

The Good, The Bad and The Orals

Walter O. Whitley, OD, MBA, FAAO

2 Hours

Course Descriptions – Oral medications play an integral role in the treatment and management of ocular disease. Additionally, the side effects of many common systemic medications can have ocular side effects. Through case examples, this course will review the impact oral medications have on our patients and practice of optometry.

Learning Objectives

- Attendees will consider prescribing considerations from indication to cost
- Attendees will gain a better understanding of when and how to use oral medications
- Attendees will review ocular side effects of common systemic medications
- Attendees will review ocular pain management and where oral meds fit in.

1. Prescribing Considerations – 5 min

- Indications
- Brand vs. generics
- Does the insurance cover prescriptions?
- Costs of medications
- Compliance

2. Patient Assistance Programs – 5 min

- Alcon (800)222-8103
- Allergan (800)433-8871
- B&L (800)323-0000
- Merck (800)727-5400
- www.rxhope.com
- www.RxOutreach.org
- www.NeedyMeds.org
- www.pparx.org
- www.goodrx.com

3. Prescription Considerations – 5min

- Review medical history
 - Renal function
 - Liver function
- Review current medications
- Side effect vs. true allergies
- Pregnant or nursing
- Rx for children

4. So What Can Be Used During Pregnancy? 5 min

- 1 • Antibiotics
 - Amoxicillin
 - Amoxicillin/clavulanate

- Azithromycin
- Azithromycin
- Erythromycin
- Antivirals
 - Acyclovir
 - Valacyclovir
- Anti-inflammatory
 - Prednisone
- 2 • Analgesics
 - Acetaminophen
 - Ibuprofen
 - Tylenol #3
 - Vicodin
- Allergy
 - Diphenhydramine
 - Loratadine

5. Prescribing Considerations for Kids – 5min

1. Know the age
2. Know the weight
3. Look up the dosage
 - mg/kg/day
4. Be good at math
 - Or call the pharmacist
5. Avoid
 - Tetracyclines
 - Fluoroquinolones

Review of Commonly Prescribed Antibiotics – 10 min

Keflex (Cephalexin)

- First generation cephalosporin
- Caution in those with PCN allergy
- Disrupts the synthesis of peptidoglycan in bacterial cell walls
- Bactericidal but less susceptible to penicillinase
- Pregnancy Category B
- 500 mg BID for one week • 5-10% cross-sensitivity with PCN
- Side Effects/Contraindications:
 - Renal dysfunction
 - GI disease

Abx Cross-sensitivity Reactions

- The overall cross-reactivity rate is approximately 1% when using first-generation cephalosporins or cephalosporins with similar R1 side chains
 -
- For penicillin-allergic patients, the use of third- or fourth-generation cephalosporins or cephalosporins with dissimilar side chains than the offending penicillin carries a negligible risk of cross allergy
 - Omnicef

–Rocephin

Diflucan (fluconazole)

- Effective against candidiasis, cryptococcal meningitis
- Interferes with fungal cytochrome P450 activity (lanosterol14- α -demethylase) decreasing ergosterol synthesis
- Pregnancy Category C
- 150 mg as a single oral dose
- Side effect
 - Headache

Eyelid / Conjunctival Cultures

i • Eyelid

- Moisten swab, rub along the lid margins
- Conjunctiva
 - Inferior palpebral conjunctiva
- Inoculate solid media plates • Culture
 - Calcium alginate swab
 - Cotton-tipped applicator
 - Transport medium

Example of Culture Report

- Hold for:
 - Bacteria 1 week
 - Viral 2 weeks
 - Fungal 1 month
- Test for all sensitivities

Treatments for MRSA

- 100% to vancomycin¹
- 97.7% to sulfisoxazole¹
- 95% to Polytrim²
- 95% to Polytrim
- 93.2% were sensitive to tetracycline¹
- 63.6% were sensitive to bacitracin¹
- 14.8% of MRSA isolates were sensitive to ciprofloxacin and erythromycin¹ • Besifloxacin has been reported to be effective

Adoxa (Doxycycline)

- Inhibits bacterial protein synthesis
- Cannot be used for kids <8 and pregnancy/nursing
 - Category D
- Anti-infective dose: 100 mg BID for 10 days
- Anti-inflammatory dose: 50 mg BID for one month then qd 1-3 months
- Side effects/Contraindications:
 - GI upset: caution patient to take this with food
 - Photosensitivity
 - Pseudotumor cerebri

Zithromax (Azithromycin)

- Inhibit bacterial protein synthesis
- Z pak: 500 mg Day 1, 250 mg Day 2-5 or 1g dose
- Pregnancy Category B
- Side Effects/Contraindications:
 - GI upset
 - Headache
 - Rash
 - May worsen myasthenia gravis symptoms
 - Kidney or liver dysfunction
- Consider risk of fatal heart rhythms

MGD: Azithromycin vs. Doxy

- Purpose: To assess the efficacy and safety of oral azithromycin compared with oral doxycycline in patients with meibomian gland dysfunction (MGD) who had failed to respond to prior conservative management.
- Conclusion: Although both oral azithromycin and doxycycline improved the symptoms of MGD, 5-day oral azithromycin is recommended for its better effect on improving the signs, better overall clinical response and shorter duration of treatment

Oral Considerations for Viral Eye Disease – 10 min

Herpetic Eye Disease Study I

- Herpes Stromal Keratitis, Not on Steroid Trial
 - Pred Phosphate faster resolution and fewer treatment failures
 - Delaying treatment did not affect outcome
 - Delaying treatment did not affect outcome
- Herpes Stromal Keratitis, on Steroid Treatment
 - No apparent benefit in the addition of oral acyclovir to the treatment of topical corticosteroid and topical antiviral
- HSV Iridocyclitis, Receiving Topical Steroids
 - Trend in the results suggests benefit in adding oral acyclovir –

Herpetic Eye Disease Study II

- HSV Epithelial Keratitis Trial
 - No benefit from oral ACV with topical trifluridine in preventing the development of stromal keratitis / iritis
- Acyclovir Prevention Trial
 - Reduced by 41% the probability of recurrence
 - 50% reduction in the rate of return of the more severe form
- Ocular HSV Recurrence Factor Study
 - No results available

Oral Antivirals

- Inhibit viral DNA polymerase without inhibiting normal cellular activity
- Works best if treatment initiated within 72 hours

- Pregnancy category B
- Caution in patients with renal disease

Vaccines for HZO – Shingrix (GSK)

- Vaccine indicated for prevention of herpes zoster (shingles) in adults aged 50 years and older
- 2 IM doses (0.5 mL each) at 0 and 2 to 6 months
- Reduced risk of developing HZ from 85 – 97%
- Efficacy against PHN 85.5%

Orals for Ocular and Systemic Allergies – 10 min

Common OTC Allergy Meds

- Inhibits action of histamine by blocking H1 receptors preventing symptoms of allergy
 - Cetirizine (Zyrtec) 5 or 10mg qd
 - Desloratadine (Clarinex) 5mg qd
 - Fexofenadine (Allegra) 60mg bid; 180mg qd
 - Loratidine (Claritin) 10 mg qd
- Pregnancy category C
- Side Effects/Contraindications:
 - Hypersensitivity reactions
 - Dry mouth
 - Headache
 - Nervousness

Singulair (montelukast sodium)

Leukotriene receptor antagonist

Indications:

- Prophylaxis and chronic treatment for asthma
- Acute prevention of exercise-induced bronchoconstriction
- Relief of symptoms of allergic rhinitis

10 mg tablet qd

Side effects

- Behavior or mood changes, URI, fever, headache, sore throat, cough, stomach pain, diarrhea, ear ache or ear infection, flu, runny nose, and sinus infection

Oral Considerations for Dry Eye Disease – 10 min

Effect of Oral Re-Esterified Omega-3 Nutritional Supplementation on Dry-Eye Disease: Double-Masked Randomized Placebo-Controlled Study

This was a multicenter, prospective, interventional, placebo controlled, double masked, randomized trial.

105 patients with dry eye disease

–Four capsules (2 gm) once a day containing 1680mg EPA and 560mg DHA (PRN Dry Eye Omega Benefits) for 3 months or four capsules of placebo.

–All patients underwent a screening, baseline, 6 week and 12 weeks visit.

–On each visit patients were tested for tear osmolarity, MMP-9, fluorescein corneal staining, Schirmer’s testing, and OSDI. On the screening exam and week 12 evaluation patients had their omega index tested.

This study demonstrated that oral consumption of re-esterified omega-3 fatty acids (1680 mg EPA and 560 mg DHA once daily for 12 weeks) is an effective treatment of dry eye disease and results in a statistically significant improvement in tear osmolarity, OSDI, tear break up time and omega index levels.

Hot Off the Press

“The results of the DREAM study do not support use of omega-3 supplements for patients with moderate to severe dry eye disease”

- So what to do???

Oral Anti-inflammatories in Eye Care – 10 min

Prednisone

- Suppresses inflammatory cascade and immune response • Optic neuritis
 - Methylprednisolone 1g/day i.v. for 3 days
 - 60-100mg qd p.o. for 11 days
 - Only after initial IV steroid treatment per ONTT to decrease risk of recurrence
- AION: 60-100mg qd
- Scleritis/Uveitis
 - Not responding to topical treatment
 - 40-80 mg as an initial dose with taper

Prednisone

- Side Effects/Contraindications:
 - Increased IOP
 - Cataract formation
 - Fluid retention (moon face, buffalo hump)
 - Increase blood sugar levels in diabetics
 - Gastric ulcers
 - Not to be used if pregnant
 - Mood changes
- Advantages:
 - Widely available
 - Inexpensive

When Should Lab Tests Be Ordered?

- Atypical age group
- Bilateral cases
- Recurrent uveitis
- Scleritis
- Recalcitrant cases
- Hyperacute cases
- Worsens with tapering
- VA worsens
- Immunosuppressed

Treatment for Scleritis

- NSAIDS
- Systemic steroids
- Immunosuppressive therapy
- Topical steroids???

Advil (Ibuprofen)

- Analgesic, antipyretic, anti-inflammatory properties
- Suppresses inflammatory cascade by inhibiting COX pathway
- Pregnancy Category
 - C – Prior to 30 weeks gestation
 - D – After 30 weeks gestation

OTC 200 mg tablets/capsules

- Analgesic dosage - 200-400mg q4-6 hrs
- Anti-inflammatory dosage – 600-800mg q4-6hrs
- Generics available

Oral Analgesics and The Eye – 10 min

- Hydrocodone/acetaminophen is the most frequently prescribed oral medication in the U.S.
- Indicated for:
 - Corneal abrasions
 - Recurrent corneal erosions
 - Severe keratitis
 - Severe iritis
 - Refractive surgery

Oral Narcotic Analgesics

- Centrally acting opioid receptor blockers
- Safe and effective for acute, short-term pain
- Clinically used in combination with acetaminophen
- Generally prescribed as one tablet po q4-6hours prn
- Onset 20 minutes, peak 1 hour, duration 4-6 hours

Extra Strength Tylenol(Acetaminophen)

- Analgesics and antipyretic
- Indications:

- Pain relief associated with corneal abrasions, chemical burns, headaches associated with eye pain, scleritis
- Pregnancy Category B
- Side Effects/Contraindications:
 - Rash, Hives
 - Itching
 - Difficulty swallowing/breathing
 - Overdose may damage liver
 - Do not take with alcohol

Vicodin (hydrocodone/acetaminophen)

- Dosage:
 - Vicodin contains 5mg hydrocodone with 300 mg APAP
 - Vicodin ES contains 7.5mg hydrocodone with 300 mg APAP
 - Vicodin ES contains 7.5mg hydrocodone with 300 mg APAP
 - Vicoprofen contains 7.5mg hydrocodone with 200 mg ibuprofen
 - Pregnancy Category C
- 1 tablet po q4-6 hours
- Indicate how many in writing
- Generics available

Ultram (tramadol hydrochloride)

- Moderate to severe pain
- Non-narcotic opioid receptor agonist
- Pregnancy Category C
- 50-100mg q4-6 hours
- Side effects
 - Hallucinations
 - Fever
 - Nausea and vomiting
 - Seizure
 - Skin rash
 - Shallow breathing, weak pulse

Phenergan

- Used to treat allergy symptoms
- Prevents motion sickness
- Treats nausea and vomiting or pain after surgery
- Sedative or sleep aid
- 25 mg QID po

Ocular Side Effects of Systemic Medications 15 min

Cordarone (amiodorone)

- Indicated for the treatment of life-threatening recurrent ventricular arrhythmia
- Side Effects
 - Halos
 - Photosensitivity
 - Optic neuropathy

- Optic neuritis
- Disc swelling

Differentials for Vortex Keratopathy

- Drug induced
 - Amiodorone
 - Chloroquine
 - Tamoxifen
 - Tamoxifen
 - Ibuprofen
 - Indomethacin
 - Netarsudil
- Stem cell deficiency
- Fabry's disease

Plaquenil (hydroxychloroquine sulfate)

- Indicated for the treatment of discoid and systemic lupus erythematosus, rheumatoid arthritis, and malaria
- Dosage: 200mg to 400mg per day
- Primary risk factors
 - Duration > 5 years
 - Cumulative dose >1000g
 - Age
 - Systemic – High BMI, liver, kidney dysfunction
 - Ocular – retina or macular changes

Viagra (sildenafil citrate)

- Selective inhibitor of phosphodiesterase type 5
- Impairment of color discrimination (B/G)
- Non-arteritic ischemic optic neuropathy

Can Anything be Done?

- Hayreh SS, Zimmerman MB. Non-arteritic anterior ischemic optic neuropathy: Role of systemic corticosteroid therapy. Graefes Archives of Clinical Exp Ophthalmology 2008; 246:1029-1046.
- Initial VA 20/70 or worse, treated within 2 weeks of onset of symptoms
 - Visual outcome at 6 mo
 - Treated eyes 70% improved
 - Untreated eyes 41%.
 - Visual Fields
 - Treated – 40.1% improvement
 - Untreated – 24.5% improvement

Anything Else?

- Purpose: To determine the clinical effectiveness and potential neuroprotection of levodopa in improving VA, VF, and RNFL thickness
- Conclusions – Treatment within 15 days of onset improved central VA by avg. of 6 lines on Snellen and may promote neuroprotection lines on Snellen and may promote neuroprotection

Flomax (tamsulosin)

- Indication for the treatment of benign prostatic hyperplasia
- Alpha-1 blocker
- Intraoperative floppy iris syndrome
- Importance to communicate prior to cataract surgery

Home Remedies, Herbal Supplements and Whatever MOM Told Me Take**Conclusions**

- Many prescription options available to treat a variety of ocular condition
- Consider patient age, history, drug interactions, compliance, cost
- Important to treat and monitor
- Practice to the fullest extent of our education