**Clinical Pharmacy I**  
**Ophthalmology**  
Lec. Dr. Anmar Al-taie

**Dry eye (keratoconjunctivitis sicca)**

**Prevalence and Epidemiology**
- 3% of older adults will develop dry eye each year.
- More common in women than men.
- More in those people with poor health.

**Etiology**
- A reduction in tear volume or alteration in tear composition.
- Underproduction of tears can be the result of increased evaporation from the eye, increased tear drainage and a decrease in tear production by the lacrimal gland.

**Clinical Features**
- Burn eyes, feel tired, itchy, irritated or gritty.
- The conjunctiva is not red unless irritated (e.g. eye rubbing or allergy).
- Decreased tear production results in irritation and burning.

**Conditions to Eliminate**
- Blepharitis
- Sjögren’s syndrome
- Medicine-induced dry eye (diuretics, anticholinergic drugs as antihistamines and TCAs, isotretinoin, HRTs, androgen antagonists, beta blockers, cardiac arrhythmic drugs, SSRI)
- Ectropion
- Rosacea
- Bell’s palsy

**Indicative of Referral**
- Associated dryness of mouth and other mucous membranes
- Outward turning lower eyelid

**Management**
- Management by artificial tears and lubricating ointments.
- Hypromellose (0.3 to 1.0%), polyvinyl alcohol, carmellose, carbomer 980, sodium hyaluronate and wool fats.
1. **Hypromellose and carmellose**
   - Hypromellose strength are 0.3%; 0.5% and 1%;
   - Carmellose is available as 0.5%.
   - Hypromellose possess film-forming and emollient properties.
   - It does not have ideal wetting characteristics, which results in up to hourly administration to provide adequate relief.
   - It is very cheap and should therefore be recommended as a first-line treatment.
   - Both might require hourly or even half hourly dosing initially, which should reduce as symptoms improve.
   - They are safe in pregnant and breastfeeding women.

2. **Polyvinyl alcohol**
   - Polyvinyl alcohol in a concentration of 1.4% acts as a viscosity enhancer
   - It has the same surface tension as normal tears, lending them optimal wetting characteristics and hence less frequent dosing.
   - Liquifilm Tears and Sno Tears are examples.
   - Dose is 4 times day.
   - Liquifilm is also available as a preservative-free formulation. It can be given to all patient groups.

3. **Carbomer (Liquivisc, Viscotears)**
   - Better tolerated than polyvinyl alcohol.
   - 1 drop 3-4 times a day or as required
   - Due to the products viscosity, carbomer should be used last if other eye drops need to be instilled.

- **Lubricants (Wool fats e.g. Lacri-Lube and Simple eye ointment)**
  - These products contain a mixture of white soft paraffin, liquid paraffin and wool fat.
  - They are useful at bedtime when prolonged lubrication is needed but because they blur vision are unsuitable during the day.
  - They are safe in pregnant and breastfeeding women.