



Similarities between Chef and Optometrist?

- White coat
- Wash hands
- Infectious Disease



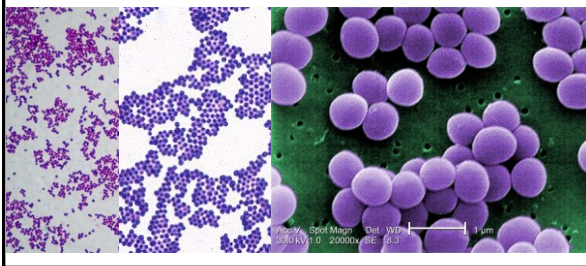
Foodborne illness in United States

Pathogen	Estimated number of illnesses	%
Norovirus	5,461,731	58
Salmonella nontyphoidal	1,027,561	11
Clostridium perfringens	965,958	10
Campylobacter spp.	845,024	9
Staphylococcus aureus	241,148	3
Subtotal		91



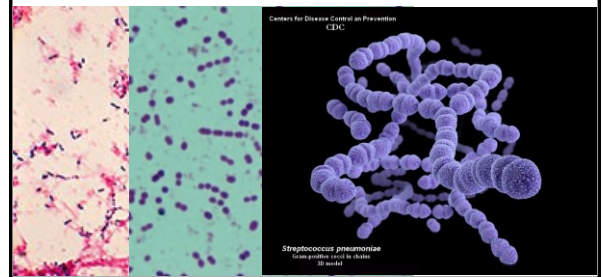
Gram Positive

Staphylococcus Aureus (staphyle = bunch of grapes)



Gram Positive

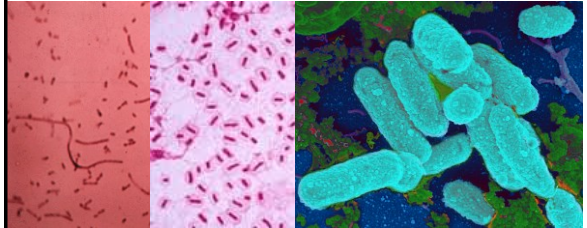
Streptococcus Pneumoniae (strepto = twisted)





Gram Negative

Haemophilus Influenzae (blood-loving) - Does NOT cause the Flu



Gram Negative

Pseudomonas Aeruginosa



Thought #1 Eyelid Bumps Agree? "Optometrists change lives"

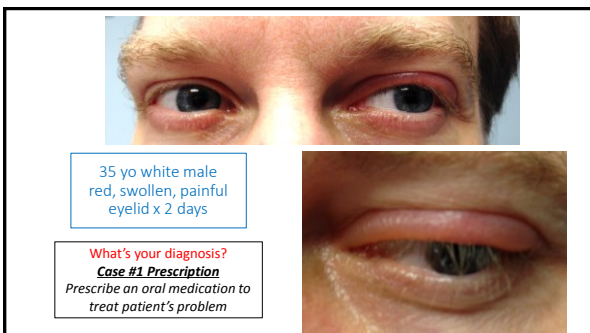


Hi Dr. Kenworthy,

I thought I'd update you on the sty. After a few nights of warm compress, along with using **both** **prescriptions**, the sty discharged and now you can barely tell it was ever there.

Just in time for a date Wednesday :)

"Excellent, thanks for the report. Just don't tell that story over dinner on your date"



35 yo white male
red, swollen, painful
eyelid x 2 days

What's your diagnosis?

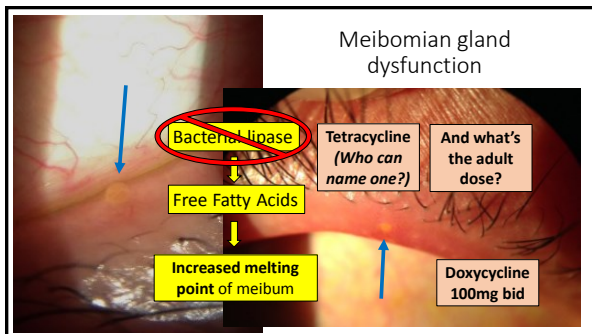
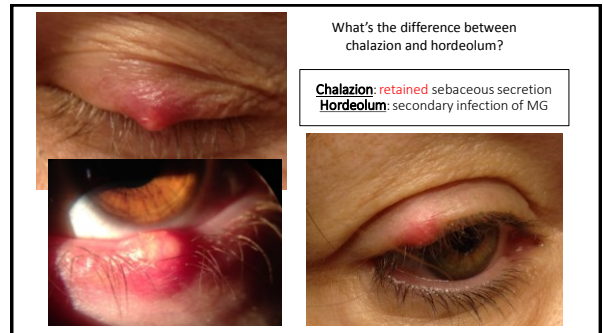
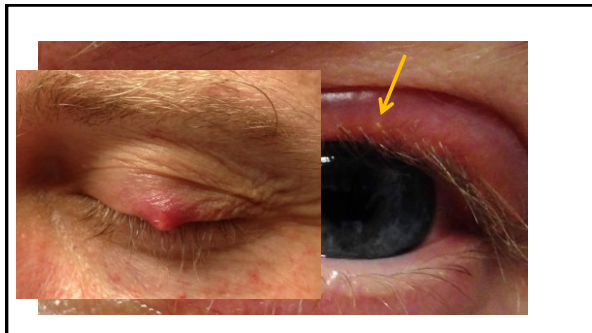
Case #1 Prescription

Prescribe an oral medication to
treat patient's problem

Was Rx'd Augmentin 500mg bid x 1 week

One week later...





Kid's Menu

What are some lemon chickens?

- Tetracyclines:
 - permanent tooth staining and abnormal bone development
- The recommended oral dose for children ages eight and older is 2.1mg/kg/D BID
- It should never exceed the adult dose, which is 100mg BID

Systemic Management of Pediatric Ocular Disease: Small Patients, Big Decisions

A Miller pharmacology expertise can go a long way in breaking both using oral medications.

By Susan D. Miller, MD

When managing ocular disease with systemic medications, clinicians must select drugs and dosages that are both safe and effective, and the process is often more complex than when the patient is an adult. The most common consideration in this context is the child's age and weight, as both factors influence the drug's pharmacokinetics and pharmacodynamics. Additionally, the pediatric population is more susceptible to adverse effects from drugs than the adult population, and the risk of drug toxicity is higher in children than in adults.

It is important to consider the child's age and weight when selecting a drug and dose, and to monitor the child closely for adverse effects. The following table provides a summary of the recommended dosages for several common drugs used in the management of pediatric ocular disease.

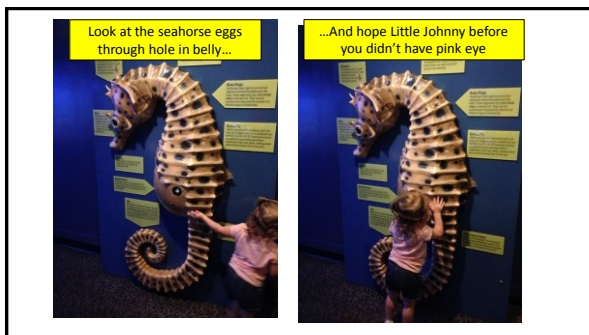
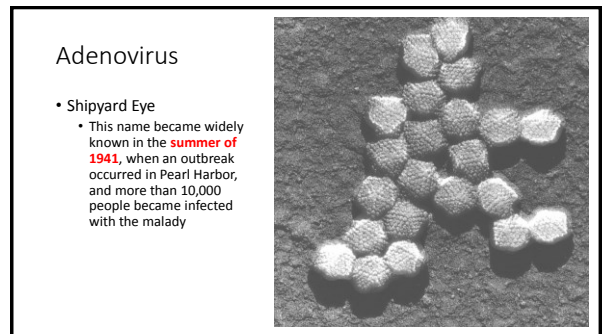
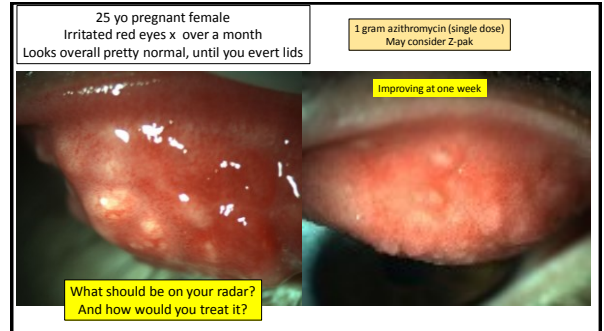
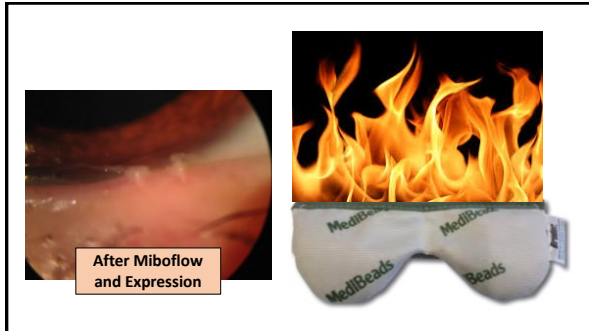
Dosing Information

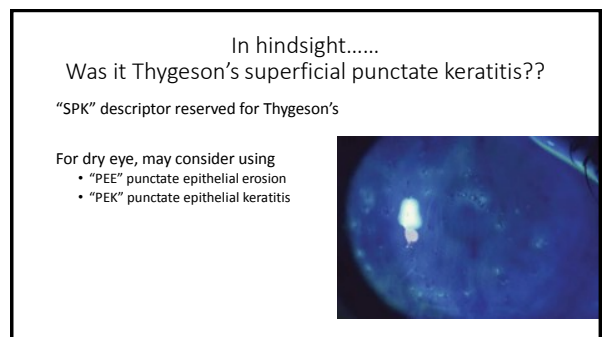
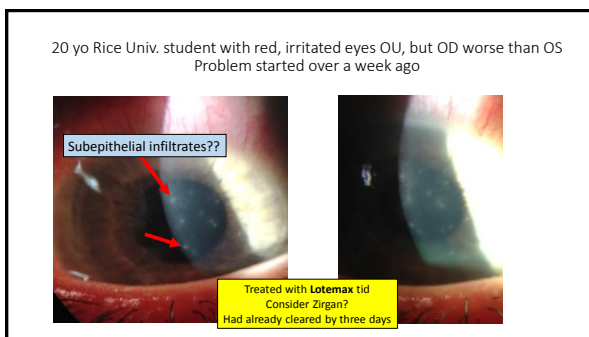
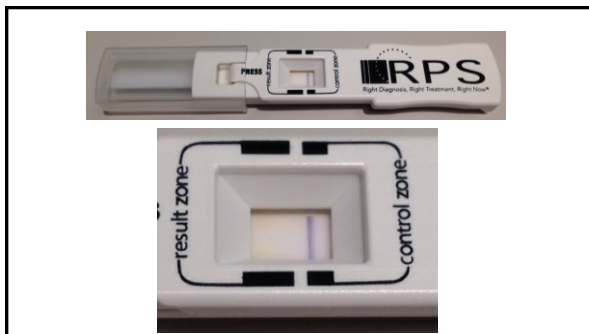
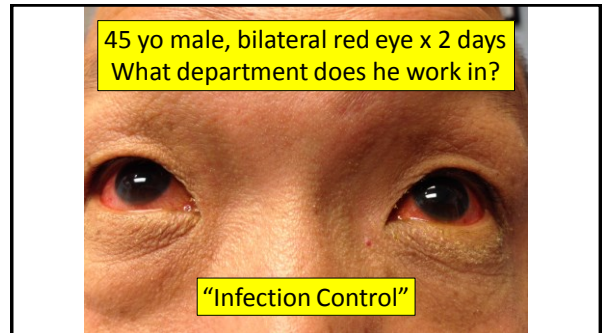
The following table provides a summary of the recommended dosages for several common drugs used in the management of pediatric ocular disease. The dosages are based on the child's age and weight, and are intended to provide a general guide only. Clinicians should consult the product literature for more detailed information on the dosing of these drugs.



It is important to consider the child's age and weight when selecting a drug and dose, and to monitor the child closely for adverse effects. The following table provides a summary of the recommended dosages for several common drugs used in the management of pediatric ocular disease.







40 yo male developed "pink eye" OS only, while flying home to Houston from Manila, Philippines

(+) yellowish discharge

2+ conj hyperemia and chemosis
(+) papillary rxn

Raised, "bulbous" type corneal lesions

Possible diagnosis?
Case #2 Prescription
Prescribe topical pharmaceutical to treat condition

Rx'd Zylet tid OS x 7 days

1 week follow up

What's a fork?

Offensa
New combo drug =
Ocuflox + Prolensa

Combination therapy

Some **REAL** combination eye drops

Polytrim	polymyxin B / trimethoprim		sol
Maxitrol	neomycin 0.35% polymyxin B dexamethasone 0.1%		susp & ung
Tobradex	tobramycin 0.3% dexamethasone 0.1%		susp & ung
Zylet	tobramycin 0.3% loteprednol etabonate 0.5%		susp
Combigan	brimonidine/timolol	0.2%/0.5%	sol
Cosopt	dorzolamide/timolol	2%/0.5%	sol
Simbrinza	brinzolamide/brimonidine	1%/0.2%	susp

Thought #3 Cornea's Dating Profile

"Hi, I'm Cornea"

- I have **no blood** until you take my breath away
- I'm **transparent**, always telling the truth
- I'm a sensitive guy, thanks to the ciliary **nerves** and lots of **tears**

"Hi, I'm Cornea"

- Nutrients supplied via **aqueous humor** and **tears**
- Regularly spaced **collagen fibrils**, no regeneration of stroma
- Most **densely innervated tissue** in body, 1st division of trigeminal

Neovascularization secondary to K hypoxia

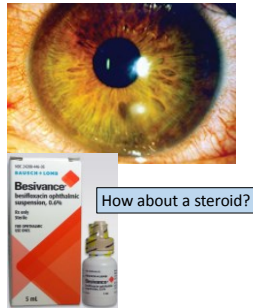
Contacts can be problematic

32 yo female, eye pain x 1 day because she "scratched her eye"
Do you sleep in contacts? No, but I did two nights ago.

What's your diagnosis?
Case #3 Prescription
Prescribe topical pharmaceutical to empirically treat condition

"Empiric" therapy

- **Broad spectrum fluoroquinolone q1hr**
 - Gatifloxacin (Zymarid)
 - Moxifloxacin (which two?)
- **Loading dose?**
- **How about Besivance?**
 - DuraSite vehicle prolongs the drug's contact time on the ocular surface
 - Currently, no plans for systemic



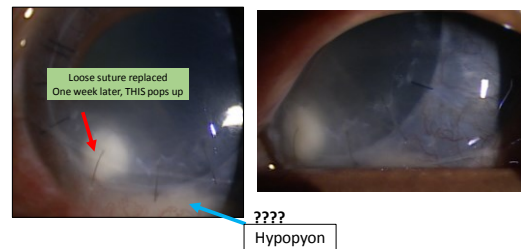
SCUT (The Steroids for Corneal Ulcers Trial)

- **Basic Question:** Will visual prognosis after a **corneal ulcer** be better if you use **steroid during treatment**?
- **Five hundred patients**
 - 485 (97%) were enrolled in India
 - The majority of patients were **agricultural manual laborers** (220 of 500, 44%).
 - The most common object of injury was **vegetative matter**.
 - Eight patients were contact lens wearers
- The most common organisms isolated were
 - *Streptococcus pneumoniae* (250 of 506; 49%)
 - *Pseudomonas aeruginosa* (111 of 506; 22%)
 - *Nocardia* species (56 of 506, 11%).
 - The most common organism in the United States was *P. aeruginosa* (5 of 16, 31%)
- Contact lens wear is a common risk factor for ulcers in the United States, in contrast to agricultural work in India.
- **Basic Answer:** No, steroids did not help in SCUT, but what about timing??!

Early Addition of Topical Steroids (2014)

- In a recently published sub-analysis, patients who were given **steroids within two to three days** of starting antibiotic therapy showed a statistically significant **gain in visual acuity (1 line) at three months**, particularly those with severe or moderately severe ulcers.
- In patients who had **4 or more days** of antibiotic therapy before corticosteroid treatment, the effect was not significant
 - patients given corticosteroids had **1-line worse** visual acuity at 3 months compared with those in the placebo group

Is an **ulcer** normal in a grafted eye?



Magical cure for everyone



Thanks El Salvador

What does the patient want prescribed?

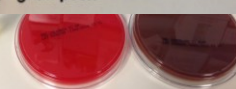


- 1) AC response of **1+** or more (>10 cells/1mm beam)
- 2) Infiltrate is greater than **2mm** in size or extends into deep stroma
- 3) Infiltrate is less than **3mm** from the visual axis
- 4) The condition is worse after **24** hours of empiric therapy
- 5) Just hope it's **before 5:00** o'clock pm and **not** in a graft



Gram Stain Result:

3+ WBCs
1+ gram positive cocci in chains and pairs



Antibiotic	Value	Units	Method	Interpretation
Organism: Staphylococcus species				
Cloxacillin	0.25			Susceptible
Erythromycin	<=0.25			Susceptible
Levofloxacin	<=0.12			Susceptible
Linezolid	2			Susceptible
Rifampin	<=0.5			Susceptible
Tetracycline	<=1			Susceptible
Trimethoprim + Sulfamethoxazole	<=10			Susceptible



5 days later



14 days later

Thought #4: Be Patient ('Cause Herpes Is)

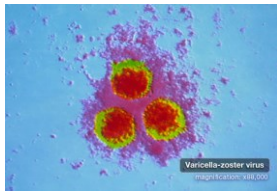
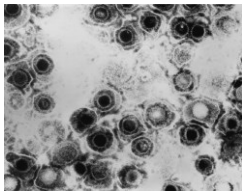
Beginning of long journey

*"In a hole in the ground
there lived a hobbit"*

"You have herpes"



Herpes Simplex and Zoster



Herpes Virus Family

Type	Synonym
HHV-1	Herpes simplex virus-1 (HSV-1)
HHV-2	Herpes simplex virus-2 (HSV-2)
HHV-3	Varicella zoster virus (VZV)
HHV-4	Epstein-Barr virus (EBV), lymphocryptovirus
HHV-5	Cytomegalovirus (CMV)
HHV-6	Herpes lymphotropic
HHV-7	Roseolovirus
HHV-8	Kaposi's sarcoma-associated herpesvirus

Different manifestations of HSV-1

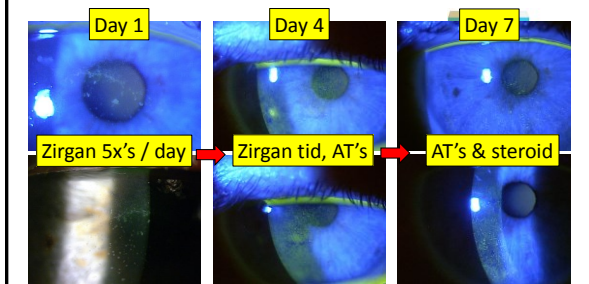
- Dermatitis
- Blepharitis
- Conjunctivitis
- Epithelial Disease (dendritic)
- **Stromal keratitis** (necrotizing, **disciform**)
- **Endothelitis**
- Trabeculitis
- Iridocyclitis
- Retinitis

32 yo male patient was diagnosed with "conjunctivitis" a few days ago
Given Maxitrol (which has dexamethasone-steroid)
Returns with worsening symptoms, pain, redness and tearing




What's your diagnosis?
Case #4 Prescription
Prescribe topical pharmaceutical
to treat condition

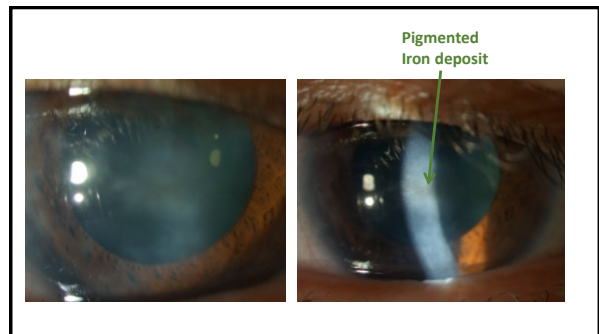
Presumed Herpes simplex – epithelial keratitis



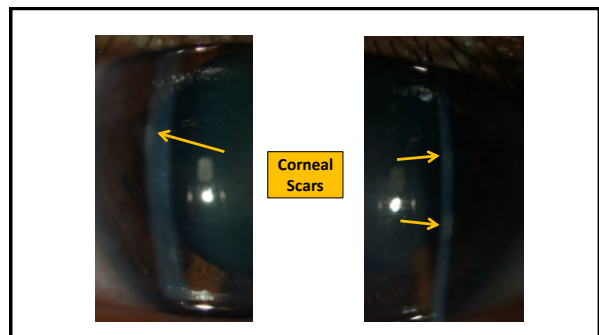
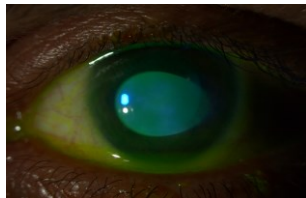
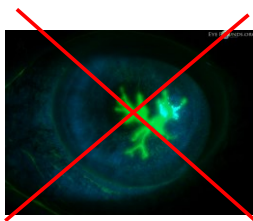
Corneal toxicity




- 41 year old Middle Eastern male
- **Earlier that year:** spectacles from Walmart 
- Also Rx'd FML 0.1% for "eye redness"
- Blur and redness OS
 - BCVA OD 20/20, **OS 20/50**
 - IOP OD 14 mmHg, **OS 20 mmHg**
- Suspected reactivation of herpes infection
 - Hx of herpes **7 YEARS AGO!!**
 - (patiently waiting in trigeminal ganglion)



(-) Fluorescein stain
Why check??






Active
Corneal
Swelling

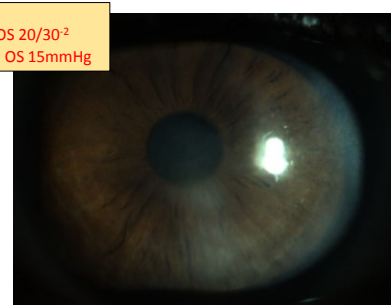
What's your diagnosis?
Does that change your prescribing??

Acyclovir bid 400mg po
FML q2hr x 2 days, then FML q4hr x 5 days

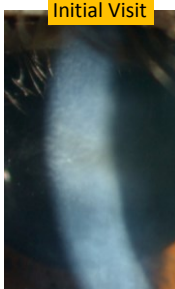


Two week follow up

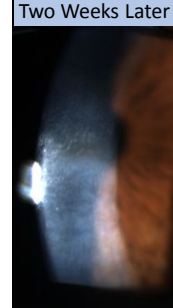
- BCVA OD 20/20, OS 20/30⁻²
- IOP OD 16mmHg, OS 15mmHg





Initial Visit



Two Weeks Later



How about Acyclovir?





- HEDS (Herpetic Eye Disease Study)
 - Oral Acyclovir (400mg bid x 1 year) reduced risk of stromal keratitis recurrence by 50%
 - 14% recurrence Acyclovir vs 28% recurrence placebo

To steroid or not...


Epithelial HSV keratitis

Promote replication of virus
(that's a bad thing)



Stromal/Endothelial HSV keratitis

Suppress inflammation
(that's a good thing)



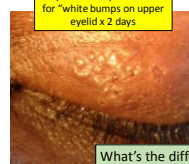
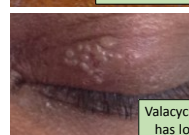

30 yo male hospital consult for "white bumps on upper eyelid x 2 days"

Skin lesions Herpes?

Oral Antivirals 7-10 days
Acyclovir 800 mg 5x's
Valtrex 1000 mg tid
Famvir 500 mg tid

What's the difference between acyclovir and valacyclovir??

Valacyclovir prodrug (becomes acyclovir) but has longer duration of action (dosed less)

Herpes Virus Family

<u>Type</u>	<u>Synonym</u>
HHV-1	Herpes simplex virus-1 (HSV-1)
HHV-2	Herpes simplex virus-2 (HSV-2)
HHV-3	Varicella zoster virus (VZV)
HHV-4	Epstein-Barr virus (EBV), lymphocryptovirus
HHV-5	Cytomegalovirus (CMV)
HHV-6	Herpes lymphotropic
HHV-7	Roseolovirus
HHV-8	Kaposi's sarcoma-associated herpesvirus

Zoster (Chickenpox → Shingles)



Dormant in dorsal root ganglion



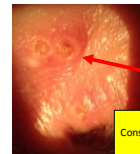
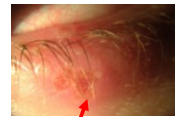
Greek "half belt"



Herpes zoster
"shingles"
Zostavax



20 year old student
Given Rx of Valtrex 1,000mg tid
for "shingles" earlier that a.m.



Lesion beyond lid margin
Consider adding topical antiviral??
(like Zirgan)??

