

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Treatment of infections of  
peripheral nervous system

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## Treatment of ophthalmic Infections

### 1- Herpes zoster ophthalmicus

➤ It is a reactivated latent varicella-zoster virus (VZV) infection involving the eye (eyelid, cornea, conjunctiva) & the ophthalmic division of the trigeminal nerve (V).

❑ **Start** treatment **as early as possible** (within 72 hours)

❑ **Oral Aciclovir** (800mg 5 times per day) or **oral valaciclovir** 1g three times per day for **7 days duration**.

**N.B:** Topical anti-viral drugs are NOT routinely required.

❑ If recommended by ophthalmologist: **Ganciclovir eye gel** 5 times daily (**risk** of **teratogenicity**).

## 2- Blepharitis (eyelid bacterial infection)

Treatment:

- 1- **Good hygiene.**
- 2- **Topical Chloramphenicol** or **fusidic acid**
- 3- For severe cases **oral azithromycin.**

## 3- Corneal Ulcers (Microbial Keratitis)

Empirical Treatment:

**Ofloxacin eye drops**

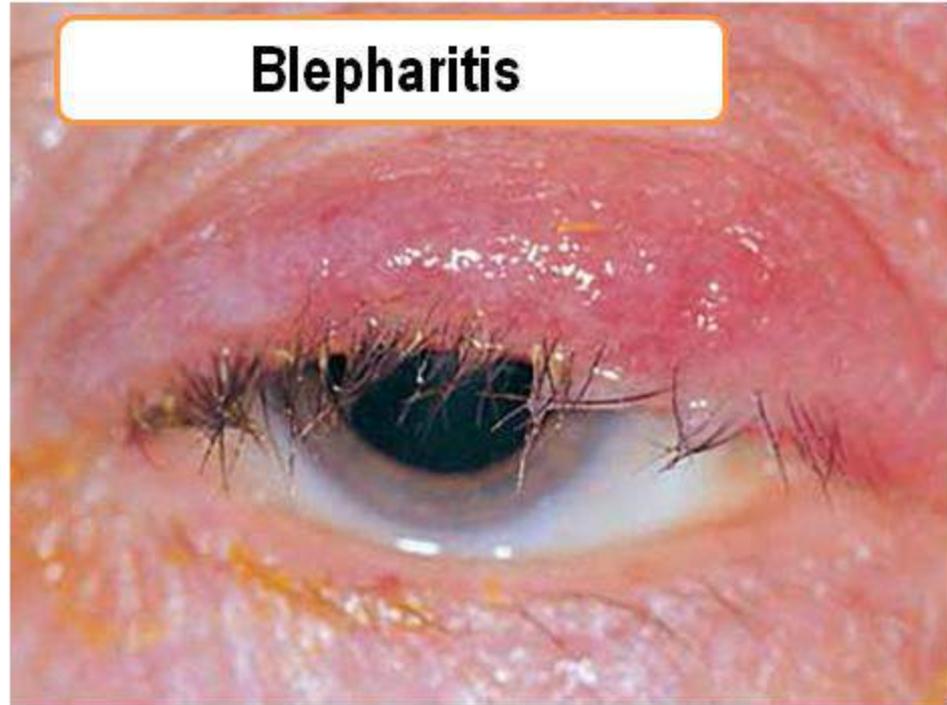
Specific Treatment:

- Bacterial (according to culture and sensitivity).
- Herpes simplex keratitis (dendretic ulcer)** **Ganciclovir** eye gel 5 times daily until healing then 3 times daily for 7 days (Maximum duration 2 weeks).
- Fungal: **Amphotericin** eye drops.

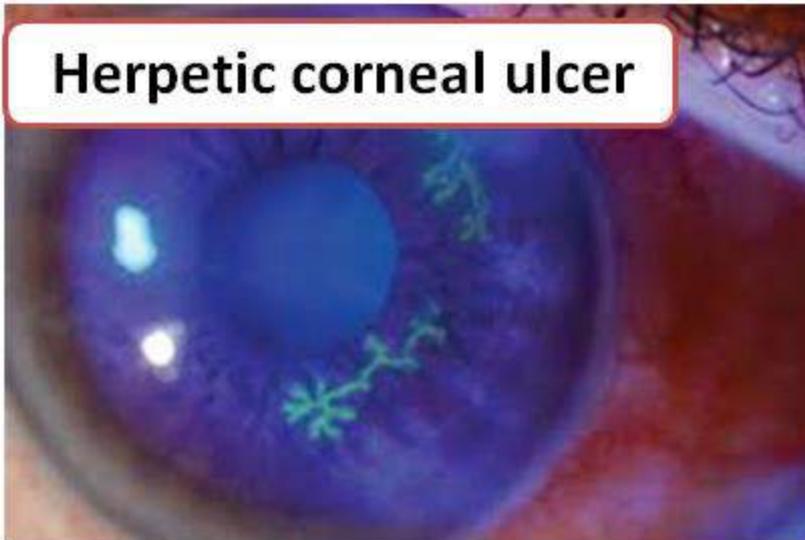
**Herpes zoster ophthalmicus**



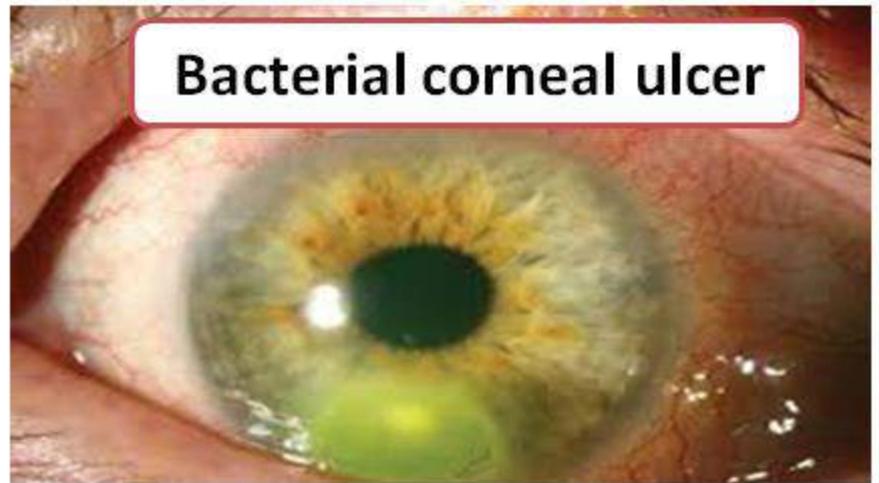
**Blepharitis**



**Herpetic corneal ulcer**



**Bacterial corneal ulcer**



## 4-Infectious Conjunctivitis

- ❑ Two common types: non-herpetic viral (**adenovirus**) & **bacterial** (muco-purulent) **conjunctivitis**.
- ❑ Most cases are viral and usually self limiting.
- ❑ Advise **good hand washing** and avoid sharing of personal items.
- ❑ The most common pathogens are *Haemophilus influenzae* in children and *Staphylococcus aureus* in adults.
- ❑ Transmission is assumed to be via contaminated fingers, contact lenses and makeup.



**Mucopurulent  
conjunctivitis**



The use of topical steroids for the treatment of bacterial conjunctivitis **should be avoided** as there is an increased risk of potentiating the infection and prolonging the duration of the disease.

## Treatment of bacterial conjunctivitis

1- Eye hygiene: washing regularly to remove crusts and pus.

2- **Chloramphenicol eye drops** or **ointment** applied four times daily.

Continue treatment for 48 hours after resolution.

Treatment should not exceed 5 days, to avoid adverse effects of Chloramphenicol (optic neuropathies, blood dyscrasis and aplastic anemia).

3- If no response to Chloramphenicol (bacteriological investigation should be requested); one of the followings can be prescribed:

1. **Fusidic acid eye drops** (for *gram positive only*).

2. **Aminoglycoside** (e.g. **tobramycin**) eye drops or ointment **for gram negative only**

Both Fusidic acid and aminoglycoside causes **burning sensation and hypersensitivity**.

Finally: Consider *Chlamydia trachomatis* or *gonococcal infection* in sexually active patients (need specific oral treatment).

# Chlamydial conjunctivitis

1. **Inclusion conjunctivitis** (in adults and neonates)

2. **Trachoma**

❑ **Trachoma** predominantly affects children in developing countries and is associated with low socioeconomic status and poor hygiene.

❑ It is caused by *Chlamydia trachomatis* (subtypes A–C) and can result in **blindness** if left untreated.

➤ **Adults:**

• Oral **azithromycin** (**single 1 g oral dose**) or Oral doxycycline (21–28 days) or Oral erythromycin for (21–28 days).

➤ **Children:**

• Oral **azithromycin** (20 mg/kg maximum 1 g) **single dose**.

➤ **Pregnant women, infants < 6 months or patients allergic to macrolides:**

• **Topical tetracycline** ( **eye ointment** 2 times daily for **6 weeks** )

# Trachoma



Normal eye



Eyelid Inflammation



Eyelid scarring

It is a bacterial eye infection. It is the main cause of irreversible blindness due to infection that can however be prevented.

## Antibiotics for trachoma



Azithromycin tablets



Azithromycin paediatric oral suspension

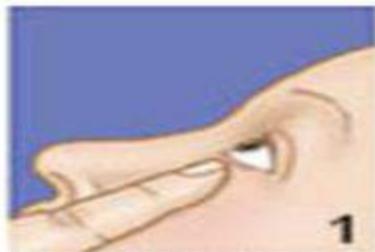


Tetracycline eye ointment



## Instructions for applying eye drops

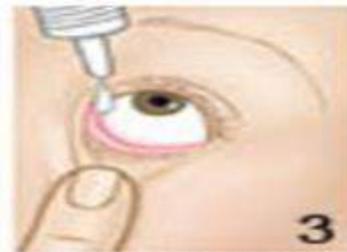
- ❑ Tilt the head backward and pull down the lower eyelid to create a sac.
- ❑ Place one drop at a time at the **lower conjunctival sac** followed by gentle closure of the eye for several seconds.
- ❑ Press against inner corner of eyelid to close lacrimal duct.
- ❑ wait 3 to 5 minutes between application of different drugs.
- ❑ Excessive blinking and placing more than two drops at a time can cause **spillage and waste**.
- ❑ Eye drops should be administered 15 minutes before lenses are placed or after lenses are removed.



Tilt your head back



Pull your lower lid down creating a pocket



Put a drop in the pocket without touching your eye with the bottle



Close your eye and press your finger against the inside corner

# Drugs used in treatment of leprosy

## 1- Dapsone & other sulfones

- **Dapsone** is closely related to the sulfonamides.
  - It inhibits folate synthesis.
  - **Resistance** can emerge in lepomatous leprosy, if low doses are given.
- ☐ Therefore, the combination of **dapsone, rifampin** and **Clofazimine** is recommended for initial therapy of lepomatous leprosy.
- A combination of **dapsone plus rifampin** is commonly used for leprosy with a lower organism burden (paucibacillary).
  - Dapsone is used in Pneumocystis jiroveci pneumonia in AIDS patients.
  - Dapsone is used also for treating other conditions including dermatitis herpetiformis, acne vulgaris and behcet's disease.

## Pharmacokinetics of dapsone

- ❑ Dapsone is well absorbed orally and widely distributed in tissues.
- ❑ Dapsone is metabolized by:
  - 1-hydroxylation (yielding **toxic metabolite** to Blood cells)
  - 2-then by acetylating (non-toxic metabolite).
- ❑ The half-life is 1–2 days.
- ❑ Dapsone accumulates in skin (infected with *M. leprae*), muscle, liver, and kidney.
- ❑ Dapsone is excreted in **bile** & reabsorbed (enterohepatic recycling).
- ❑ **Excreted in the urine.**
- ❑ In renal failure, the dose may have to be adjusted.
- ❑ Dapsone is **Category C** (can be used in pregnancy).

## Adverse effects of dapsone

- 1- **Hemolysis**, particularly in **G6PD deficiency**.
- 2- **Methemoglobinemia** is common but usually is not clinically significant.
- 3- Rarely: **leukopenia**, **Neuropathy** and **nephrotic** syndrome
- 4- **Dapsone hypersensitivity syndrome**.
- 5- During therapy of lepomatous leprosy, **erythema nodosum leprosum** (immune-mediated inflammatory reaction) often develops.
  - Erythema nodosum leprosum may be suppressed by **thalidomide**.

## 2- Rifampin

- **Rifampin** (U.S) or **rifampicin** (Europe) is one of the Rifamycins (drug group which includes Rifampin and rifabutin)
- Rifamycins **Inhibit RNA polymerase** in the bacteria leading to **inhibition of RNA formation.**
- **Clinical uses of rifampin**
  - 1- Treatment of **Mycobacterium tuberculosis** infection (used in combination with other drugs). Monotherapy rapidly leads to resistance.
  - 2- Treatment of **leprosy** (Rifampin delays resistance to dapsone).
  - 3-Used for **meningococcal prophylaxis** and chemoprophylaxis in contacts of children with H. influenzae type b.

## Adverse effects of rifampin

1-Minor **hepatotoxicity**. However, serious hepatic injury rarely occur.

2-**Drug interactions**: Rifampin **induces cytochrome P-450** leading to accelerated metabolism of other drugs including warfarin, hormonal contraceptives, theophyllin and others.

**N.B: Rifampin causes nonhazardous orange body fluids.**

- Rifampin may change the color of urine, sweat, saliva, or tears to (yellow, orange, red, or brown).
- This effect is harmless and will disappear when the medication is stopped. However, teeth and contact lens staining may be permanent.



**Remember**  
**Rifampin's 4 R's**

- 1. RNA** polymerase inhibitor.
- 2. Ramps** up microsomal cytochrome P-450.
- 3. Red/orange** body fluids
- 4. Rapid** resistance if used alone

## Clofazimine

- ❑ Clofazimine is a phenazine dye used for treating **multibacillary leprosy**.
- ❑ Its mechanism of action has not been clearly established.
- ❑ Absorption of clofazimine from the gut is variable, and **a major portion of the drug is excreted in feces**.
- ❑ Clofazimine is stored widely in reticuloendothelial tissues and skin, and its **crystals** can be seen inside phagocytic reticuloendothelial cells.
- ❑ It is slowly released from these deposits, so the serum **half-life may be 2 months**.
- ❑ The most prominent adverse effect is **discoloration** of the **skin** and **conjunctiva**. Gastrointestinal side effects are common.



*Thank  
you!*