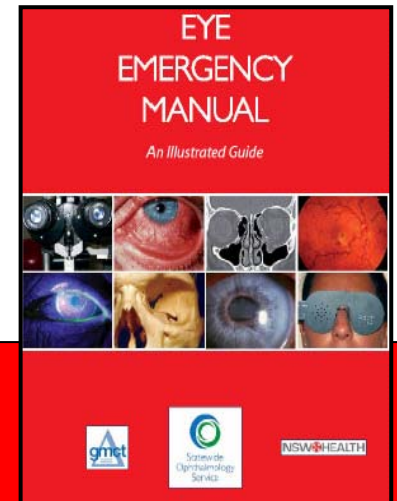


## Education Session Eight

# OCULAR PHARMACOLOGY



EYE EDUCATION FOR EMERGENCY CLINICIANS

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*Modules originally designed for emergency nurses as a component of the Eye Emergency Manual Project.*

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# Aim and Objectives

On completion of this session you will be able to:

- Explain principles of instilling eye drops
- Describe appropriate storage of drops
- Identify the common eye drops used with ophthalmic patient

# Instilling Drops

- Review Eye Skills session Six.
  - Wash hands
  - Place single drop in outer side of lower fornix
  - Where possible wait at least 5 minutes between eye drops
  - This allows better absorption of the drug



# Instilling Drops (cont)

- Compliance is the most important issue so always keep eye drop instructions simple
- If your patient has poor vision, instructions for the eye drops should be in large print
- Eye drop dispensers are useful for people with limited dexterity (available at some pharmacies)
- If eye discharge is present always clean gently before instilling drops

# Instilling Drops (cont)

- Some eye medications take longer to absorb than others
- Solutions are absorbed quickly and look clear; e.g. chloramphenicol, glaucoma preparations
- Suspensions are cloudy or milky. Shake well before instilling; e.g. Pred Forte, Maxidex



# Instilling Drops (cont)

- Gels and ointments remain in the eye longest; e.g. Zovirax, Chloramphenicol



- If using more than one type of medication: instil solutions first, suspensions next, and any ointments / gels last

# Punctal Occlusion

- Systemic absorption of topical ophthalmic drops occurs through the nasopharyngeal mucosa
- Place pressure on the punctum for two minutes to prevent this





# Storage of Eye Drops

- Correct storage is important to reduce the rate of breakdown of the ingredients in the eye drops
- Always follow manufactures' guidelines regarding expiry date and storage once opened e.g. protect from light
- Unopened drops should be stored in their box, in a cupboard or refrigerator (as directed)



# Storage (cont)

- Multi-use bottles contain preservatives
- Once opened, multi-use bottles should be discarded after 28 days. Mark with date opened
- Do not confuse with expiry date for unopened bottles



# Storage (cont)

- Minims are preservative free and sterile
- Minims should be stored in the fridge
- A single Minim may be used for the same patient for up to 24 hours after opening



# Artificial Tears and Ocular Lubricants

- To help alleviate ocular discomfort and maintain the integrity of the corneal epithelium in dry eyes
- Large number of preparations available over the counter
- Available as solutions, gels and ointments
- Available with / without preservatives
- Ophthalmic consult recommended if symptoms persist

Examples: Systane, Polytears, Liquifilm, Refresh

# Ocular Corticosteroids

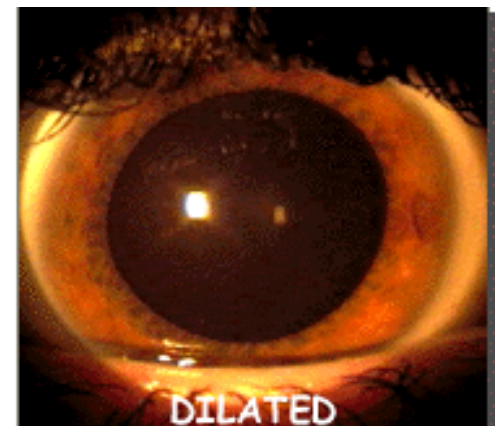
- Used post operatively or for ocular inflammation
- ALWAYS used under the guidance of an ophthalmologist
- Usually the dose is tapered down before stopping
- Suspensions: must shake bottle before using
- Side effects include; raised intraocular pressure, systemic effects
- May cause a premature cataract





# Mydriatics

- Mydriatics are drugs that cause pupil dilation
- Usually used to examine the fundus
- May be used for pain relief eg Iritis
- The most common one used is Mydracyl (Tropicamide)
- 15 minute onset, can last for 3 to 6 hours.
- Will blur vision
- Instruct patients to take care with stairs, curbs, pouring hot liquids
- Do not drive until blurring resolves



# Mydriatics (cont)

- Other dilating drops for example:
  - Atropine
  - Homatropine
    - Long acting: may last 7-10 days.
    - Different mode of action – effects close vision.



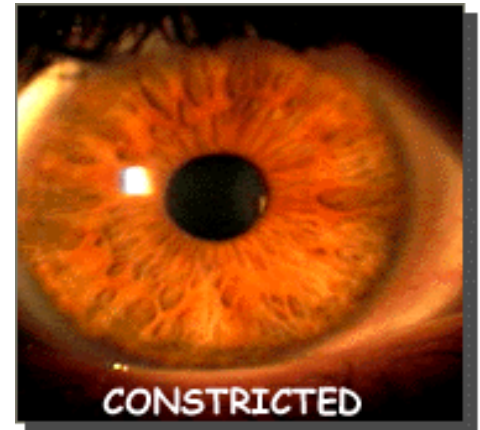
Recommendation:

Sun glasses and a hat useful when outdoors due to glare



# Miotics

- Miotics are drugs that constrict the pupil: miosis e.g. Pilocarpine
- Used to treat glaucoma
- Can cause:
  - night blindness,
  - stinging on instillation
  - brow ache or spasm
- Patients who have been on long-term Pilocarpine may be very difficult to dilate



# Glaucoma Medications

- Summary of glaucoma medications can be found in the Eye Emergency Manual
- Patients may be on multiple glaucoma medications and can become confused in their management, especially in the elderly
- There are potential side effects / contraindications

Timolol and Betoptic are beta blockers.

Acetazolamide (Diamox) is a sulfonamide.

# Ocular Topical Anaesthetics

- Ocular topical anaesthetics temporarily block nerve conduction in the cornea and conjunctiva.  
Examples: Amethocaine 0.5%, 1%;  
Oxybupricaine 0.4%
- Quick onset: 10 - 20 seconds.
- Duration: 10 - 20 minutes.
- Drops sting on instillation.
- Do not use in the case of penetrating eye injury
- Used to assist with eye examination and visual acuity testing: chemical burn, welding flash, foreign bodies.

# Ocular Topical Anaesthetics

- Advise patient not to rub the eye for at least 20-30 minutes
- Do not apply an eye pad during this time
- May wear sunglasses or prescription glasses if eye still affected on discharge
- Must not be used for long term pain relief

Patients must not be sent home with local anaesthetic drops as it retards healing.

# Ocular Diagnostic Drops

- Diagnostic drops selectively stain certain cells to provide useful information on examination
  - Examples: Fluorescein, Lissamine Green
- Use care when instilling as they may stain skin and clothing
- Does not interfere with vision
- Caution: Do not use with soft contact lenses will take up dye – not reversible

# KEY POINTS TO REMEMBER

- Most ocular drugs have the potential for marked systemic effects
- Always consider the correct storage
- Eye medications are absorbed at different rates, so use correct order for instilling drops
- Do not forget to ask patient if they are presently using eye medication, this will indicate current ocular diseases and disorders

Eye drops or ointments are never instilled in a penetrating eye injury.