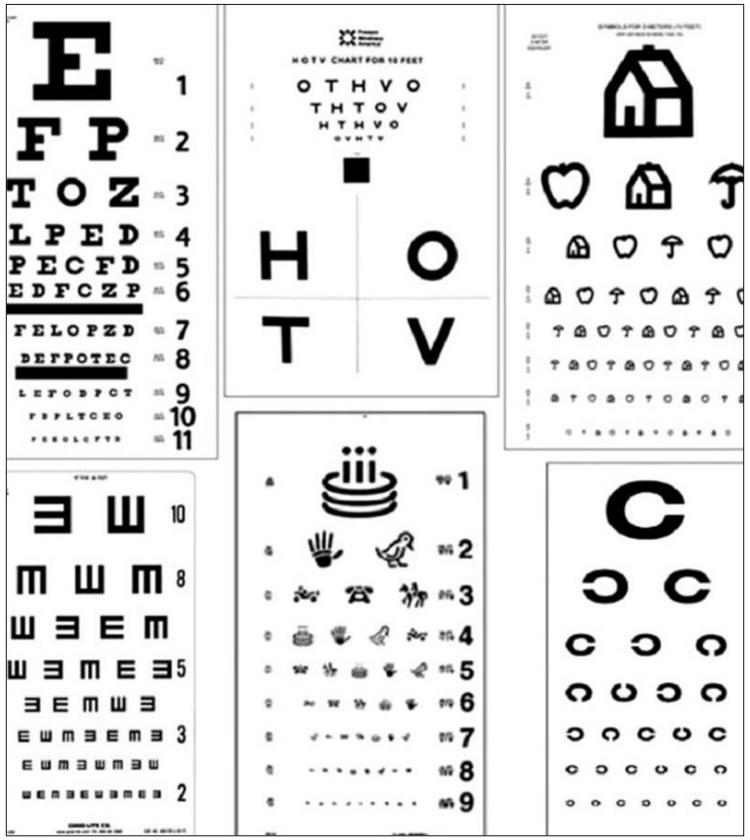
1. **Snellen** chart
2. **Ophthalmoscope**
3. **Cotton tip**
4. **Fluorescein**
5. **Foreign body** removal kit (magnification)

Five procedures

1. Assess **acuity**
2. **Visualise** the eye
3. **Evert** eyelid check eye
4. Stain with **fluorescein**
5. **Remove** foreign body (corneal)

Equipment, examination and procedures

1. Snellen chart



- Assesses **visual acuity**
- Need good **lighting**
- **?how far** from chart (which one!?)
- **With** glasses/contacts
- See the **lowest line** they can read
- Check with **pinhole**

NESB / aphasic shape charts available

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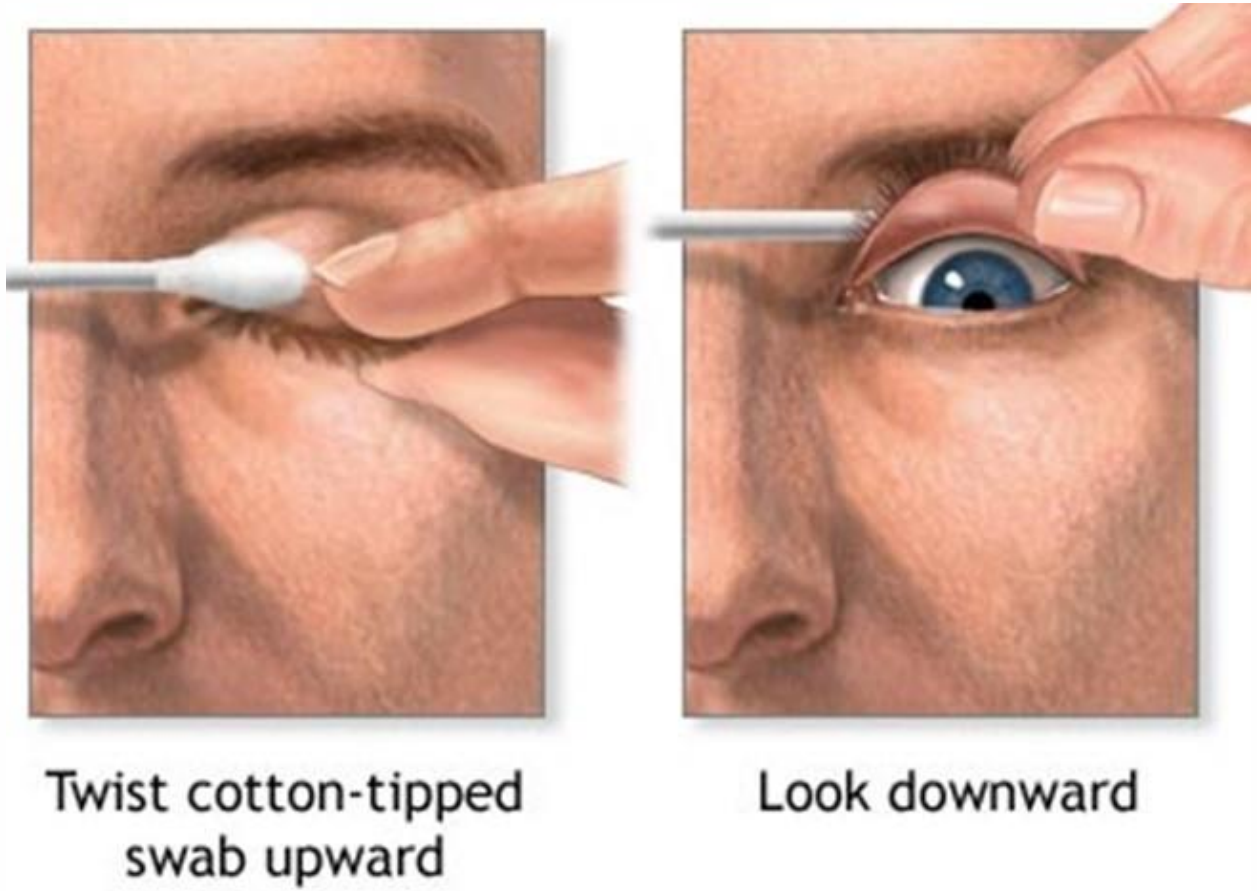
2. Ophthalmoscope

- Neonatal exam: looking for **red reflex**
- **Cornea:** ulcers, abrasions, foreign bodies,
- **Pupil:** size, shape, reactivity
- **Optic disc:** e.g. young woman on OCP
- **Retina:** can you see it? Tears, haemorrhage

3. Cotton tips (~blue swabs!)

- **Everting** the upper eyelid
- **Sweeping** the lower eyelid

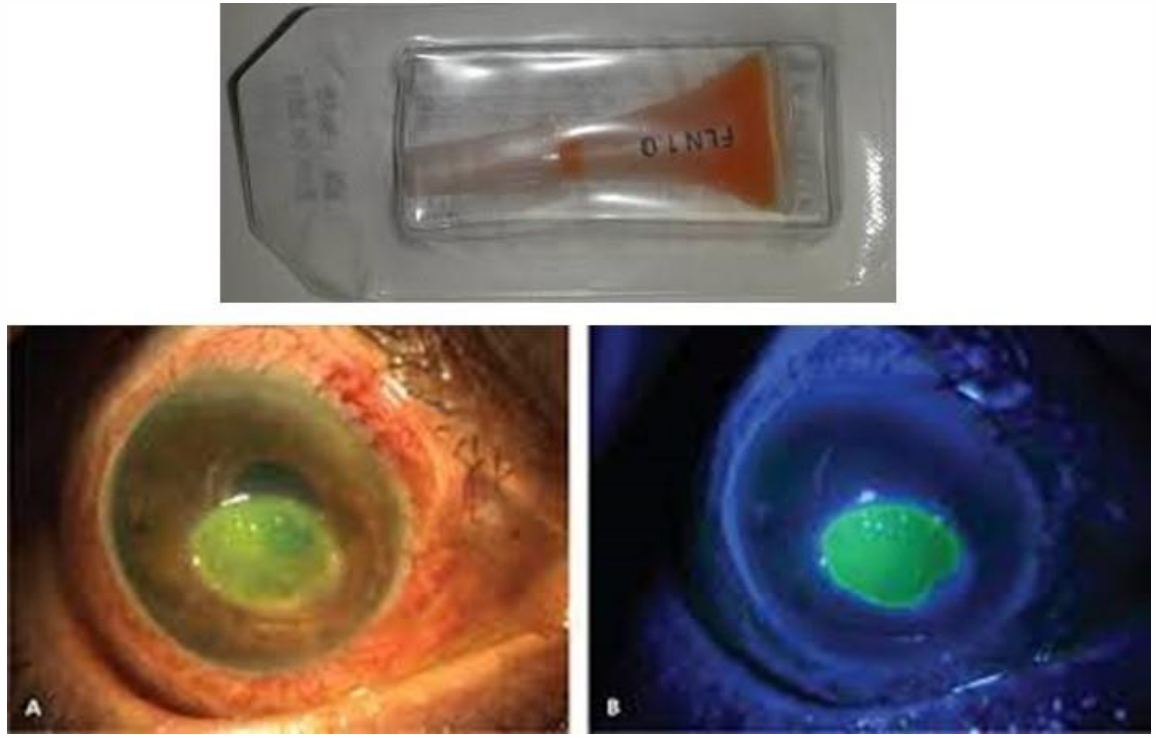


Everting the eyelid and removing FBs

- **Set up** patient
  - Well **lit** plus **magnification**
  - Give patient **tissue** to hold
- Explain this may be **uncomfortable**
- **‘Look** at your **feet,** keep **looking down’**
- Should **not hurt** so practise!
- **Checking** structures and **looking** for
  - Subtarsal **foreign body**, flecks of **dirt**, **cysts**, **redness**, **tenderness**, **stye**, **chalazion**

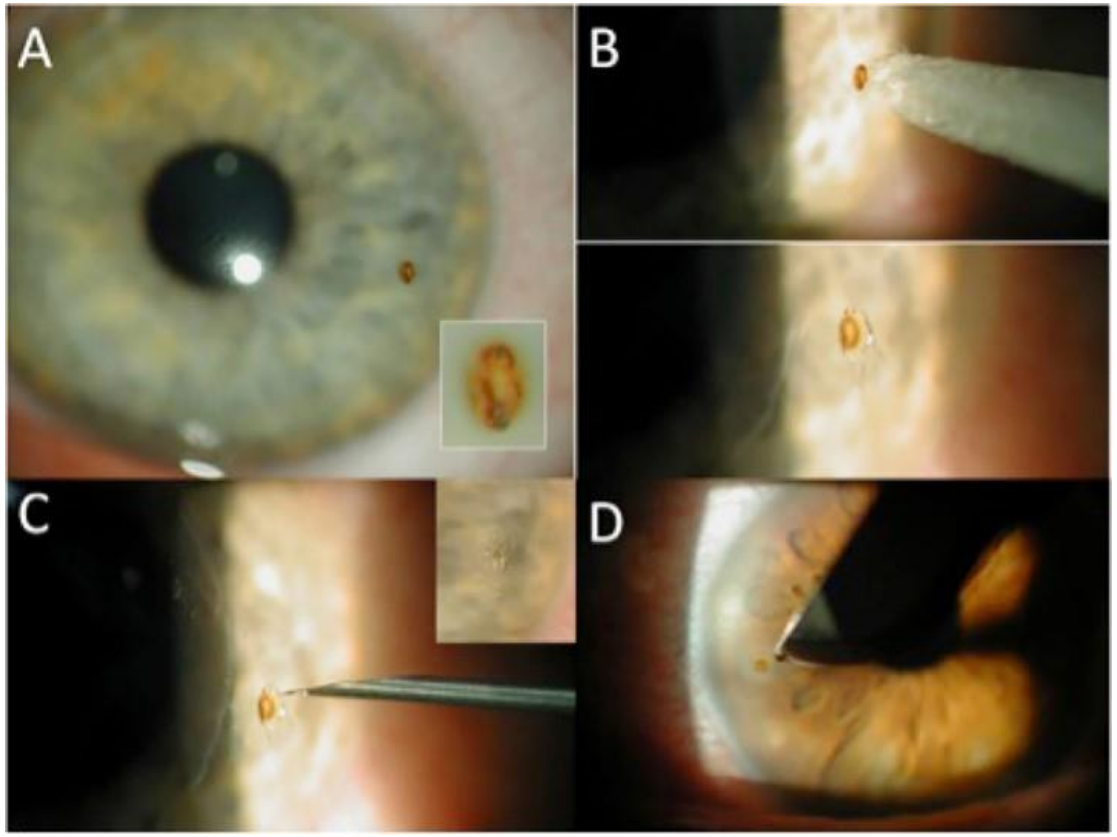
4. Fluoroscein

- **Strips** or **drops** or combined +/- **LA** local anaesthetic
- Needs **blue light**
- Ask: **contact lens** user?
- **Corneal defects**: linear, serpiginous, proximity to centre of cornea
- Will also show up **penetrating** injuries -> **ED / eye reg**



5. Your corneal FB removal kit

- **25G** needle on **syringe**
- **Tips** for foreign body removal
  - Good **lighting, magnification**
  - **Angle hand** and approach cornea with needle **parallel** to the surface
  - Ask patient to **fix their vision** and let **you know** if want to **blink**
  - Pupil **irregularity -> ?penetration**



Corneal FB and abrasions

Refer

- Reduced **visual acuity**
- **Central**
- History of **drilling**
- **Distortion** of pupil
- **Organic** matter
- **Incomplete** removal

Cases

The acute red eye

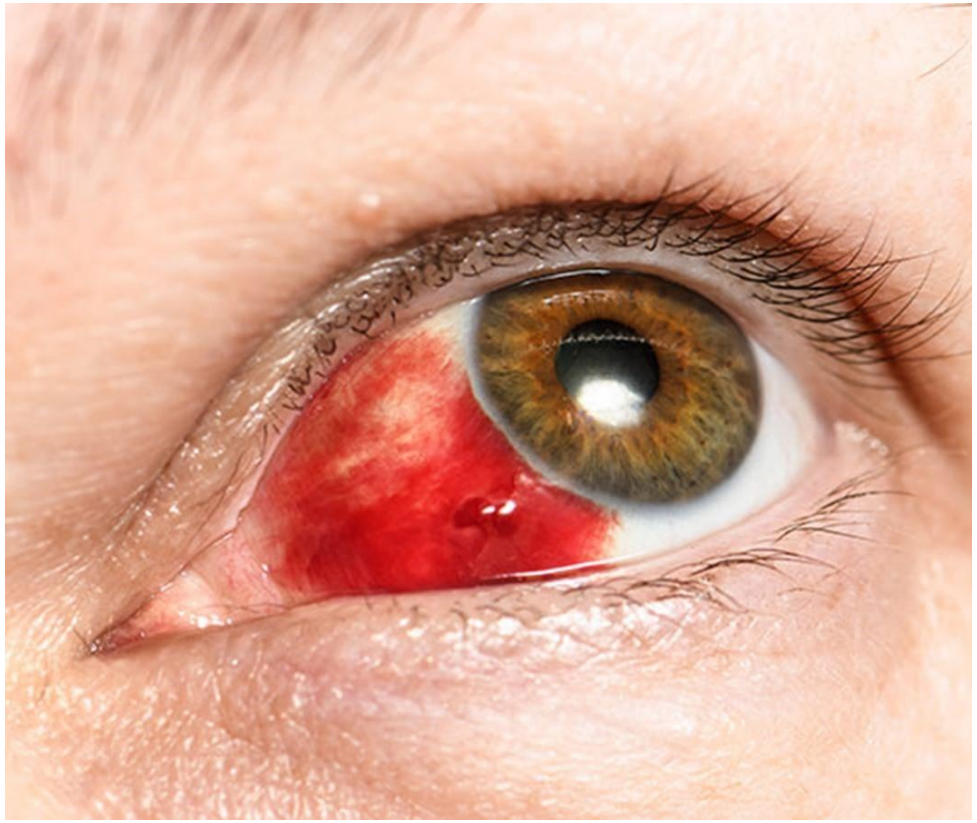
Red eye presentations

- Pain**LESS**

- Pain**FUL**

Pain**LESS** red eye

Sudden onset bright red eye

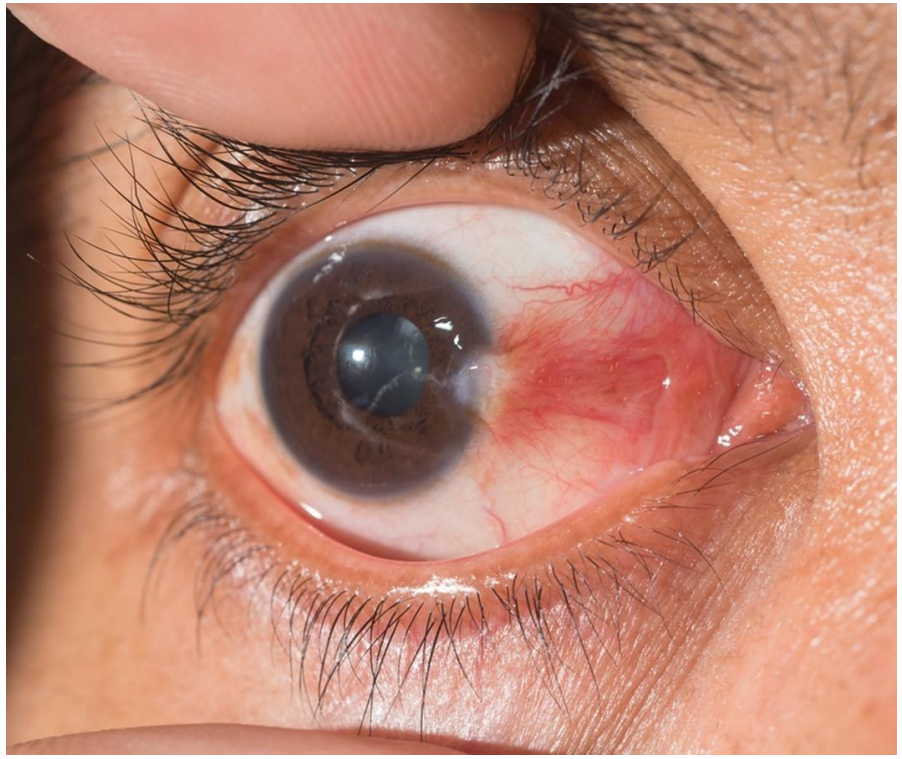


- Often appears **overnight**
- Painless
- Nil other symptoms

Subconjunctival haemorrhage

- Looks **awful** and causes **anxiety**
- Note **limbic sparing**
- Unless due to **trauma** will resolve with **time**
- **Check** for:
  - Trauma
  - Straining (cough, sneeze, vomiting, Valsalva)
- Treat with **topical lubricants** as needed

Chronic change in a small area



- Often develops over **years**
- From **medial canthus**
- **Painless**, may become **irritated**
- **Nil** other **symptoms**

Pterygium

- Chronic conjunctival overgrowth caused by **irritation**
- Swimmers / surfers / outdoor workers
- **Conservative** management until:
  - Covers pupil
  - Irritates eye too much
- Will need **surgical removal**

- See also: **pinguecula**

Focus on **conjunctivitis**

Which is which is which…

Conjunctivitis – historical hints

- **Viral**
  - Adults > kids, burning, watery discharge, **URTI S&S**, **unilateral -> bilateral**
- **Bacterial**
  - Kids > adults; more discharge, purulent, crusting; often **unilateral / bilateral**
  - Care in **newborns**: chlamydia and gonococcus screen
- **Allergic**
  - **Itch**, **atopy** history
  - **Treatment**: oral and topical anti-histamines / mast cell stabilisers

Any red flags require 'prompt referral'

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Sources: eTG (2023); Clinical Ophthalmology. 2020; 14: 805–813. AJGP Volume 49, Issue 10, October 2020

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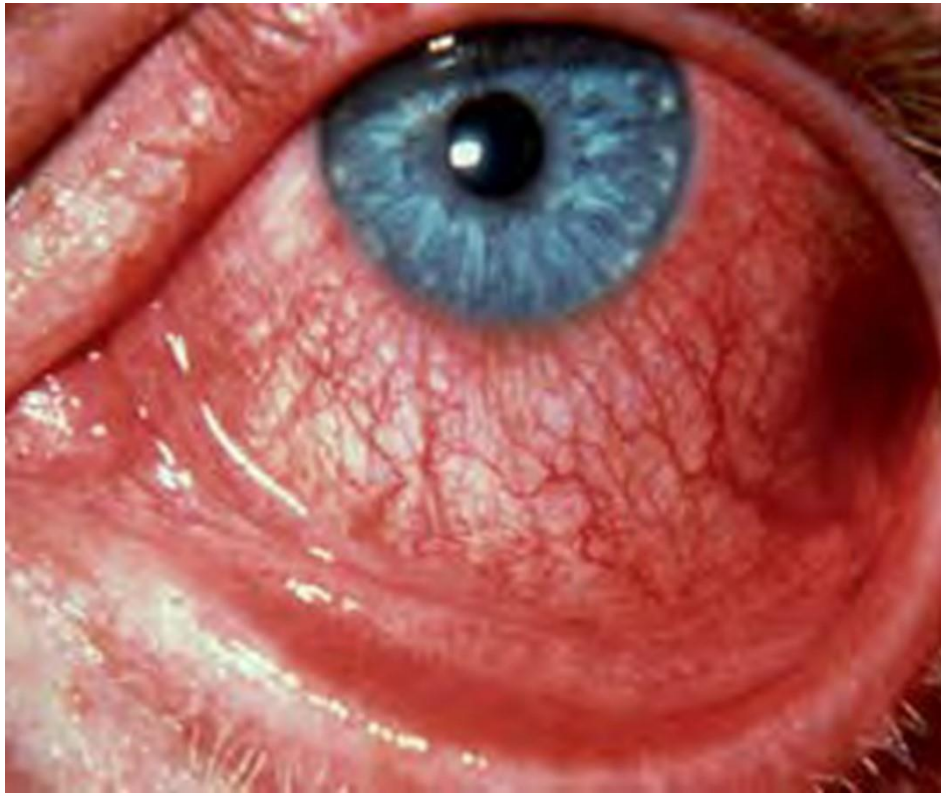
Conjunctivitis - viral



- **Treatment:** symptom control (compresses and lubricant drops)
- **NB**: explain 14 days infectious time frame

- **No steroids** without **ophal input**

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Source: eTG (2023)

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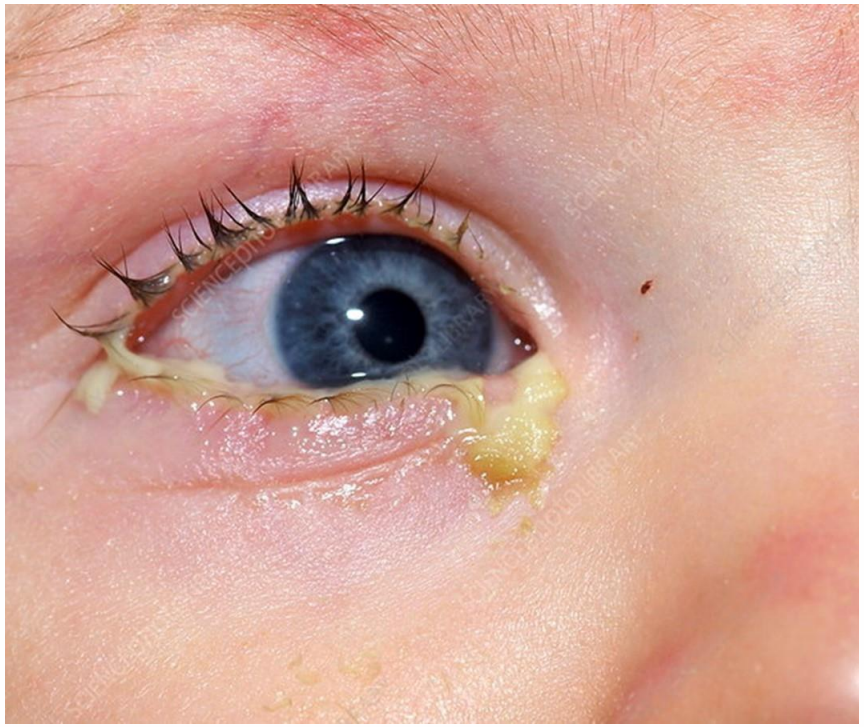
Conjunctivitis - bacterial



- Most **resolve** with **nil antibiotics** in 7/7
- **Treat** all **neonate / infants**
- **Neonates** will need STI swabs
  - **Chlamydia** – systemic treatment
  - **Gonorrhoea** – ophthalmological **emergency**
- **Treatment**
  - **Chloramphenicol** drops **QID up to 7/7**
  - Warn of possible **drop allergy!**

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Source: eTG (2023)

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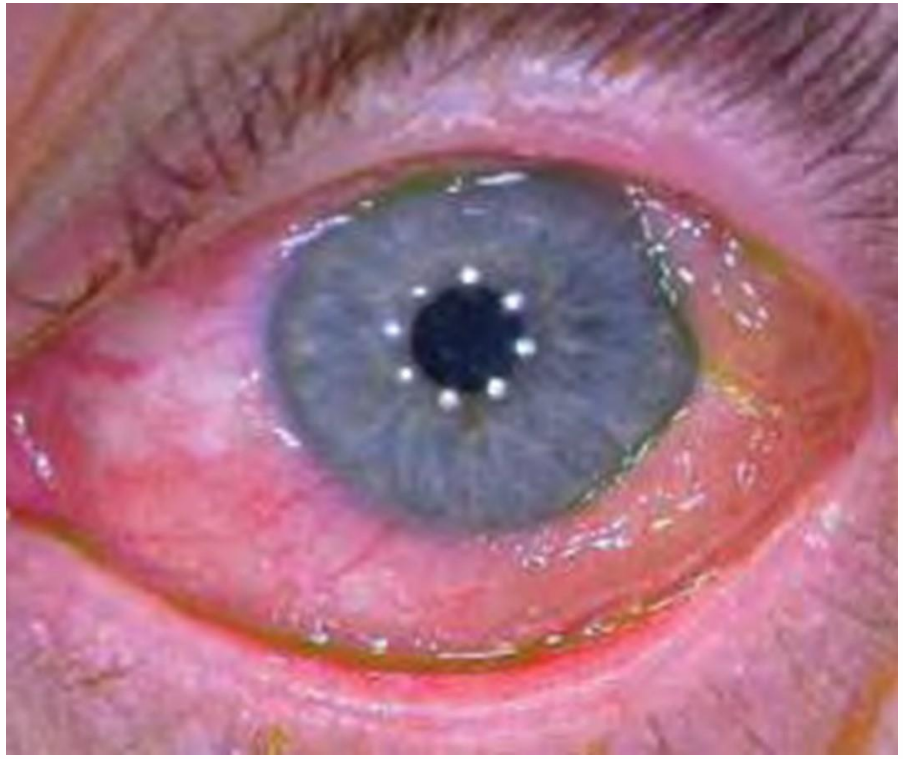
Conjunctivitis - allergic



- Bilateral
- Intense **itching - c**an be **severe**
- Often a clear **trigger**
- **Treatment**
  - **Azelastine** 1 drop BD-TDS (double action!)
  - **Opthal review** if not settling

- **No steroids** without **ophal input**

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Source: eTG (2023)

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Painless red eye – when to refer

- **Severe** or **worsening** symptoms
  - E.g. significant pain, reduced vision or photophobia
- **Not improving** despite treatment
- Uncertain **diagnosis**

Pain**FUL** red eye

Case 1

- **54 year old woman**
  - **1 week** of symptoms
  - **Painful,** watery, red right eye
  - **Photophobia**
  - Nil change **visual acuity**
  - **Seen elsewhere after 2/7of symptoms - >Chlorsig**
  - Using it **four times** per day
- **Nil improvement.**

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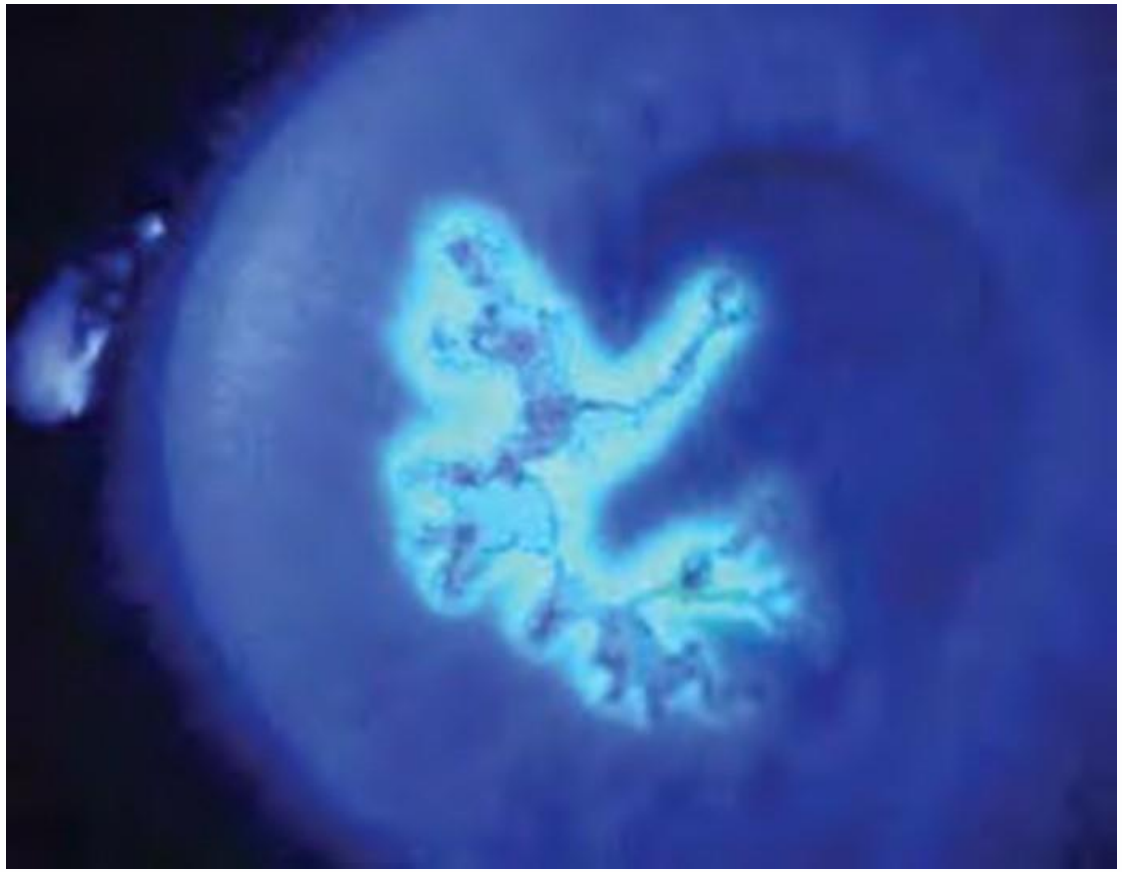
What procedures/examination/Ix are important here?

Further examination



<u>Fluorescein</u>

Dendritic ulcer

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HSV keratitis

Management

- **Ophthalmology** review in next **24 hours**
- Start **acyclovir** 3% **ointment** 5 x a day 10-14 days
- **Valaciclovir** 500 mg orally, BD for 7 - 10 days if nil ointment

Admit paediatric patients

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Source: eTG (2023)

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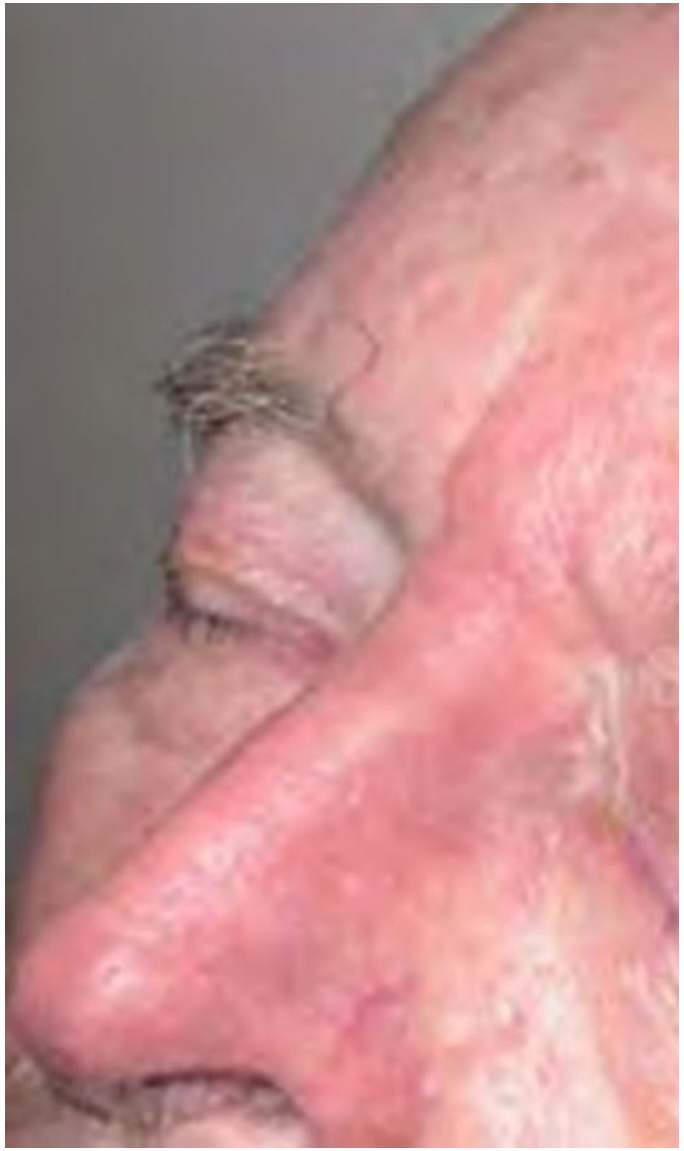
VZV / shingles

- NB: if skin lesions tip of nose -> nasociliary branch / **ophthalmic** division CN-V is affected
- Oral antiviral: **Valtrex** has best adherence
- **Analgesia**
- Talk to **ophthalmologist**



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Source: eTG (2023)

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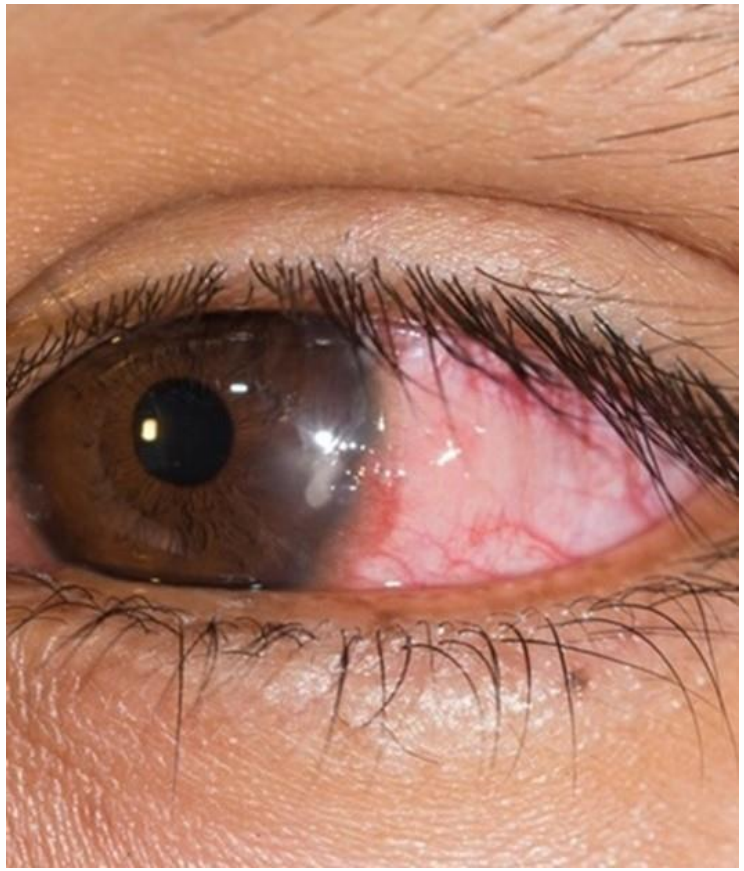
Case 2: Worsening painful left eye

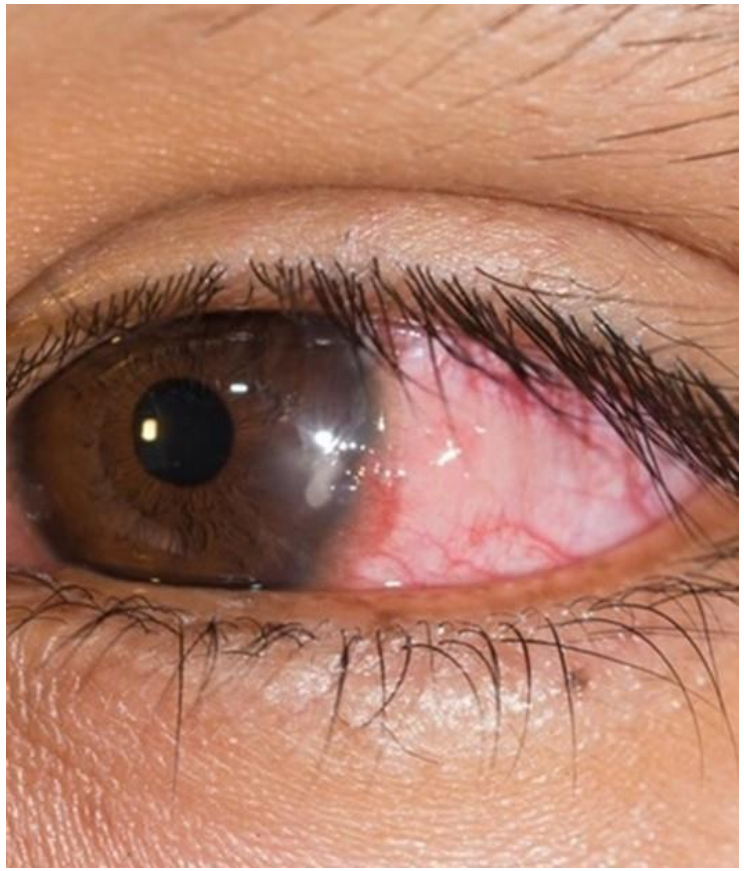


35-year-old man

- **Unilateral** painful red eye
- **Ran out** of contact lenses
- **Reusing** daily **lens** for 3 days in a row

What is your Pdx or Ddx?

Bacterial keratitis



Contact lens users

- Consider **Pseudomonas** and **Acanthomoeba**
- If reduced visual acuity, refer immediately: **sight threatening**

Management

- If ophthalmologist onsite do NOT treat: pre=treatment corneal scrape preferred
- If not -> **ciprofloxacin 0.3% <u>HOURLY ASAP</u>**
- This includes **<u>overnight</u>**

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Source: eTG (2023)

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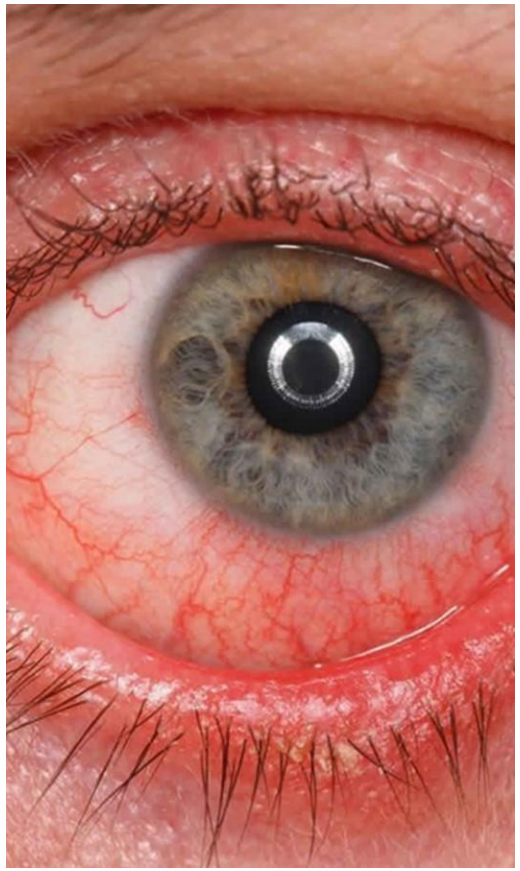
Case 3: Sudden eye pain at work

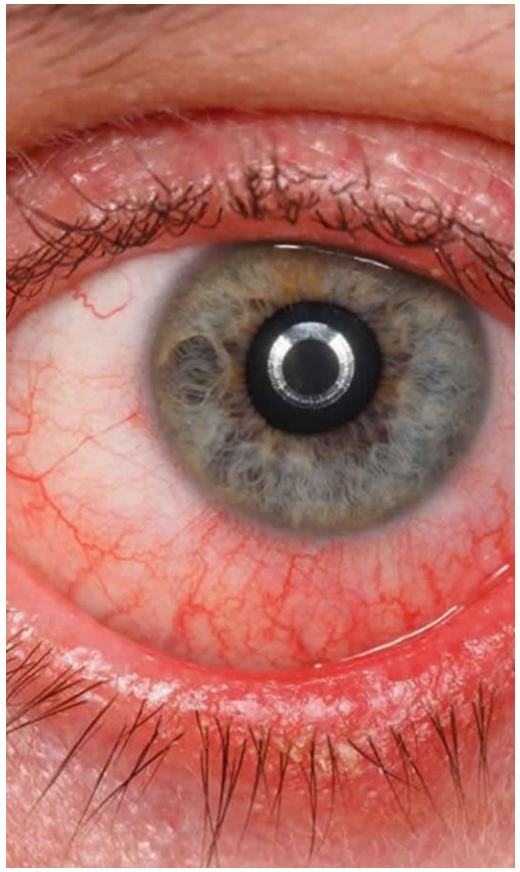


24 year old man

- Works as a welder
- **Sudden onset** red eye
- **Irritated**

Quick diagnosis?

Flash burn



- **Dilating drops**
  - Some benefit: eases pan
- **Padded dressing**
  - **Rests** eye, time to heal
- **Cool packs**
  - **Placed over eyes: symptom relief**

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Source: eTG (2023)

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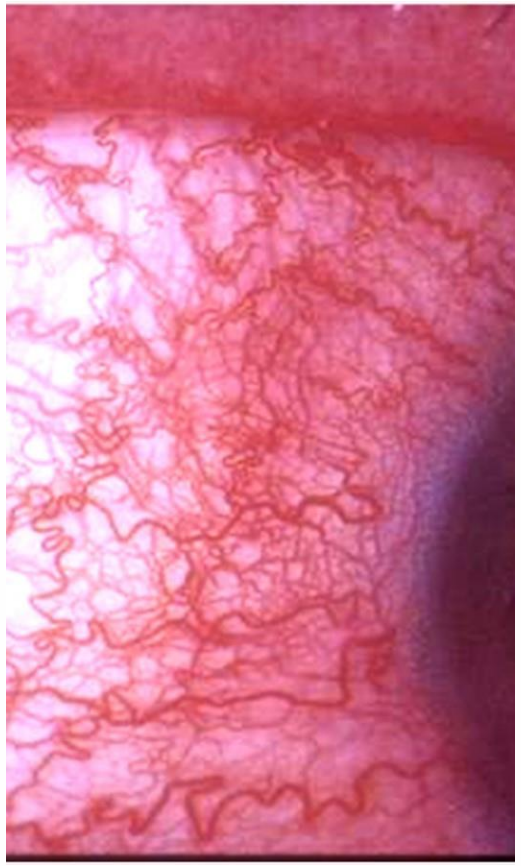
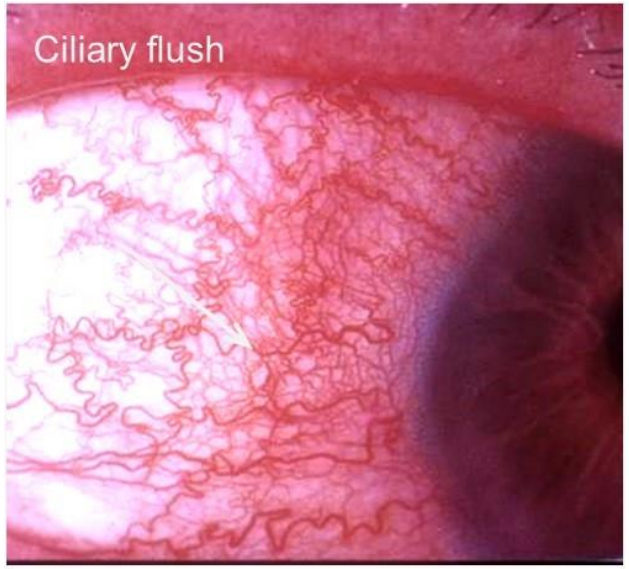
Case 4: Worsening left eye pain

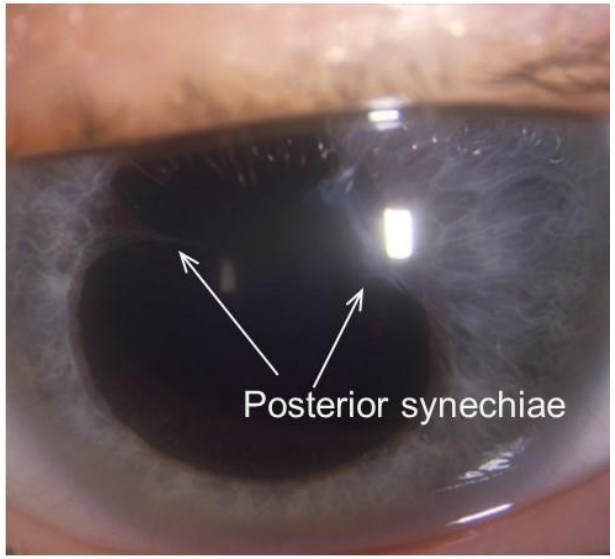


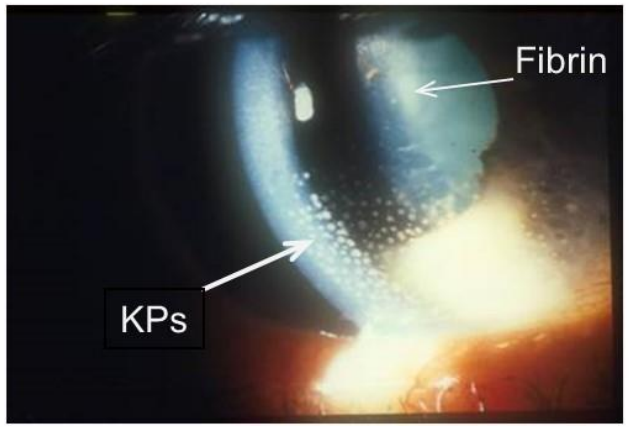
30 year old woman

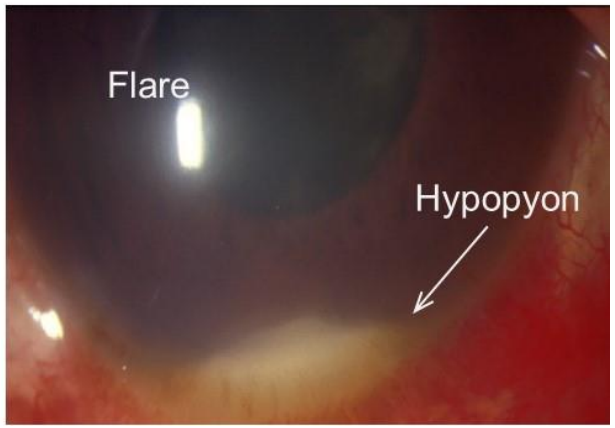
- **Three (3) days** of symptoms
- Increasing **pain**
- **Blurred** vision
- **Unilateral**
- History of **early morning back pain**

On further examination



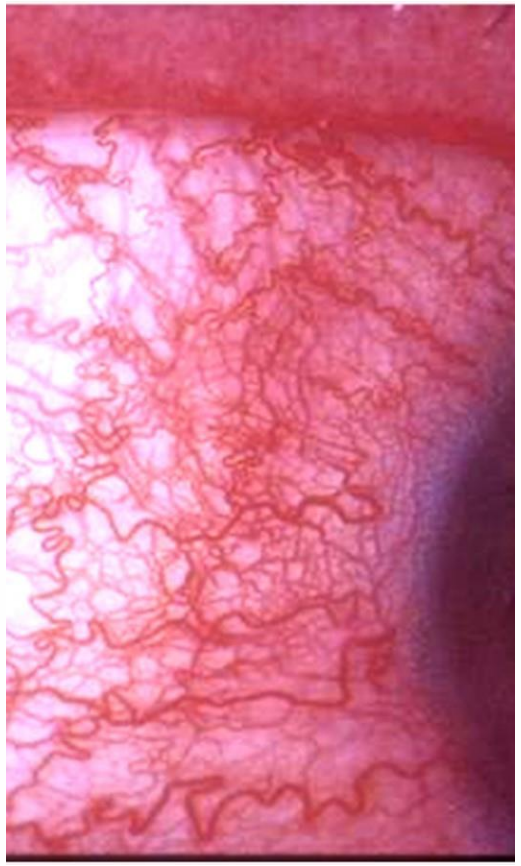






Possible Ddx?

Uveitis / iritis / scleritis



- Localised **ciliary injection**
- Reduced visual **acuity**
- **Painful**

- **Urgent referral** to ophthalmology
  - **Same day**

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Source: eTG (2023)

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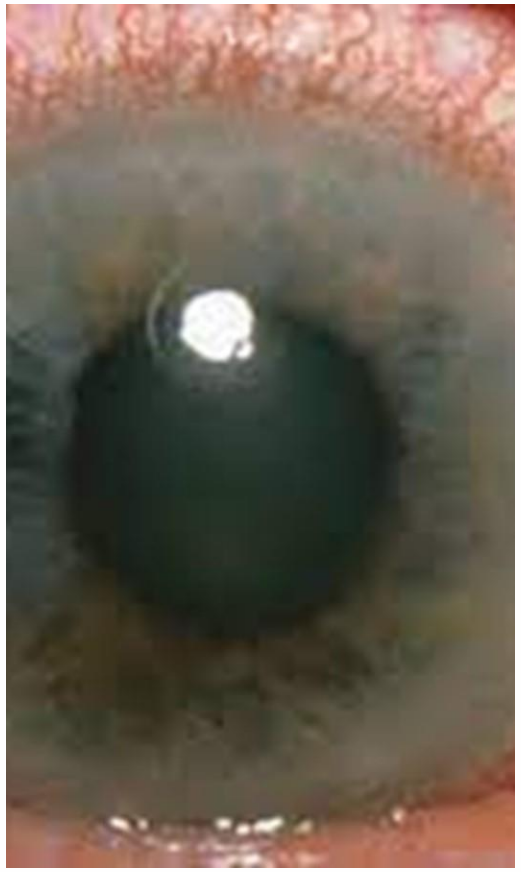
Case 5: Incredible eye pain on leaving cinema



45-year-old woman

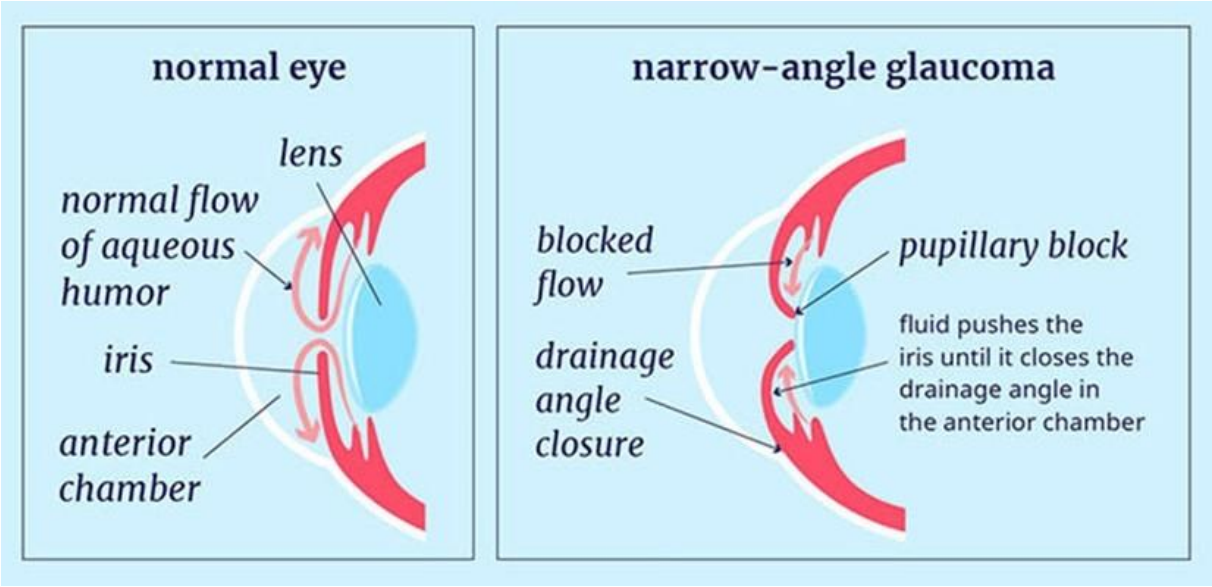
- **Sudden** onset of symptoms
- **Headache**
- Eye **pain**
- **Photophobia**
- **Vomiting**

Eye exam

- Minimally reactive **mid-dilated** pupil

Acute angle closure glaucoma

- Urgent **pressure check** needed
- **Patch** eye
- **URGENT** ophthalmology review



Sight threatening eye emergency

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Source: eTG (2023)

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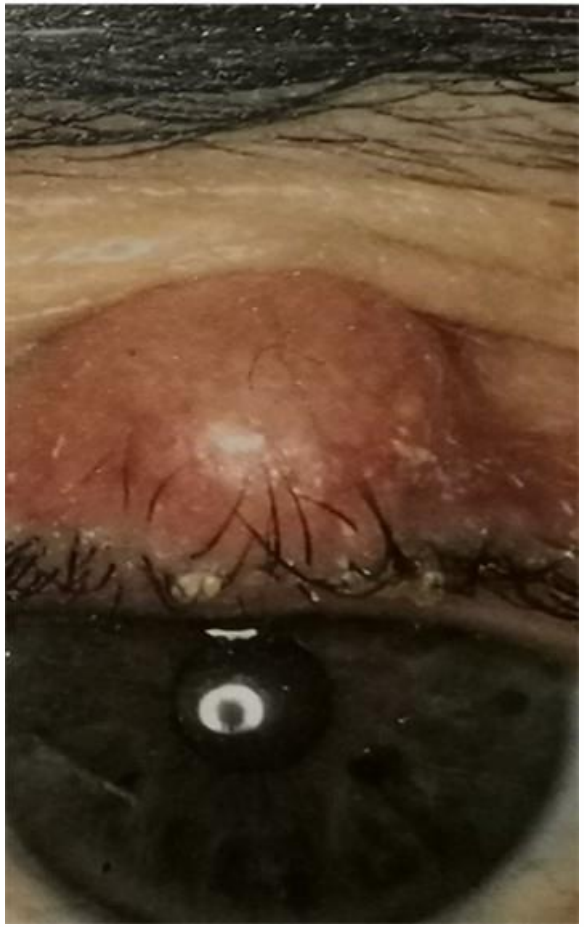
Non-red eye presentation

Chalazion

- **Blocked** Meibomian gland, secretion stagnation
- **Painless** lump posterior aspect of lid
- **Sometimes**: grittiness, crusting, tearing
- Treatment: eye hygiene
  - Hot **compresses, massage** and **eyelid scrub, time** (2/52)
- **Only** use antibiotics if associated **periorbital cellulitis**
- Persistent: refer for **incision and drainage**



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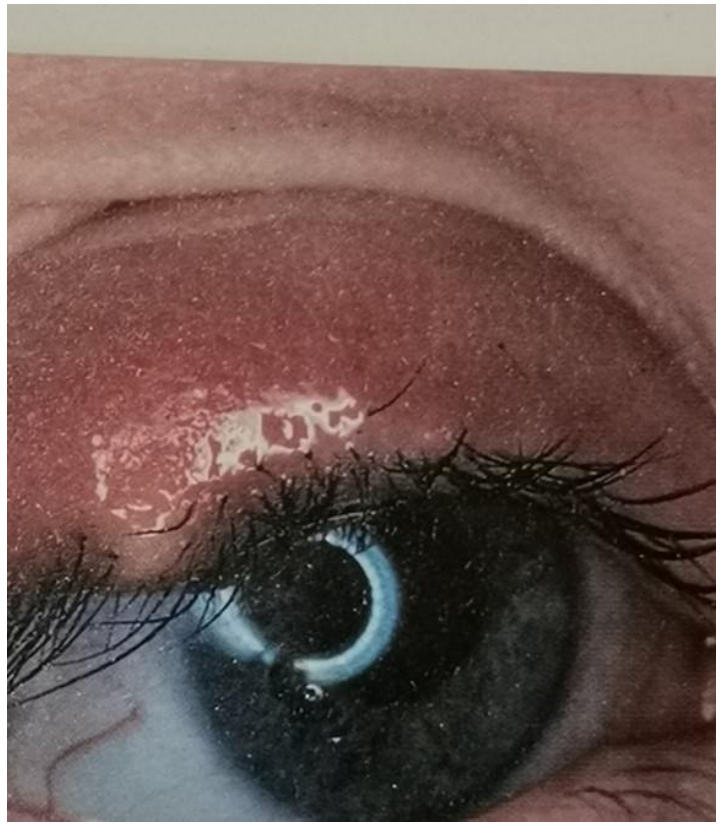
Source: eTG (2023)

Stye

- **PainFUL** lump anterior aspect of lid
- Associated **blepharitis** symptoms
- **Acute bacterial** infection of anterior or posterior glands
- Treatment: as per chalazion



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Source: eTG (2023)

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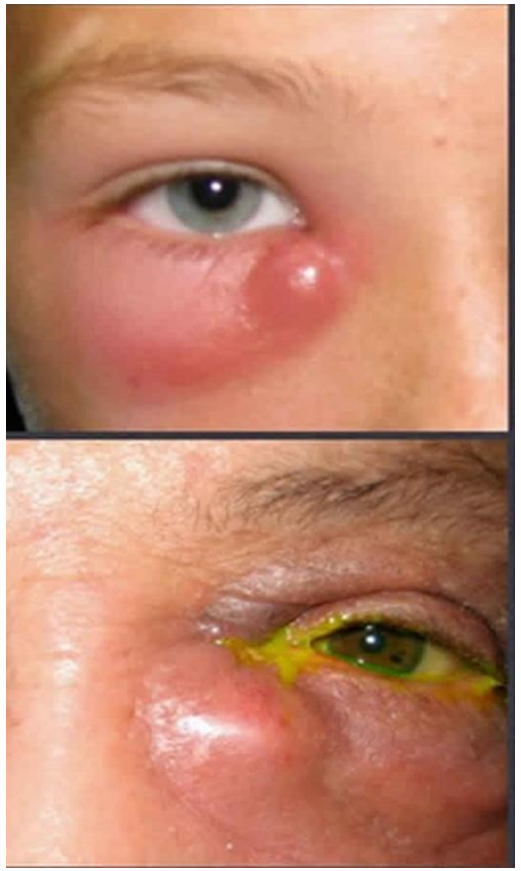
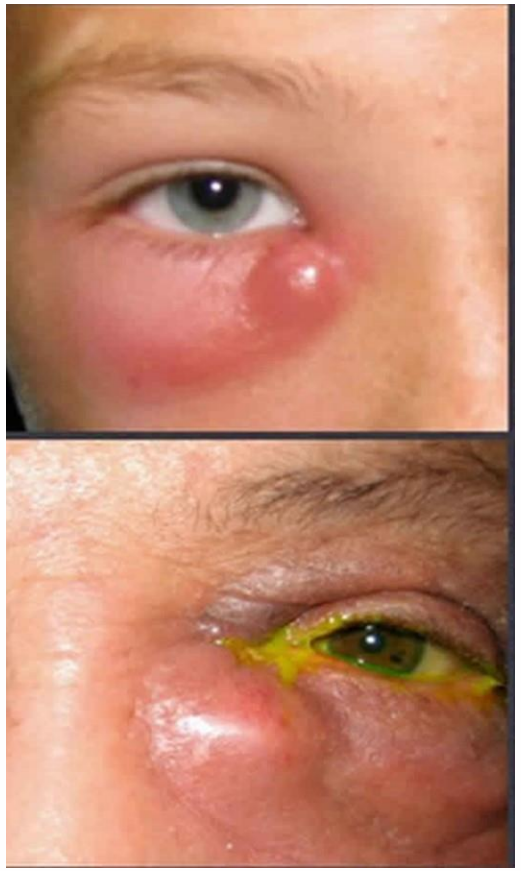
Several days of sore lower eyelid



4 year old child

- **Redness** and **swelling**
- **Pain**
- **Localised** to inner right eyelid
- History of **epiphora**

Dacrocystitis



Acute

- **Oral Abx** (eTG: cephalexin
- If **pain -> urgent** ophthal review for **drainage**
- Check for **periorbital cellulitis**
- Ophthal **follow up** for **all**

Chronic / recurrent

- **Surgical management** with paediatric ophthalmologist

- Causative agent mainly ***S. aureus***

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Source: eTG (2023)

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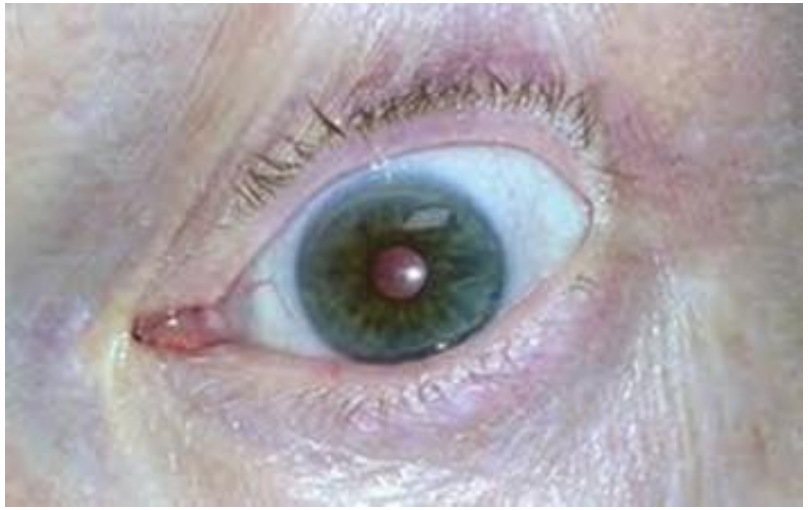
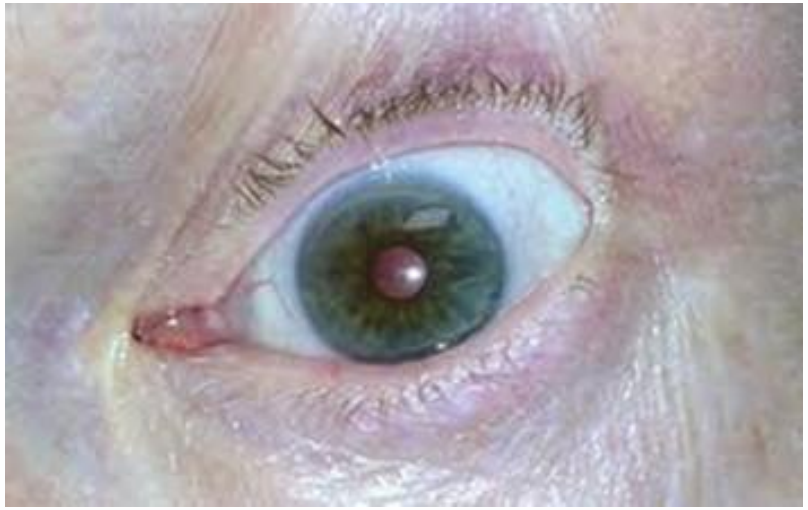
Strange visual phenomena…



62 year old man

- Recently noted **flashes of light -** today
- **Left eye** only
- More **floaters**
- Describes a **“dark curtain”** across vision
- **Denies** pain / photophobia

Retinal detachment



- Requires **slit lamp** / **indirect** ophthalmoscopy to diagnose
- **Immediate ophthalmology review** to confirm diagnosis

Source: eTG (2023)

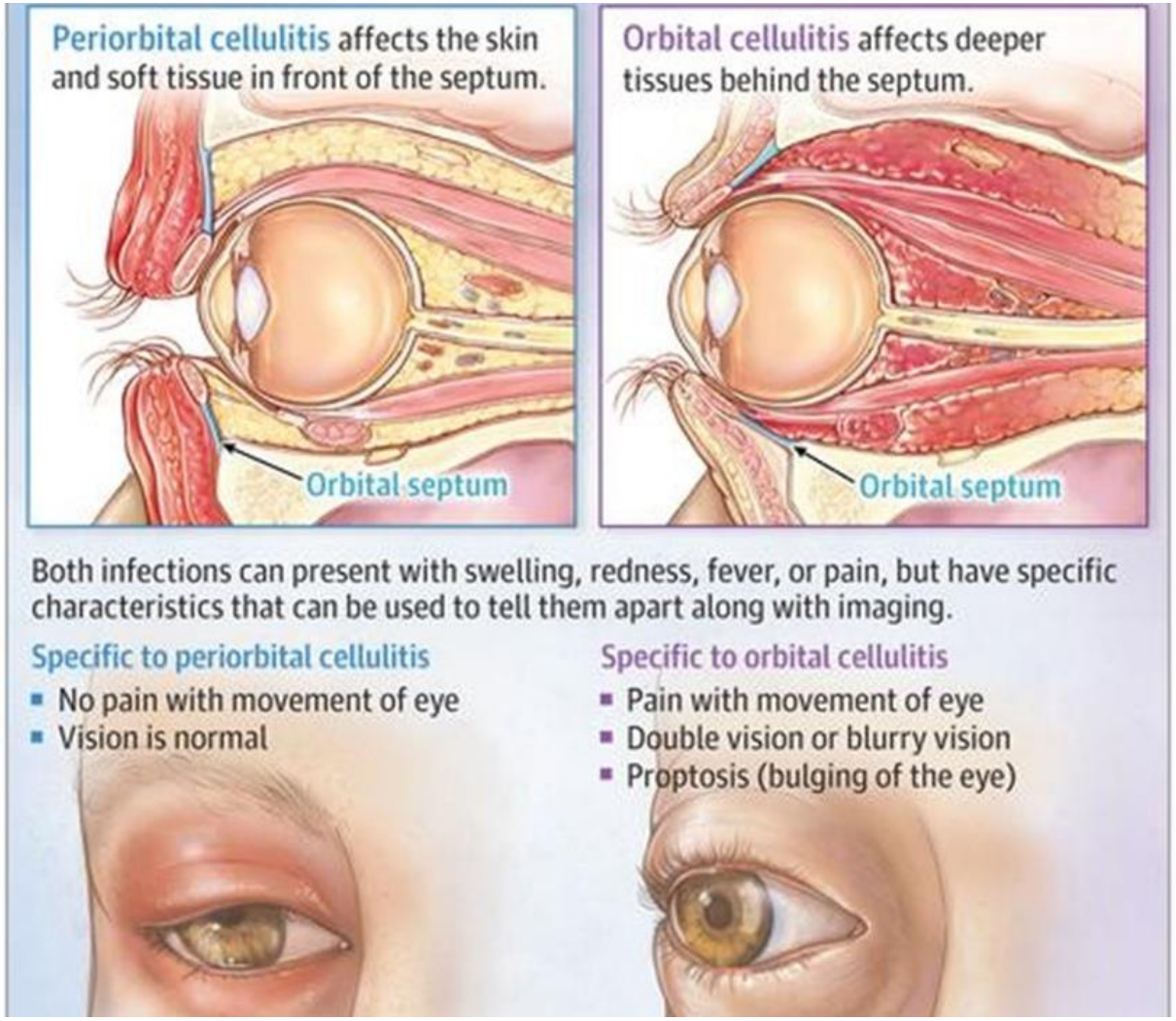
A difficult ward round

25 year old resident medical officer

- “My **eyelid** is **sore** and **swollen**”
- **No change** in visual **acuity**
- No scleral injection
- Working **long hours** in aged care team

Source: eTG (2023)

Periorbital and orbital cellulitis



Periorbital and orbital cellulitis

Oral therapy for periorbital (preseptal) cellulitis

For empirical therapy of periorbital cellulitis, use:

1 flucloxacillin 500 mg (child: 12.5 mg/kg up to 500 mg) orally, 6-hourly for 7 days

OR

1 dicloxacillin 500 mg (child: 12.5 mg/kg up to 500 mg) orally, 6-hourly for 7 days.

Intravenous therapy for orbital (postseptal) cellulitis

1 cefotaxime 2 g (child: 50 mg/kg up to 2 g) intravenously, 8-hourly. Switch to oral therapy when the patient is improving

OR THE COMBINATION OF

1 ceftriaxone 2 g (child 1 month or older: 50 mg/kg up to 2 g) intravenously, daily. Switch to oral therapy when the patient is improving

PLUS

flucloxacillin 2 g (child: 50 mg/kg up to 2 g) intravenously, 6-hourly. Switch to oral therapy when the patient is improving.

Questions

RACGP

Practical tips

Basic eye assessment

1. Look at the **patient**
   - **Eye swelling, proptosis, erythema, lumps / bumps**
2. Check visual **acuity**
3. Check eye **movements**
   - **Pain, double vision**
4. Check **pupils**
   - **PEARL, accommodation, shape, symmetry, pain on constriction**
5. **Palpate** surrounding skin and globe
   - **Tenderness, lumps / bumps**
6. **Ophthalmoscope** exam
   - **Cornea, iris, sclera, retina**

Ophthalmoscope - basics

Set this to the **empty circle**

Set this to give **largest beam**

This dial changes to **focus** (D) distance from **anterior** (cornea) to **posterior** (retina)

Start at **0 (retina)** then click through to **+10 (cornea)**

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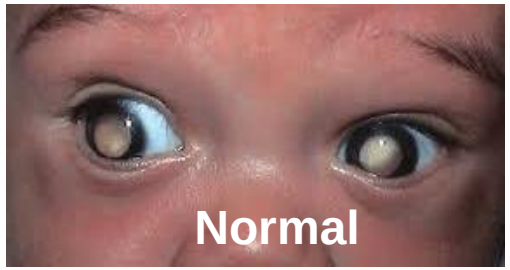
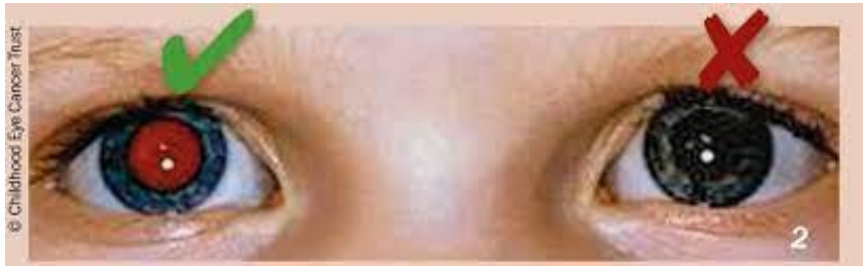
Source: BMJ.com

Healthy Profession. Healthy Australia.

Ophthalmoscope – in use

- Start at **arms length** from the patient **–** seek **red reflex**





- **Move in** whilst maintaining reflex
- **Follow the** BVs to seek the **optic disc**
- Look for the **macula** temporal to disc
- Check the **vessels**

Tip – retina can be seen more easily in an eye with a lighter iris colour

RACGP

Source: BMJ.com

Source: BMJ.com

Healthy Profession. Healthy Australia.

Red / fundal reflex and sleepy newborns

How to encourage eye opening

- **Timing**
  - Try to aim for a feeding time
- **Positioning**
  - Place infant upright, then face down on forearm, then on shoulder etc (depending on your confidence!)
- **Encouragement**
  - Can *gently* assist eye opening with clean fingers
- NB reflex often lighter if skin darker

Checking for fundal reflex is important

What is this and what happens next?

Ophthalmoscope – goals of practice

Equipment familiarity

- Be able to change **focus** from anterior to posterior to eye

Red reflex

- Manage to **elicit this each time** (even on uncooperative patients / volunteers…)

Essential!

Posterior eye

- **Optic disc:** visualise this; identify key components
- **Macular:** visualise this
- **Blood vessels:** visualise these

Nice to have

Questions?

Thank you!

RACGP