

## 9 EYE

### 9.01 OPHTHALMIC ANTI-INFECTIVES

GENERIC (TRADE) NAME	CAT.	INDICATION/DOSE
<b>*Chloramphenicol Eye Drops 0.5%, 10ml (CMC, Chloromycetin)</b>		Eye drops: Apply 1-2 drops q2h, reduce frequency as infection is controlled and continue for 48 hrs after complete healing.
<b>Ciprofloxacin Eye Drops 0.3%, 10ml (Ciloxan)</b>  <i>[Contains benzalconium chloride]</i>		Bacterial infection: Apply 1-2 drops q2h, reduce to 3-4 times daily as infection is controlled, continue for 48 hrs after healing. Corneal ulcer: apply day and night, first day 2 drops every 15 min for 6 hours then every 30 min for the rest of the day, day 2 apply 2 drops every hour, days 3-14 apply 2 drops every 4 hours, max duration 21 days.
<b>*Gentamicin Eye Drops 0.3%, 5ml</b>  <i>[Contains benzalconium chloride]</i>	MSL  EDL	Apply 1-2 drops q2h, reduce frequency to 3-6 times daily as infection is controlled and continue for 48 hours after healing.
<b>*Neomycin 3500 units &amp; Polymixin B 6000 units &amp; Dexamethasone 0.1% / ml Eye Drops, 5ml (Maxitrol)</b> <i>[Contains benzalconium chloride]</i>		Apply 1-2 drops q2h, reduce frequency to 4-6 times daily as infection is controlled and continue for 48 hours after healing.
<b>Polymixin B 10000 units &amp; Bacitracin Zinc 500 units / g Eye Ointment 3.5g (Polysporin)</b> <i>[Contains benzalconium chloride]</i>		<i>Psuedomonas aeruginosa</i> eye infection: Apply a thin strip to the conjunctiva up to every 3 to 4 hours, reduce frequency as infection is controlled and continue for 48 hours after healing.

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GENERIC (TRADE) NAME	CAT.	INDICATION/DOSE
<b>*Tetracycline Eye Ointment 1% 3.5g (Terramycin)</b>	MSL  EDL	Apply a thin coating into the conjunctival sac of the affected eye 4-6 times daily.
<b>Tobramycin Eye Drops 0.3%, 5ml &amp; Eye Ointment 0.3% (3mg/g), 3.5g (Tobrex)</b>  <i>[Contains benzalconium chloride]</i>		Eye drops: Apply 1-2 drops q4h, reduce frequency as infection is controlled and continue for 48 hours after healing. Eye ointment: Apply half-inch q4h, or at night only if eye drops are used in the daytime.
<b>*Tobramycin 0.3% &amp; Dexamethasone 0.1% Eye Drops 5ml &amp; Eye Ointment 3.5g (Tobradex)</b>  <i>[Contains benzalconium chloride]</i>		Eye drops: Apply 1-2 drops q4h, reduce frequency as infection is controlled and continue for 48 hours after healing. Eye ointment: Apply half-inch q4h, or at night only if eye drops are used in the daytime.
<b>Trifluridine 1% Eye Drops, 5ml (Viroptic)</b>		Antiviral: Apply 1 drop every 2 hours while awake, up to max 9 drops/24 hours, continue until the ulcer is re-epithelialized; then continue 1 drop every 4 hours while awake with at least 5 drops/24 hours, for 7 more days after re-epithelialization. If no improvement 7 days after starting treatment, discontinue and consider alternatives.

**COMMENT/CAUTIONS:**

- DISCARD ALL TOPICAL EYE PREPARATIONS 4 WEEKS AFTER OPENING FOR OUTPATIENTS & 7 DAYS AFTER OPENING FOR INPATIENTS.
- Eye drops or ointment should be applied frequently in the acute phase of infection (at least 2 hourly unless otherwise directed), then reduce frequency as infection is controlled, continuing for 48 hours after healing.
- **Chloramphenicol:** drug of choice since allergic skin reactions are rare. However, do not give long term or use if family history of blood dyscrasias (rare aplastic anaemia side effects).

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**COMMENT/CAUTIONS (CONT.) :**

- **Antibiotics with corticosteroids** are primarily indicated for post-op use for risk of infection. **Dexamethasone 0.1%** should thus not be used without direct ophthalmologist supervision. Prolonged use may result in posterior subcapsular cataract formation and glaucoma in steroid-responding patients.
- **Gentamicin** eye drops are useful against gram-negative organisms.
- **Tetracycline** eye drops is indicated for ocular trachoma but should be combined with oral tetracycline for a curative effect.

**9.02 OPTHALMIC ANTI-INFLAMMATORY PREPARATIONS**

<b>GENERIC (TRADE) NAME</b>	<b>CAT.</b>	<b>INDICATION/DOSE</b>
<b>Diclofenac Sodium Eye Drops 0.1%, 5ml (Voltaren Ophthalmic) [NSAID]</b>		Apply 1 drop 4 times daily 24 hours after cataract surgery and continue for 2 weeks.
<b>Ketorolac Trometamol Eye Drops 0.5%, 5ml (Acular) [NSAID]</b>	NF	Anti-inflammation post-ocular surgery, see manufacturer's leaflet for further details.
<b>*Prednisolone Eye Drops 0.12% &amp; 1%, 5ml (Pred-Mild/ Pred-Forte) [Steroid]</b> <i>[Contains benzalconium chloride]</i>	MSL  EDL	0.12% Eye Drops: Apply 1-2 drops every 1-2 hours initially, reduce frequency when controlled. 1% Eye Drops: Apply 1-2 drops 2-4 times daily or as directed.

**COMMENT/CAUTIONS:**

- Because of the danger of masking the underlying cause of a condition or an opportunistic infection, corticosteroid eye preparations should normally not be prescribed without prior consultation with an ophthalmologist.
- **Corticosteroids with antibiotics** are primarily indicated for post-op use for the risk of infection.
- **Prednisolone 1%** is the most potent, followed by **dexamethasone 0.1%** and **prednisolone 0.12%** preparations. The more potent items are reserved for more serious inflammation, so prednisolone 1% & dexamethasone 0.1% should not be used without direct supervision of an ophthalmologist. Prolonged use may result in posterior subcapsular cataract formation and glaucoma in steroid-responding patients.
- Corticosteroids are contraindicated in herpes simplex corneal ulceration.
- DISCARD ALL TOPICAL EYE PREPARATIONS 4 WEEKS AFTER OPENING FOR OUTPATIENTS & 7 DAYS AFTER OPENING FOR INPATIENTS.

## 9.03 MIOTICS

GENERIC (TRADE) NAME	CAT.	INDICATION/DOSE
<b>Acetylcholine Ophthalmic Injection 1% (Miochol)</b>		Instil 0.5-2ml of the 1% solution into the anterior chamber parallel to the iris face, tangential to pupil border.
<b>Carbachol Ophthalmic Injection 0.01% (Miostat)</b>	NF	To produce miosis: Instil 0.4-0.5ml into the anterior chamber.
<b>*Pilocarpine HCl Eye Drops 2%, 10ml</b> <i>[Contains benzalconium chloride]</i>	EDL	Apply 1-2 drops as needed for procedure, or 3-6 times daily for management of raised intra-ocular pressure.

**COMMENT/CAUTIONS:**

- **Pilocarpine** makes the vision darker due to miosis. Pupil sphincter spasm may cause pain on administration. Advise patients to be cautious in night driving/hazardous occupations.

## 9.04 MYDRIATICS

GENERIC (TRADE) NAME	CAT.	INDICATION/DOSE
<b>*Atropine Sulphate Eye Drops 1%, 10ml</b> <i>[Contains benzalconium chloride]</i>	EDL	Refraction: 1 drop 1 hour before procedure; Inflammation: 1-2 drops twice daily.
<b>*Cyclopentolate Eye Drops 2%, 15ml (Cyclogyl)</b> <i>[Contains benzalconium chloride]</i>		Refraction: 1-2 drops; Uveitis: 1-2 drops 2-3 times daily.
<b>Phenylephrine Eye Drops 2.5% &amp; 10%, 10ml (Analux/Neosynephrine)</b>	MSL  EDL	Pupil dilation for examination, apply 1-2 drops as needed, Avoid or use 2.5% prep in patients with cardiovascular disease, avoid 10% prep in children or elderly.
<b>Tropicamide Eye Drops 1%, 15ml (Mydriacyl)</b> <i>[Contains benzalconium chloride]</i>	MSL  EDL	Refraction: 1-2 drops; Uveitis: 1-2 drops 2-3 times daily.

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**COMMENT/CAUTIONS:**

- Relative potencies and duration of action: Tropicamide [3 hours], cyclopentolate [up to 24 hours], atropine [7 days or longer].
- Patients should be advised to exercise caution in driving and other hazardous occupations during and a few days after treatment if vision is affected.
- **Atropine** eye drops effects last for a longer duration, use only on ophthalmologist advice.
- **Atropine & Cyclopentolate** eye drops can have a CNS and cardiac depressive effect, especially in children.
- DISCARD ALL TOPICAL EYE PREPARATIONS 4 WEEKS AFTER OPENING FOR OUTPATIENTS & 7 DAYS AFTER OPENING FOR INPATIENTS.

**9.05 OCULAR HYPOTENSIVE PREPARATIONS**

<b>GENERIC (TRADE) NAME</b>	<b>CAT.</b>	<b>INDICATION/DOSE</b>
<b>*Acetazolamide Tab 250mg (Diamox) [CAI, Carbonic anhydrase inhibitor]</b>	EDL	Carbonic anhydrase inhibitor: 250mg-1g daily in divided doses.
<b>Apraclonidine Eye Drops 0.5%, 5ml (Iopidine)</b> <i>[Contains benzalconium chloride]</i>		Alpha <sub>2</sub> -adrenoceptor stimulant: apply 1 drop 3 times daily for max 1 month; or 1 drop 1 hour before procedure then 1 drop immediately after completion of procedure.
<b>Betaxolol Eye Drops 0.5%, 5ml (Betoptic)</b> <i>[Contains benzalconium chloride]</i>	NF	Beta-blocker: 1-2 drops twice daily.
<b>Brimonidine Tartrate Eye Drops 0.2%, 5ml (Alphagan)</b> <i>[Contains benzalconium chloride]</i>		Alpha <sub>2</sub> -adrenoceptor stimulant: apply 1 drop twice daily.
<b>*Brinzolamide Eye Drops 1% (10mg/ml), 5ml (Azopt) [CAI]</b> <i>[Contains benzalconium chloride]</i>		Adjunct to beta-blocker or used alone for glaucoma: 1 drop 2 times daily, max 3 times daily if needed.
<b>Carteolol Eye Drops 1%, 5ml (Carteol/Teoptic)</b> <i>[Contains benzalconium chloride]</i>	NF	Beta-blocker: 1 drop twice daily.

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GENERIC (TRADE) NAME	CAT.	INDICATION/DOSE
* <b>Dorzolamide Eye Drops 2%, 5ml (Trusopt) [CAI]</b> <i>[Contains benzalconium chloride]</i>	NF	Adjunct to beta-blocker or used alone for glaucoma: used alone, 1 drop 3 times daily; with beta-blocker, 1 drop twice daily.
* <b>Latanoprost Eye Drops 0.005% (50ug/ml), 2.5ml (Xalatan)</b> <i>[Contains benzalconium chloride]</i>		Prostaglandin analogue, for open-angled glaucoma and ocular hypertension patients intolerant or unresponsive to other drugs: 1 drop once daily, in the evening.
<b>Levobunolol Eye Drops 0.5%, 5ml (Betagan)</b> <i>[Contains benzalconium chloride]</i>	NF	Beta-blocker: 1-2 drops once or twice daily.
<b>Timolol Eye Drops 0.5%, 5ml (Timoptol)</b> <i>[Contains benzalconium chloride]</i>	EDL	Beta-blocker: 1 drop 1-2 times daily.

**COMMENT/CAUTIONS:**

- **Acetazolamide S/E:** drowsiness/malaise, hypokalaemia (if used long-term).
- **Carbonic anhydrase inhibitors:** use in patients resistant/contraindicated to beta-blockers.
- Cardioselective **beta-blockers** (e.g. betaxolol) are preferable to non-selective  $\beta$ -blockers (e.g. timolol) in the elderly/heart disease/asthma patients, but caution is still advised.
- **Latanoprost (Xalatan):** may cause brown pigmentation in the iris and change in eye colour.
- DISCARD ALL TOPICAL EYE PREPARATIONS 4 WEEKS AFTER OPENING FOR OUTPATIENTS & 7 DAYS AFTER OPENING FOR INPATIENTS.

## 9.06 INTRAOPERATIVE OPHTHALMIC PREPARATIONS

GENERIC (TRADE) NAME	CAT.	INDICATION/DOSE
<b>Balanced Salt Solution for Eye Irrigation, 500mls (BSS &amp; BSS Plus)</b>		For intra-ocular and topical irrigation of the eye during surgical procedures.
<b>Dehydrated Alcohol Inj USP 26</b>		For pain relief of blind eyes: inject retro-bulbar 1.5ml. See product leaflet for details.
<b>Gonioscopic Lens Solution (Goniosol)</b>	NF	For use during laser procedures to improve visualization. See product leaflet for details.
<b>Hyaluronate Sodium, Ophthalmic Injection, various strengths &amp; molecular weights (F - Viscoat, Amvisc Plus) (NF - Amvisc, Healon, Rayvisc)</b>	F/NF for diff prep	Inject 0.5ml slowly and carefully into the anterior chamber during ophthalmic surgery. See manufacturer's leaflet for details. Dispersive: Amvisc Plus, Healonid; Cohesive: Amvisc, Healon, Rayvisc.
<b>Lidocaine HCl Inj 1% 10mg/ml preservative-free (Xylocaine MPF) [Lignocaine]</b>	MSL  EDL	Intraocular injection up to 0.3ml, see product leaflet for details. [Note. Other lidocaine preparations listed in Chapter 13 Anaesthetics Section 13.02 Local Anaesthetics.]
<b>Povidone-Iodine Sterile Ophthalmic Prep Solution 5% (Betadine)</b>		Apply to eyelashes and lid margins using a sterile, cotton tip applicator using one or more applicators per lid; repeat once. To prep lids, brow and cheek, use a circular ever-expanding fashion until the entire field is covered; repeat prep 3 times. While separating the lids, irrigate the cornea, conjunctiva and palpebral fornices using a sterile bulb syringe; leave in contact for two minutes, then use sterile saline in a bulb syringe to flush away residual prep solution.

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GENERIC (TRADE) NAME	CAT.	INDICATION/DOSE
<b>Proparacaine Eye Drops 0.5%, 15ml (Ophthetic)</b> <i>[Contains benzalconium chloride]</i>	NF	Anaesthetic: 1-2 drops as required.
<b>Sodium Chloride Eye Drops 5% (Muro 128)</b>		Post-cataract surgery for corneal oedema to restore vision and relieve pain: Apply 1 drop every 15 minutes till improved, repeat <i>prn</i> .
<b>Tetracaine Eye Drops 0.5%, 5ml [Amethocaine]</b>	MSL EDL	Anaesthetic: 1-2 drops as required.
<b>Trypan Blue Injection</b>		For management of poor visibility of the lens capsule during cataract surgery, 0.1-0.3ml as needed, see product leaflet for details.

**COMMENT/CAUTIONS:**

- Warn patients not to rub or wipe the anaesthetised eye(s) for at least 30 min after procedure.
- DISCARD ALL TOPICAL EYE PREPARATIONS 4 WEEKS AFTER OPENING FOR OUTPATIENTS & 7 DAYS AFTER OPENING FOR INPATIENTS.

## 9.07 OTHER EYE PREPARATIONS

GENERIC (TRADE) NAME	CAT.	INDICATION/DOSE
<b>Eye Wash Solution, for Eye Irrigation (Eye Stream)</b>		2-4 drops or more as required.
<b>*Fluorescein Disodium 0.4moles in H<sub>2</sub>O Medium, Strips for Ophthalmic Use (Fluorescite)</b>	<i>MSL</i>	For diagnosis of corneal epithelial defects. For single use only, externally, applied to the conjunctiva or conjunctival sac where tears will dissolve the strip, then leave in contact for 5 seconds. Do not use on damaged eye tissue, and do not touch the fluorescein-coated tissue. See product leaflet for details.
<b>Levocabastine Eye Drops 0.05% (Levostin)</b>  <i>[Contains benzalconium chloride]</i>		Allergic conjunctivitis: adult & child > 9 yo, apply 1-2 drops twice daily, max 4 times daily; discontinue if no improvement within 3 days; max 4 weeks treatment per year.
<b>Lubricant, Eye Ointment, various preparations (e.g. Lacrilube)</b>		Apply a thin coating <i>prn</i> or as directed, see product leaflet for details.
<b>Tears, Artificial, Eye Drops, various preparations</b>		Artificial tears: 1-2 drops several times daily, see product leaflet for details.

**COMMENT/CAUTIONS:**

- **Fluorescein** may cause temporary yellowish discoloration of the skin & urine.
- DISCARD ALL TOPICAL EYE PREPARATIONS 4 WEEKS AFTER OPENING FOR OUTPATIENTS & 7 DAYS AFTER OPENING FOR INPATIENTS.