

# Pharmacology for Optometrists

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## My Disclosures

Dr. Gupta is not a member of any speakers bureau nor does he get paid by any pharmaceutical or ophthalmic instrument company mentioned in the lecture.

## Because...

- Some ocular conditions will not get better unless we do
- Optometrists long before most of us starting practicing fought to earn therapeutic privileges for ODs so we have to use them

## Why the growth?

- We diagnose and intervene earlier
- We treat more aggressively
- The overall population is increasing

Did you know that there are  
2 million eye infections a  
year?

## Who sees most of them?

- Primary/Urgent care see 65%
- Eye Care specialists only see 35%

## Red Eye Emergencies: Things to quickly rule out

- Iritis
- Acute angle closure glaucoma
- Corneal ulcer
- Herpetic infection
- Fungal infection
- Corneal FB/Penetrating injury

## Diagnosing Iritis

### Incidence

- 12 per 100,000
- Typical age – 25 to 50

### Work up

- VA
- SLE
- Dilated exam !

### When should lab tests be ordered?

- Bilateral cases
- Atypical age group
- Recurrent uveitis
- Recalcitrant cases
- Hyperacute cases
- Worsens with tapering
- VA worsening
- Immunosuppressed px

### Systemic diseases causing uveitis

- Rheumatoid arthritis
- Reiter's syndrome
- Sarcoidosis
- Syphilis
- Ankylosing spondylitis
- PMR
- Lyme's disease
- JRA
- TB
- SLE
- Sjogren's syndrome
- Crohn's disease
- GCA
- Occult blood disorders
- AIDS

## Goals Of Treatment

- Make patient comfortable
- Improve Visual Acuity
- Decrease inflammation
- Determine any underlying cause
- Minimize side effects of treatment

2 Prescriptions will take care of your problem

1. Cyclogyl 2% or Scopolamine .25% or Atropine 1%
2. Topical Steroid – Pred Forte or Durezol

When you are done...

- Taper slowly
- QID x 1 week
- TID x 1week
- BID x 1week
- QD x 1week

ACG



- Pt complaint of dull ache
- Steamy Cornea
- Mid fixed dilated pupil
- Elevated IOP

ST: Treatment of ACG

### PACG : Treatment of the acute attack

- Pilocarpine eye drop 1-2% in the affected and the fellow eye
- Topical beta-adrenergic blocker
- Carbonic anhydrase inhibitor

Definitive Treatment:  
Peripheral Iridotomy

- Done at slit lamp
- Topical anesthetic, brimonidine, and pilocarpine instilled

## How to rule out penetration

- History
  - SLE Exam – Seidel's sign
  - Dilation
- 
- What if you cant rule it out?

## What is the most important risk factor for eye infections?

Wearing contact lenses

## When to Culture

- When something in history or exam seems out of the ordinary
- When patient fails to get better

## What happens if we do nothing in bacterial conjunctivitis?

## Antibacterial agents

- Sulfa Preparations
- Erythromycin
- Bacitracin
- Bacitracin / Polymyxin B
- Bacitracin / Polymyxin B / Neomycin
- Tetracycline
- Gentamycin
- Tobramycin
- Trimethoprim / Polymyxin B

## When Do We Use Antibiotics?

Prophylaxis in Cataract Surgery

When Do We Use Antibiotics?

- To treat ocular trauma - abrasions, ulcers, after FB removal

When Do We Use Antibiotics?

- To manage patients who have a red eye emergency after ruling out causes other than conjunctivitis

How important is our choice of Antibiotic?

Clinical Ophthalmology 2010; 4:1451-1457

My mistake

We prescribe because patients expect us to

Causes of SAC

Spring - ?

Summer - ?

Fall - ?

## Causes of PAC

## The Allergic Cascade

- Allergy is a Type I hypersensitivity reaction
  - Mediated by IgE
- Four phases – complex process:
  - Sensitization
  - Mast cell degranulation
  - Activation or Early phase response
  - Late phase response

## Things Patients Can Use Without Us

- Artificial tears
- Cool compresses

## OTC Products

• **Naphcon**

• **Visine**

• **Opcon A**

## Things which used to be Rx but now are OTC

- Patanol and Pataday
- Zaditor

## The Ones Which Still Need a Rx

- Lastacaft (Alcaftadine)
- Bepreve (Bepotastine)
- Elestat (Epinastine)

## The Newest Stuff

- Zerviate
  - Basically ocular form of Zyrtec (.24% Cefirizine)
  - Single use vials
  - BID dosing

## What should I do next time?

- Write her a prescription for an older product such as generic epinastine
- Or write for more current product, but educate her on high costs and that she might get better with OTC

## What if the combination products are not enough?

- Soft steroids
- Oral meds
- Allergy testing

## What if the combination products are not enough?

- Soft steroids such as Alrex or Lotemax work well
- Rx: Alrex and combination product together  
D/C Alrex after 1-2 weeks and keep combination for LT therapy

## What if the combination products are not enough?

- Oral Allergy products
  - Vast majority of oral products are now OTC

If a patient only has ocular symptoms  
when do we send out for allergy testing?

## ***Influential Factors of Dry Eye***

Who suffers more from dry eyes: men or women?

68 % women  
32% men

Visual Tasking  
(e.g. PC use)

Hobbies  
( Outdoor Sports)

Air  
Conditioning,  
Fans, Heating

Schirmer Testing

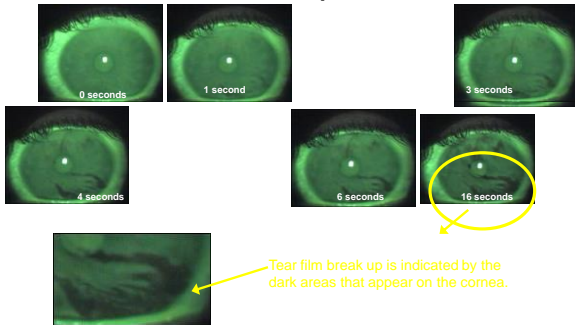
Phenol Red Testing

Lissamine Green

Fluorescein Staining



## Tear Film Break Up Evaluation



## Other tests



What did I do with her?

- I educated her on the need for regular use of artificial tears, instead of prn
- Told her to use regularly and then see me for follow up if needed

If you leave them to figure it out themselves...

- ▶ 33% of dry eye patients diagnosed by a doctor purchase either a store brand or a redness reliever like Visine®.<sup>1</sup>
- ▶ 50% of dry eye sufferers choose redness relievers or allergy drops – the wrong type of drop for dry eye relief.<sup>1</sup>

## Better OD

Gives specific recommendations  
AND  
schedules follow up

What if tears aren't enough?

- Restasis (Cyclosporin) or Xiidra (Lifitegrast)
- Punctal Plugs
- Topical Steroids
- Biologics?

Why do plugs?

- Patient will get relief very fast
- Your practice will make more money

What about Restasis and  
Xiidra?

### Restasis(Cyclosporin) Mechanism of Action

- Activated T cells produce cytokines that result in
- Increased cytokine production
- Neural signal to lacrimal gland that disrupts production of natural tears

### Xiidra (Lifitegrast)

- BID dosing
- Approved for 17 years and older
- Comes in single use plastic vials

### Xiidra (Lifitegrast)

- Works by interfering with T-cells so decreases their impact on the lacrimal gland trying to restore their normal function
- Patients demonstrate improvement as early as 4-6 weeks

### Also... Cequa

- Basically another version of Restasis
- = .09% cyclosporine A
- BID dosing
- By Sun pharmaceuticals

## When Do We Use Them?

- Decrease Inflammation
- Prevent Scarring
- Increase patient comfort

## Topical Steroids

- Fluoromethalone - FML
- Prednisilone Acetate - Omnipred
- Dexamethasone - Maxidex
- Loteprednol – Alrex and Lotemax

## Prednisolone

- 5 times more potent than hydrocortisone
- Previous gold standard of topical steroids
- The acetate suspension facilitates corneal penetration to provide increased concentrations in the anterior chamber

## Difluprednate (Durezol)

- **First emulsion formulation of a steroid**
- **Ketone based product of Prednisilone**
- **Equal efficacy of Pred with half of the dosing**

## Lotemax gel

- Loteprednol 0.5%
- Same active ingredients as drops but now you don't need to shake bottle since its' not a suspension

## Side effects of Corticosteroids

- Increased IOP
- Cataracts
- Decreased healing
- Re-emergence of certain viral and fungal infections

## Steroids and IOP spikes

- Impacts 4 – 6% of the population
- Usually takes over 2-4 weeks to get IOP spike
- Mechanism: Inhibition of phagocytosis
- Most, but not all, return to normal when steroid is withdrawn

## What do you do if patient demonstrates an IOP spike?

- Do nothing
- Discontinue the steroid
- Switch to a different steroid
- Add IOP lowering agent

## Steroids and cataracts

- If prescribing rarely for a given patient, not a big deal
- If prescribing periodically, then educate the patient on the risk and document this conversation

## Lacrisert

## More Options

- **Omega 3's**
- **Humidifiers**
- **Warm Compresses**

## What did I do with her?

- I prescribed Restasis OU BID + Lotemax OU BID
- After 6 weeks, discontinued Lotemax
- At 3 months no better