

# Instruction manual for preparation of fortified antimicrobial eye drops

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## General Instructions

- Should be done by doctor or pharmacist inside a laminar air hood under aseptic precautions. If laminar air hood is not available, please prepare in the operation room
- Disposable syringe should be used
- All drops should be labelled - date of preparation and date of expiry should be mentioned
- Prescription describing frequency of application etc should also be given to the patient
- Storage instructions should also be given. Drops which are to be refrigerated at 4degC can be kept on the refrigerator door.

## Aminoglycosides

### 1. Fortified Tobramycin: 14mg/ml(1.4%)

Method: Add 2ml/80mg of parenteral tobramycin to commercially available tobramycin eye drops 0.3% 5 ml (15mg/5ml).

Shelf Life: 1 week in refrigerator at 4 degrees and 4 days in room temperature

### 2. Fortified Gentamicin Eye Drops: 14mg/ml(1.4%)

Method: Add 2ml/80mg of parenteral gentamicin to commercial gentamicin ophthalmic solution 0.3% 5 ml (15mg/5ml).

Shelf Life: 1 week in refrigerator at 4 degrees C and 4 days in room temperature

### 3. Fortified Amikacin Eye Drops: 2.5%

Method: Parenteral Amikacin 250mg/2ml is mixed with 8 ml artificial tears.

Shelf Life: 7 days under refrigeration at 4 Degrees Centigrade

## **Cephalosporins**

### **1. Fortified Cefazolin Eye Drops: 50mg/ml( 5%)**

Method: Reconstitute parenteral Cefazolin 500mg with 2ml sterile water available with the injection and add to 8ml of artificial tears.

Storage: Refrigerate in 4 degrees C.

Shelf Life: 1week in refrigeration at 4 degrees C and 4 days in room temperature

### **2. Fortified Ceftazidime eye drops: 50mg/ml( 5%)**

Method: Reconstitute parenteral Ceftazidime 500mg with 2ml sterile water/BSS available with the injection and add to 8ml of artificial tears.

Storage: Refrigerate in 4 degrees C.

Shelf Life: 1week under refrigeration at 4 degrees C and 3 days in room temperature

### **Topical Vancomycin Eye Drops: 50mg/ml(5%)**

Method: Reconstitute 500mg of vancomycin powder for injection with 2 ml sterile water/BSS. Add to 8ml of artificial tears.

Storage: Refrigerate at 4 Degrees C.

Shelf Life: 28 days at 4 Degrees C

### **Topical Linezolid 2 mg/ml (0.2%)**

Method: Can use directly from parenteral Linezolid (Lancure / Adlid /Rapidline) available as 200mg/100ml (2mg/ml) IV infusion.

### **Topical Colistin 0.19%**

Method: Prepared from parenteral Colistimethate sodium powder (Xylistin) 1million IU/75mg

Added to 10ml distilled water – 7.5mg/ml (0.75%)

1ml of above solution is then added to 3ml distilled water – 0.19% Colistin drops

### **Topical Imipenem–Cilastin eye drops 1%**

Method: To parenteral Imipenem(500mg)-Cilastin (500mg), add 10ml sterile water to create a solution of strength 50mg/ml.

Take 1 ml of this solution and add 4 ml sterile water to make topical Imipenem 1% - 1mg/ml

Storage - In amber coloured bottles

Stability – 3 days at 2-8 deg C

### **Topical Amphotericin B 0.15%**

Method: Add 10 ml distilled or sterile water to parenteral 50mg of amphotericin B powder for injection. Draw 3 ml of this and add to 7ml of artificial tears eye drops.

Storage: Refrigerate in 4 degrees.

Shelf life: 7 days in refrigerator at 4 degrees C and 4 days in room temperature.

### **Amphotericin B 5 -10 µgm/0.1ml for intracameral injection**

To reconstitute 10 µgm/0.1ml :

Method: Reconstituted in BSS or sterile water

From 5mg/ml solution of Amphotericin B (as mentioned above) – take 0.2ml solution and add 0.8ml BSS / sterile water. Now, take 0.1ml of this solution and add 0.9ml BSS/Sterile water to create 0.1mg/1ml Amphotericin B equivalent to 10 µgm/0.1ml. Use immediately.

### **Amphotericin B 5 -10 µgm/0.1ml for intrastromal injection**

Method: Same concentration as is used for intrastromal injection

### **Topical Voriconazole Eye Drops 1%**

Method: Mix 20 ml ringer lactate to 200 mg voriconazole lyophilized powder.

Label: Voriconazole eye drops 1%

Stability: 30days at 4deg C or room temperature

### **Voriconazole for intrastromal injection 50 µgm/0.1ml**

Method: From 1% solution voriconazole, take 1ml, add 19 ml ringer lactate to make 0.05mg/ml (50 µgm/0.1ml)

## References:

1. External Disease and Cornea. American Academy of Ophthalmology 1999-2000.
2. Jain R, Murthy SI, Motukupally S. Clinical outcomes of corneal graft infections caused by Multi - drug resistant *Pseudomonas aeruginosa* keratitis. *Cornea* 2014;33: 22-26.
3. Prabhasawat P, Chotikavanich S, Leelaporn A. Sterility of non preservative eye drops. *J Med Assoc Thai.* 2005;88:S6-10.
4. Karampatakis V, Papanicolaou T, Giannousis M, Goulas A et al. Stability and antibacterial potency of ceftazidime and vancomycin eye drops reconstituted in BSS against *Pseudomonas aeruginosa* and *Staphylococcus aureus*. *Acta Ophthalmologica* 2009; 87(5):555-558.
5. Shao Y, Yao Y, Chong Gang P, Tan Y et al. Therapeutic efficacy of intracameral amphotericin B injection for 60 patients with keratomycosis. *Int J ophthalmol* 2010;3(3):257-260.
6. Prakash G, Sharma N, Goel M, Titiyal JS, Vajpayee RB. Evaluation of intrastromal injection of voriconazole as a therapeutic adjunctive for the management of deep recalcitrant fungal keratitis. *Am J Ophthalmol* 2008; 146: 56-59.
7. Dupuis A, Tournier A, Moal GL, Venisse N. Preparation and stability of voriconazole eye drop solution. *Antimicrobial agents and chemotherapy*; Feb 2009: 798-799.