

## Ocular Pain Management for the Primary Care Optometrist

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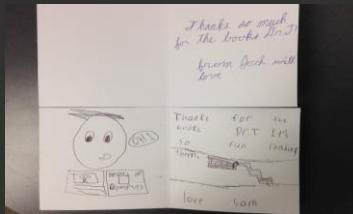
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### Start to my day...



### And mine...



### Disclosures

- We have nothing to disclose. *Unfortunately.*

### Pain

- Pain is a necessary reaction for our survival and overall well being
- The pain pathways in every system are redundant to give us more than one opportunity to "get out" of the situation.
- The sensory nerves in and around the eye are mainly supplied by the trigeminal nerve and its branches.
- The cornea is one of the most sensitive organs in the body. It reportedly has 300-600 more receptors per unit area than the skin.

### Causes of Ocular pain

- Foreign bodies
- Dry Eye
- Corneal/Conjunctival Abrasions
- Blunt Trauma
- Inflammation: stye, episcleritis, uveitis, keratitis
- Post-surgical: Refractive, Cataract, Retinal

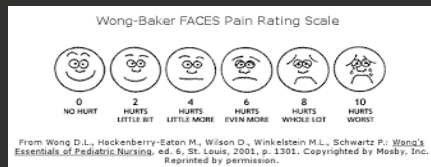
## History Is Paramount

- Key Hx questions for the patient in pain:
  - When did this start?
  - How often are you feeling the pain? Constant? Intermittent?
  - Have you had it in the past?
  - Does anything make it better/worse?
  - Can you associate the pain with any particular action or time of day?

## History Continued

- It is important to put the pain on a scale.
  - It gives you a starting point
    - On a scale of 1 to 5—5 being the worst pain you have experienced—how would you rate the level of the pain?
  - It lets you know how you are progressing through treatment.
  - Instead of 1-5 scale, some might use the Wong-Baker Classification scale
  - Regardless of the scale you use, remember that pain is subjective.

## Wong-Baker Classification Scale



## History Continued

- Medical History is important:
  - Pregnancy
  - Allergies to Medication
  - Alcohol use
  - Other medications that may cause interaction
  - Liver function
  - Kidney function

## History Continued

- It is important to determine what the goal of the pain treatment will be.
  - Is it to treat/manage an obvious inflammation, infection or injury?
  - Or is it for a purely analgesic effect, i.e. symptomatic relief?
  - Or the goal could be symptomatic relief until the hidden source of the pain is identified and eliminated if possible?

## Treatment: From the Top Down

- There are ways to treat pain that don't necessarily involve medications.
  - Removal of some type of foreign body
    - Lashes, small fibers or dust, bugs
  - Bandage contact lens
  - Compression patch (rarely used)

## Topical Medications

- Artificial tears
  - Great for lubrication
  - Useful for dry eye
  - In conjunction with use of other medications
  - Assist in healing mild corneal erosions/abrasions
  - Usually only a mild sense of relief
  - Available OTC, easy to access
  - Cost varies

## Topical Medications

- NSAIDs
  - Work by blocking COX-1 and COX-2 which stops production of prostaglandins and thromboxanes from arachidonic acid.
  - Prostaglandins are the "messenger" molecules for inflammation.
  - Have analgesic, antipyretic and anti-inflammatory effects.
  - Topical NSAIDs, often used after surgery, help control inflammation, give a mild analgesic effect and can help with pupil dilation.

## Topical Medications

- NSAIDs Continued
  - Side effects
    - Burning
    - Stinging
    - Hyperemia
    - Possibility of corneal melt
    - Delayed wound healing

### Acular (ketorolac tromethamine) 0.5%, 3mL, 5mL, 10mL

- Uses:
  - Seasonal allergic conjunctivitis
  - Postoperatively: refractive and cataract
- Dosage:
  - QID for two weeks
- Side effects:
  - Stinging and Burning
- Age range:
  - Do not use for patients below the age of 3
- Pregnancy:
  - Category C
- Cost:
  - \$70.00-\$115.00, much lower with some online pharmacies, cost based on 5mL bottle

### Acular LS (ketorolac tromethamine) 0.4%, 5mL

- Uses:
  - For pain, burning or stinging following refractive surgery
- Dosage:
  - QID up to 4 days following surgery
- Side effects:
  - Stinging, even more so than Acular; could be a deterrent for use
- Age Range:
  - Do not use for patients below the age of 3
- Pregnancy:
  - Category C
- Cost:
  - \$54.00-\$130.00, can get it for much less with online coupon, membership, etc.

### Acuvail (ketorolac tromethamine) 0.45%, PF, 30 vials per box

- Uses:
  - For the treatment of pain and inflammation following cataract surgery
  - \*\*\***Lower pH so less stinging to the ocular surface**
- Dosage:
  - BID for up to two weeks following surgery
- Side effects:
  - Increased intraocular pressures, conjunctival hemorrhaging, blurred vision
- Age range:
  - Has not been established for use in children
- Pregnancy:
  - Category C
- Cost:
  - \*\*\***Expensive!!!**
  - \$240.00-\$250.00, could not find a coupon on this one!

**Voltaren  
(diclofenac  
sodium) 0.1%,  
5mL**

- **Uses:**
  - Post operatively after cataract surgery for inflammation, for photophobia and pain following refractive surgery
- **Dosage:**
  - Cataract surgery: QID starting 24 hours after surgery for two weeks
  - Refractive surgery: 1-2 drops within the hour of surgery, then within 15 minutes post op, then QID for up to 3 days.
- **Side effects:**
  - Stinging and Burning
- **Age range**
  - Not established on children

**Voltaren  
(diclofenac  
sodium) 0.1%,  
5mL**

- **Pregnancy**
  - Category C
- **Cost**
  - \$26.00-\$90.00, can get it much lower with online coupon, membership, etc.

**Bromday  
(bromfenac)  
0.09%  
1.7mL/2.5mL/5  
mL**

- **Uses:**
  - Treatment of inflammation and ocular pain post cataract surgery
- **Dosage:**
  - One drop 1 day prior to cataract surgery and then one time a day through day 14 post op
- **Side effects:**
  - Abnormal sensation in eye, conjunctival redness, eye irritation, itching, headache and iritis
- **Age Range:**
  - Efficacy has not been established in those 18 years and below

**Bromday  
(bromfenac)  
0.09%  
1.7mL/2.5mL/5  
mL**

- **Pregnancy:**
  - Category C
- **Cost:**
  - \*\*\***Another Expensive drop!**
  - \$126.00-\$168.00 for 2.5 mL bottle. Online coupons made it significantly less (~\$55.00)

**Prolensa  
(bromfenac)  
0.07%  
1.6mL/3mL**

- **Uses:**
  - For inflammation and ocular pain after cataract surgery
- **Dosage:**
  - QD starting the day before cataract surgery and through the 14<sup>th</sup> day.
    - Slightly higher pH is supposed to give it better penetration to the cornea
- **Side effects:**
  - Iritis, foreign body sensation, eye pain, photophobia, blurred vision
- **Age Range:**
  - Use in patients below 18 years of age has not been established

**Prolensa  
(bromfenac)  
0.07%  
1.6mL/3mL**

- **Pregnancy:**
  - Category C
- **Price range:**
  - \$266.00-\$287.00, could find some coupons, but they did not cut the price by much! This range looks at the 3 mL bottle.

### Ocufen (flurbiprofen) 0.03% 2.5mL

- Uses:
  - Typically used to prevent miosis during intraocular surgeries
  - Off label use can be for pain post operatively for cataract surgery and refractive surgery
- Not used often since there are so many choices out there.
- The cost is significantly less coming in at \$14.00-\$22.00. It can be as low as \$6.00 with an online coupon!
- Fun Fact: It was the first topical NSAID to get FDA approval.

### Nevanac (nepafenac) 0.1% 3mL

- Uses:
  - For pain and inflammation associated with cataract surgery.
  - \*\*\*this is a prodrug. Once the drug gets in the body it becomes a more potent form of the drug through a series of enzymatic reactions
- Dosage:
  - TID starting one day before cataract surgery through the 14<sup>th</sup> day following surgery.
- Side effects:
  - Capsular opacification, decreased VA, increased IOP, foreign body sensation, sticky sensation
  - In a smaller percentage: conjunctival edema, corneal edema, dry eye, ocular discomfort, ocular pain, ocular itching, lid margin crusting, ocular hyperemia, photophobia, tearing, vitreal detachment
  - Non-Ocular Problems: headache, nausea/vomiting, hypertension, sinusitis

### Nevanac (nepafenac) 0.1% 3mL

- Age Range:
  - Not to be used in those below the age of 10.
- Pregnancy:
  - Category C, avoid during 3<sup>rd</sup> trimester
- Cost:
  - \$288.00-\$324.00 and slightly less with a coupon

### Ilevro (nepafenac) 0.3% suspension 1.7mL/4mL

- Uses:
  - For pain and inflammation associated with cataract surgery
- Dosage:
  - QD starting one day before cataract surgery and through the 14<sup>th</sup> day after surgery. An additional drop should be put in the eye 30-120 minutes before surgery begins.
- Side effects:
  - Same side effects as Nevanac
- Age range:
  - Not to be used on anyone below the age of 10.
- Pregnancy:
  - Category C, avoid in 3<sup>rd</sup> trimester
- Cost:
  - \$269.00-\$302 for a 1.7mL bottle, slightly less with coupon

## Cycloplegic Agents

- Effective in helping control inflammation, which in turn can help control pain
- How?
  - Acetylcholine causes the iris and the ciliary body to contract. Cycloplegics block acetylcholine, therefore stop the contraction of the iris and the ciliary body.

## Cycloplegic Side Effects

- Common:
  - Blurred vision, itching, burning, stinging, irritation at application site, photophobia
- Severe:
  - Rashes, hives, itching, difficulty breathing, tightness of chest, swelling of mouth, face, lips or tongue, difficulty urinating, dry mouth, eye pain, fever, flushing or dryness of skin, irregular or rapid heartbeat, unsteadiness on your feet.

## Interactions

- Make sure to examine the patients medical history and current medications and allergies.
- Educate patient before starting drops on the following:
  - Cardiovascular changes
  - GI issues
  - Toxicity
  - Sudden allergic reactions
  - Neurologic changes

## Atropine 0.5%, 1%, 2% 5mL and 1% ung

- Can get in Preservative free form.
- Strongest of the cycloplegics
  - Can last up to 12 days.
- Uses:
  - Control inflammation and for mydriasis.
- Dosage:
  - Varies: found between QD and QID.
- Age Range:
  - Below 3 months of age should not be used.
  - Under 3 years old should not use more than one time a day.
- There has been concern about using Atropine with Down's syndrome patients. There is debate on that finding.

## Atropine 0.5%, 1%, 2% 5mL and 1% ung

- Pregnancy:
  - Category C
- Cost:
  - \$16.00-\$40.00, lower with online coupon

## Scopolamine 0.25% 5mL, 15mL

- Less potent than Atropine.
- Can last for up to 7 days.
- Uses:
  - For aid in inflammation of the eye and for mydriasis
- Dosage:
  - Varies: BID-QID
- Age Range:
  - Similar to atropine
- Pregnancy:
  - Category C
  - Long term use may reduce milk production or milk letdown.
- Cost:
  - \$16.00-\$40.00, lower with online coupon.

## Homatropine 2%, 5%, 5mL, 15mL

- Most used of the cycloplegic agents.
- Can last up to 3 days.
- Uses:
  - For inflammation in the eye and for mydriasis.
- Dosage:
  - Varies: BID to hourly
- Age range:
  - Similar to Atropine
- Pregnancy:
  - Category C
- Cost:
  - Slightly cheaper in cost to Atropine, \$6.00-\$25.00
  - Has been difficult to get recently, at least in IN

## Cyclopentolate 0.5%, 1%, 2% 2mL, 15mL

- It is the least potent of the cycloplegics
  - Can last up to 24 hours
- Uses:
  - For mild inflammation and mydriasis of the eye
- Dosage:
  - Varies: QD to hourly
- Age range:
  - Similar to Atropine
- Pregnancy:
  - Category C
- Cost:
  - ~\$20.00, less with online coupon

## 2001: A Patient Odyssey

- 57-year-old female
- Recent Hx of cataract surgery OD only
- Extremely unhappy; will not disclose the name of the surgeon or the surgery center
- VA 20/80, 20/20
- Had been release from post-op care "sometime before."
- Adie's pupil OD
- A/C reaction, moderate to high
- Due to Adie's pupil, no synechia, but hard to assess due to lack of response
- Possible vitritis or "spill-over"

## Continued

- Started on Homatropine 5%
- Did not have to worry about dilation and light sensitivity
- Predforte 1%
- Follow-up in short order

## Continued

- Patient is happy, but A/C reaction remains
- Resists any change or reduction of cycloplegic or steroid
- Immediate rebound to high reactivity
- At best, the A/C reaction is kept at a low-moderate grade of approximately grade 2 cells and about 1 flare—perpetually!
- Patient is happy
- VA maintained hovering around 20/40-20/30+

## 2003

- Vigamox is introduced
- During a dinner presentation, it is hailed as being capable of highest penetration into ocular tissue of any topical agent
- NOTE: Patient has had multiple checkup with local specialists, who would not succumb to her wish to perform an *in vitro* serological test to rule out bacterial presence in vitreous and prove a mild case of endophthalmitis. Patient is extremely unhappy with the local specialists and travels to Mayo clinic for a second opinion. Nothing changes. No one will submit given the acceptable VA.
- I call the patient back, discuss the new medication, I add Vigamox empirically.
- In one week, the A/C shows zero cells/flare, for the first time in 2 years.

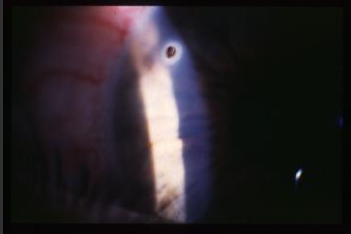
## 2007

- Patient is diagnosed with severe Grave's disease
- Diplopia
- Frequent Rx checks and prism evaluation
- Patient is taken from the waiting area to exam room by me (no intern allowed) to verify Rx
- The trek takes less than one minute
- The refractor has not been lined up properly yet because I am putting patient's name on the exam form.
- Patient screams that she lost her vision, that she has gone completely blind
- I align refractor, verify Rx, and refer her to a counselor

## Conclusion

- Psychology of pain
- Patient in pain can:
  - feel "dumb" for what s/he has done to cause the damage
  - blame the doctor for not making the pain go away immediately
  - "Catastrophic" consequence related to severity of pain
    - "I'm losing my vision."
- Referral for those patient's whose acute pain management may need an "ally"

## Foreign Body Case



## Foreign Body Case

• 35 year old male presents with complaint of "getting something in my right eye" yesterday. He is a mechanic. He was working underneath a car and something, "maybe rust" fell into his eyes while he was working. It has happened several times before. +pain 2-3 out of 5 on the severity scale, +mild watering, no photophobia, no discharge, +redness, +mild blur to vision. Pt does not wear glasses or contacts. Nothing makes him feel better or worse. He did try to remove the item from his eye the night before with a Q-tip, but couldn't get it all out. Stated that it was very irritated after that. Pt states he had difficulty sleeping.

- Meds: None
- Allergies: None

## Foreign body case

- VAs: OD: 20/40-, pH 20/25, OS: 20/20-
- Entrance testing: Normal, PERRLA, no APD
- Anterior segment: OD: Mild crust on lid margins, gr 1+ diffuse injection, +foreign body at ~4:30 just outside pupillary axis with mild surrounding edema that encroaches on the pupillary axis, mild SPK surrounding area, small abrasion near the foreign body, trace cell and no flare  
OS: Trace injection, corneal scars at 4:00 and 6:00

## Foreign body case

Posterior Segment: OD: 0.3/0.3, +FLR, no h/t/d 360, OS: was not dilated

## Foreign body case

- Assessment:
  1. Corneal Foreign Body OD
  2. Mild Corneal Edema Secondary to Foreign Body OD
  3. Corneal Abrasion OD
  4. Secondary Iritis OD due to foreign body

## Foreign body case

Plan: 1.-4. Ed pt on today's findings. 1 gtt proparacaine instilled into OD. Removed foreign body with spud, followed by use of Algar brush to get all of the metal out. Pt tolerated the procedure well. 1 gtt of Moxeza was given OD in office, 1 gtt of Prolensa given OD in office, 1 gtt of 5% HA given OD in office and a bandage CL AV Oasys was placed in OD 8.4/-0.50 to be worn until next appointment. Pt to use Moxeza QID OD. Told pt if he needed something for pain to use Ibuprofen 200-300mg every 4-6 hours. If increased redness/pain or decreased vision RTC ASAP, if not RTC 24 hours for assessment. Pt voiced understanding.



## Ocular Steroids

- Steroids mimic hormones your body naturally produces in your adrenal gland.
- Steroids control pain by—
  - suppressing inflammation when introduced at a higher dose than secreted naturally by the body
  - suppressing the immune system

## Ocular Steroids Side Effects

- Blurred vision, burning, itching, increased pressures, possibly development of glaucoma, cataract formation, photophobia, headaches, ONH damage, visual acuity and field defects, corneal perforation, delayed wound healing, mask other ocular infections, flare up of herpes
- The biggest concern generally is increased IOP—importance of checking pressures
- Always ask about history of herpes or corneal thinning
- Not to be used lightly, but can definitely be helpful in cases of inflammation due to trauma, abrasions, uveitis and keratitis

### Pred Forte 1% 1mL, 5mL, 10mL, 15mL

- Available in generic and trade name
- Uses:
  - For inflammation of the eye and eyelid.
- Dosage:
  - Varies depending on the level of inflammation.
- Age Range:
  - Safety has not been established in pediatric patients.
- Pregnancy:
  - Category C
- Cost:
  - ~\$120.00, less with an online coupon, but not too much less (5mL bottle).

### Durezol 0.05% emulsion 5mL

- POTENT!!!
- Uses:
  - For post op inflammation and pain associated with ocular surgery
  - 1<sup>st</sup> steroid to go through the FDA for the treatment of pain post surgery.
  - Also used off label for inflammation in the cases of uveitis.
  - Benefit to this drop is that you can use it less than trade name Pred.
  - More likely to raise pressures.
- Dosage:
  - 1 drop QID starting 24 hours after surgery through first 2 weeks following ocular surgery, then BID for a week, then taper
  - For inflammation other than post op varies

### Durezol 0.05% emulsion 5mL

- Age Range:
  - Safety has not been established for children.
- Pregnancy:
  - Category C
- Cost:
  - \$187.00-\$211.00, slightly less with an online coupon

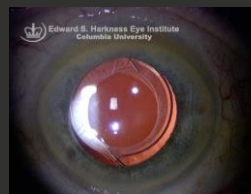
### Lotemax 0.5% 2.5 mL, 5mL, 10mL, 15mL, ung 3.5g, gel 5g

- Ester based
- Also comes in 0.2% known as Alrex
- Uses:
  - Steroid responsive ocular disease.
  - Post op inflammation after ocular surgery.
- Dosage:
  - Drops: steroid responsive: 1-2 drops QID, may give 1 drop every hour for first week of treatment. For post op: 1-2 drops QID 24 hours after surgery continue for two weeks.
  - Ung: ribbon into eye QID 24 hours after surgery and continue for 2 weeks post op.
  - Gel: 1-2 drops QID 24 hours after surgery and continue for 2 weeks post op.

Lotemax 0.5%  
2.5 mL, 5mL,  
10mL, 15mL,  
ung 3.5g, gel 5g

- Age Range:
  - Safety not established in children
- Pregnancy
  - Category C
- Cost:
  - Drops: \$209.00-\$240.00, slightly less with online coupon
  - Gel: \$365.00, couldn't find a coupon, but doesn't mean one doesn't exist!

## Post Op Case



<http://dro.hs.columbia.edu/pseudophakia.htm>

## Post op case

- 85 year old patient presents to clinic for 1 day post op OD after cataract extraction. Pt was put in a toric IOL. Drop regimen was Durezol BID OD, Vigamox TID OD, Ilevro BID OD, AT PRN
- VAs: OD 20/50- pH NI, OS 20/100-
- Entrance testing: normal OU
- Anterior segment: OD: low grade conjunctival hemorrhage, mild stromal edema throughout cornea, localized more near incisions sites, mild pigmentation on endothelium, gr 1 cells, no flare

## Post op case

- Assessment:
  1. Pseudophakia OD
  2. Secondary non-infectious uveitis OD
  3. Nuclear Sclerosis OS
- Plan:
  1. Patient educated on the status of the lens; monitor at one-week.
  2. Durezol BID OD, Vigamox TID OD, Ilevro (Nepafenac) BID OD, RTC 1 week for post op eval, if any changes RTC sooner.
  3. Surgery scheduled for 09/09/2015 OS

## Uveitis Case



## Uveitis Case

- 18 year old female with irritation, swelling in left eye, onset: 1 day
- +tearing, +photophobia, +redness, +foreign body sensation, constant, no vision decrease
- CL wearer, AV Oasys
  - Uses Target solution, rubs lenses, no topping off, case was 2 weeks old, wear for 12-13 hours/day, throws them out monthly
- Meds: +Minastrin 24 Fe, +Nexium

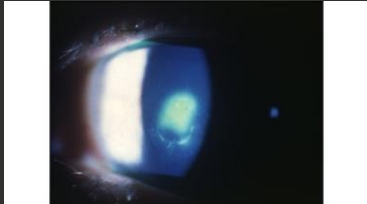
## Uveitis Case

- VAs: OD 20/20-, OS 20/20-
- Entrance testing: Normal, mild miosis OS, but reactive and no APD
- Anterior Segment: Conj: OD normal, OS gr 1+ ciliary injection
  - Cornea: OD normal, OS normal
  - Anterior Chamber: OD normal, OS gr 1+ cells, mobile, no flare
- Posterior Segment: ONH normal color, distinct margins, 0.3/0.3 OU,
  - +FLR, vitreous clear with no cells or flare

## Uveitis Case

- Assessment:
  - 1. Anterior Uveitis OS
- Plan:
  - 1. Ed pt on findings. Pt to start Pred Forte 1% trade name q4h OS for 7 days; pt told to mix bottle before each use. Pt also to use HA 1% 1 gt/day for 5 days. Stressed the importance of taking drops the way they are Rx'ed. If increase in redness/pain or decrease in VA RTC ASAP, if not RTC 1 day for follow up.
  - \*\*\*talk about pain.....

## Recurrent Corneal Erosion



## Recurrent Corneal Erosion

- "Woke up and it felt like there was a rock in my eye." OS. Saw OD the day before for "tear". Given a bandage lens and told to use FreshKote TID and NaCL ung at night. Pt was dilated at that exam. +pain, 4 out of 5 on severity scale, +photophobia (pt still slightly dilated), +watering
- VAs: OD 20/20, OS 20/40- pHNI
- Entrance testing: Normal OU, OS reactive, but sluggish. Pupil sizes asymmetric, but pt was dilated yesterday with 5% HA
- Meds: Metformin, Crestor, Moexipril, Vit D2
- Allergies: Coconut, Adhesive tape

## RCE

- Conjunctiva: OD trace injection, OS gr 2+ diffuse injection
- Cornea: OD normal, OS erosion 1mm high X 0.5 mm long, +staining, no edema, no cell or flare

## RCE

- Assessment
  - 1. Recurrent Corneal Erosion OS
- Plan
  - 1. Ed pt on today's findings. Pt given 1 gt 5% HA OS in office, 1 gt Prolensa 0.07%, OS in office for pain, Moxeza BID OS until follow up with other OD, told to continue FreshKote TID and a new bandage contact lens was placed in the OS, AV Oasys S.4/-0.50 to be left in until the other doctor evaluates the cornea. Instructed pt to use 400mg Ibuprofen every 4-6 hours for pain if needed. RTC if increased redness/pain or decreased vision. Pt voiced understanding to all of the above.

## Oral Analgesics

- Three categories
  - Over the Counter
  - Prescriptions that are Non-Narcotic
  - Narcotics

## Over the Counter

- Aspirin (Bayer)
- Ibuprofen (Advil, Motrin)
  - Naproxen
- Acetaminophen (Tylenol)

## Aspirin (Acetylsalicylic Acid)

- Inhibits cyclooxygenase which prevents production of prostaglandins.
- Removing prostaglandins lowers inflammation, fever and pain.
- It also has some anticlotting properties that make it slightly different than other NSAIDs.
- Better for inflammation, not as effective at pain relief.

### Aspirin 325mg



- Uses:
  - Pain, fever
- Dosage:
  - 325mg-650mg every 4 hours, max dose in a day: 4000mg
  - 81mg/day for heart health
- Age ranges:
  - Do not use in children or teenagers with fever, flu symptoms or chicken pox. Causes Reye's disease.
- Contraindications:
  - Bleeding disorders
  - GI issues
  - Allergic to NSAID's/ASA
  - More than 3 alcoholic beverages a day
  - Hepatic or renal dysfunction

### Aspirin 325mg



- Pregnancy:
  - No category has been officially given.
  - In last trimester considered Category D.
  - Traces have been found in breast milk, should be avoided.
- Side effects:
  - Hives, difficulty breathing, swelling of face, lips, tongue, throat
  - Stomach upset
  - Mild heartburn
  - Dizziness
  - Itching or rash
  - Tinnitus

### Aspirin 325mg



- Interactions
  - Blood thinners
  - Methotrexate
  - Antacids
  - Diuretics
  - Other NSAID's (remember cold meds)
  - Hypoglycemics

## Ibuprofen

- Very similar to aspirin, but no anticlotting factors.
- Works quickly without staying in body too long.
- Lower risk for GI impact than aspirin, but still present.
- Effective anti-inflammatory profile.

## Ibuprofen 200mg



- Uses:
  - Mild to moderate pain, fever
- Dosage:
  - 200-400mg every 4-6 hours
  - >400mg has not proven efficacy
  - Max dose: 2400mg, for less GI interactions 1200mg
- Age ranges:
  - 6 months through adulthood
  - Talk to physician if child under 2 years old
- Contraindications:
  - GI issues
  - NSAID allergies
  - Coronary artery bypass graft surgery
  - Alcohol intake

## Ibuprofen 200mg



- Pregnancy:
  - Category C until 29 weeks
  - After 30 weeks should not take
  - Unknown if there are traces in breastmilk
- Side effects
  - Hives
  - Difficulty breathing
  - Swelling of face, lips, tongue or throat
  - Stomach upset
  - Dizziness
  - Itching or rash
  - Ringing in ears

## Ibuprofen 200mg



- Interactions
  - Other NSAID's (cold medications)
  - Lithium
  - Diuretics
  - Anticoagulants
  - Methotrexate

## Aspirin and Ibuprofen Together

- Something to keep in mind:
  - If taking low dose ASA for cardiovascular use, avoid ibuprofen. It makes ASA less effective
  - If using them together take ASA 30 minutes before ibuprofen.
  - If take ibuprofen first have to wait 8 hours to take ASA.
  - May be problematic with older patients: CV and arthritis.

## Naproxen (Aleve)

- How is it different from Ibuprofen?
  - Slower acting than ibuprofen
  - Gives longer term relief
  - Targets muscle tissue inflammation best

## Naproxen 220mg



- Uses
  - Minor aches and pain, fever
- Dosage:
  - 220mg every 8-12 hours with front loading dose of 440mg for up to 10 days for pain.
- Age range:
  - Not for children under 2 years old, talk with doctor
- Contraindications:
  - ASA or NSAID (cold medicines)
  - Coronary artery bypass graft surgery

## Naproxen 220mg



- Pregnancy:
  - Category C until last trimester
  - DON'T take in 3<sup>rd</sup> trimester
  - Can pass through to breast milk, avoid
- Side effects:
  - GI upset/bleeding
  - Rash
  - CV risk

## Acetaminophen (Tylenol)

- Mechanism of action poorly understood.
  - Some think it works similarly to NSAIDs.
  - Some think it works on CNS (brain and spinal cord).
  - Some think there is another COX enzyme it inhibits.
- Not an effective anti-inflammatory agent.
- FDA debate on dosing and how much should be allowed (325mg) due to liver toxicity.

## Acetaminophen 325mg



- Uses:
  - Minor aches and pain. Fever.
- Dosage:
  - 325mg-650mg every 4-6 hours or 1000mg every 6-8 hours.
  - Max daily dose: 3000mg
- Age range:
  - 6 months of age to adult.
  - If younger than 6 months of age, talk with pediatrician.
- Contraindications:
  - Hepatic dysfunction
  - Alcoholism

## Acetaminophen 325mg



- Pregnancy:
  - Category C
  - It is found in breast milk, however, in small percentage. American Academy of Pediatrics considers it compatible with breastfeeding.
- Side effects:
  - Nausea, upper stomach pain, itching, loss of appetite, dark urine, clay colored stool, jaundice.
- Interactions:
  - Chronic, heavy alcohol use.

## Acetaminophen and Ibuprofen Combo

- Some studies have shown that using 2 acetaminophens and one ibuprofen is as effective as Tylenol #3 for post op pain relief.
  - Easier to get
  - Cheaper

## Excedrin



- ASA + APAP + Caffeine
- Uses:
  - Headaches
    - Migraines
    - Tension
  - Pain relief
    - Menstrual cramps
    - Arthritis
    - Aches
- Dosage:
  - 2 tablets every 6 hours
  - Max dose: 8 tablets/day
- Age range:
  - Can't use in children or teenagers with viral infections due to Reye's disease.

## Excedrin



- Contraindications:
  - Same for ASA and APAP together
- Pregnancy:
  - Not classified, but should NOT be used in third trimester
- Side effects:
  - All of the side effects as ASA and APAP
  - Avoid other caffeine intake

## Scleritis



## Scleritis

- 25 year-old patient woke up with a red right eye "several" days ago. No burn, no sting, no tearing, more sensitive to light OD and "throbbing". 4 out of 5 on the severity scale. Started Pred Forte TID OD for 3 days, BID for 3 days, QD for 3 days. "Drops do give relief." 90% improvement, thinks skin is hot to touch, feels puffy and swollen. Similar episodes started 3 years ago, has had 6 episodes total. Takes Aleve for the throbbing. Sees a rheumatologist for unspecified CT disorder.
- Meds: Zinc, Vitamin D, Aleve
- No allergies

## Scleritis

- VAs OD 20/20-, OS 20/20 3-
- Entrance testing: Normal
- Adnexa: Puffy appearance to cheeks right/left
- Conjunctiva: OD bulbar gr 3 diffuse injection, most dense temporal and superior, trace chemosis. Sclera gr 3 diffuse injection temp/superior/nasal with thickening temporal and superior  
OS normal
- Cornea: Clear
- Anterior Chamber: Clear
- Posterior: ONH good color, distinct margins, OD 0.35/0.35, OS 0.3/0.3, +FLR, No H/B, T360 OU

## Scleritis

- Assessment:
  - 1. Anterior Scleritis OD
- Plan
  - 1. Ed pt on today's findings. Spoke with pt's rheumatologist on the phone. Agreed to have pt start Ibuprofen 600mg TID until signs and symptoms resolve. Will follow up in two weeks and reassess at that time. Rheumatologist plans to start the pt on a systemic medication for unspecified connective tissue disorder.

## Prescription NSAIDs

- Work the same way Non-Prescription NSAIDs do.
- They are higher in dose and that is why they require a prescription.
- The side effects are the same as Non-Prescription NSAID's.
- Contraindications are the same as Non-Prescription NSAID's.
- Pregnancy:
  - First two trimesters Category C
  - Last trimester Category D

## Prescription NSAIDs

- Uses:
  - Episcleritis and Scleritis
    - Very useful in these instances
- Uveitis
  - To try to help control inflammation
- Cystoid Macular Edema
  - Topical is more effective with this

## Prescription NSAIDs

- Diclofenac (Voltaren): For OA, RA and Ankylosing spondylitis
  - 75mg BID
- Diclofenac (Voltaren XR): For chronic RA and OA
  - 100mg QD
- Diclofenac (Cataflam): For pain
  - 100mg initial dose then 50mg TID
- Etodolac: For pain
  - 200-400mg q 6-8 hour, max dose 1000mg/day

## Prescription NSAIDs

- Fenoprofen (Nalfon): For mild to moderate pain
  - 200mg q 4-6 hours
- Flurbiprofen (Ansaid): For RA and OA
  - 50mg QID
- **Indomethacin (Indocin): For moderate to severe RA, OA, Ankylosing spondylitis, acute painful shoulder, gouty arthritis**
  - 25mg BID-TID
  - **Used for scleritis**
    - 25-50mg TID

## Prescription NSAIDs

- Ketorolac (Toradol): For short term treatment for moderately severe pain
  - 20mg first dose then 10mg q 4-6 hours (day 1) after 10mg QID, max dose 40mg/day
- Meloxicam (Mobic): For OA, RA and JRA
  - 7.5mg qd
- Nambumentone: For RA and OA
  - 500-750 mg qd

## Prescription NSAIDs

- **Naproxen (Naprosyn): For mild to moderate pain**
  - 500mg 1<sup>st</sup> dose, 250mg q 6-8 hours, max 1<sup>st</sup> day 1250mg/day, then 1000mg/day
- Oxaprozin (Daypro): For RA, OA, JRA
  - 600-1200mg qd
- Piroxicam (Feldene): For OA and RA
  - 20mg qd
- Sulindac (Clinoril): For OA, RA, Ankylosing spondylitis, acute shoulder pain, gouty arthritis
  - 150mg-200mg BID



## Prescription NSAIDs

- Tolmetin (Tolectin): For RA, OA, JRA
  - 400mg TID

## Prescription NSAIDs

- COX-2 inhibitors
  - They are different from regular NSAIDs
    - NSAIDs block both COX-1 and COX-2. COX-1 is in the stomach lining and the reason regular NSAIDs cause stomach issues.
    - COX-2 inhibitors do just that; they only inhibit COX-2, so cause fewer stomach problems

## COX-2 Inhibitors

- Rofecoxib (Vioxx)
- Valdecoxib (Bextra)
  - Both of these were taken off the market due to increased risk of stroke, heart attack and cardiovascular events
- Celecoxib (Celebrex): For acute pain and inflammation from arthritis, ankylosing spondylitis
  - 1<sup>st</sup> day, loading dose 400mg, then 200mg
  - After that 200mg BID

## Remember the Scleritis patient???

- So, it happened again...

## Gabapentin (Neurontin)

- Uses:
  - Management of postherpetic neuralgia
  - Anti-seizure medication
- Dosage:
  - Day 1 single 300 mg dose
  - Day 2 600 mg dose
  - Day 3 900 mg dose
  - Can be titrated up all the way to 1800 mg/day
  - Dosage may need adjusted for patients that are 12 years old or older with renal impairment
- Age:
  - 3 years of age and older (for anti-seizure), for postherpetic neuralgia not recommended

## Gabapentin (Neurontin)

- Contraindications:
  - People who have hypersensitivity to the drug
- Pregnancy:
  - Category C
- Side effects:
  - Dizziness
  - Somnolence
  - Peripheral edema
  - Withdrawal can precipitate seizures
  - Increased risk of suicidal behavior
  - Can cause attention and behavioral problems in children
  - Has caused sudden and unexplained deaths in epileptics

## Gabapentin (Neurontin)

- Interactions:
  - Some opioids
  - Maalox
- Costs:
  - \$34.00-\$100.00—on-line cost and coupons you can get it much cheaper

## Oral Narcotics

- Schedule I
  - No accepted medical use
  - High potential for abuse
  - Most dangerous of all the drugs
  - Potentially severe psychological or physical dependence
    - Heroin, marijuana, LSD, ecstasy
- Schedule II
  - High potential for abuse, but less than Schedule I
  - Potential to lead to severe psychological or physical dependence
  - Considered dangerous drugs
    - OxyContin, Demerol, Methadone, Adderall

## Oral Narcotics

- Schedule III
  - Low to moderate potential for physical or psychological dependence
  - Dependence less than Schedule I or II
    - Testosterone, anabolic steroids, Tylenol with codeine
- Schedule IV
  - Low potential for abuse
  - Low risk of dependence
    - Xanax, Ambien, Tramadol, Valium

## Oral Narcotics

- Schedule V
  - Lower potential for abuse than Schedule IV
  - Generally antidiarrheal, antitussive, analgesic purposes
    - Lyrica, Robitussin AC, Motofen (Difenoxin + Atropine)

## State Laws

- Every state is different; check prior to drug selection and prescription.
  - They change regularly, so stay up to date with state legislature.

## State Laws

STATE	II	III	IV	V	VI	VI	VI	VI	VI
ALABAMA	X	X	X	X	X	X	X	X	X
ALASKA	X	X	X	X	X	X	X	X	X
ARIZONA	X	X	X	X	X	X	X	X	X
ARKANSAS	X	X	X	X	X	X	X	X	X
CALIFORNIA	X	X	X	X	X	X	X	X	X
COLORADO	X	X	X	X	X	X	X	X	X
CONNECTICUT	X	X	X	X	X	X	X	X	X
DELAWARE	X	X	X	X	X	X	X	X	X
FLORIDA	X	X	X	X	X	X	X	X	X
GEORGIA	X	X	X	X	X	X	X	X	X
HAWAII	X	X	X	X	X	X	X	X	X
ILLINOIS	X	X	X	X	X	X	X	X	X
INDIANA	X	X	X	X	X	X	X	X	X
IOWA	X	X	X	X	X	X	X	X	X
KANSAS	X	X	X	X	X	X	X	X	X
KENTUCKY	X	X	X	X	X	X	X	X	X
LOUISIANA	X	X	X	X	X	X	X	X	X
MAINE	X	X	X	X	X	X	X	X	X
MARYLAND	X	X	X	X	X	X	X	X	X
MASSACHUSETTS	X	X	X	X	X	X	X	X	X
MICHIGAN	X	X	X	X	X	X	X	X	X
MINNESOTA	X	X	X	X	X	X	X	X	X
MISSISSIPPI	X	X	X	X	X	X	X	X	X
MISSOURI	X	X	X	X	X	X	X	X	X
MONTANA	X	X	X	X	X	X	X	X	X
NEBRASKA	X	X	X	X	X	X	X	X	X
NEVADA	X	X	X	X	X	X	X	X	X
NEW HAMPSHIRE	X	X	X	X	X	X	X	X	X
NEW JERSEY	X	X	X	X	X	X	X	X	X
NEW MEXICO	X	X	X	X	X	X	X	X	X
NEW YORK	X	X	X	X	X	X	X	X	X
NORTH CAROLINA	X	X	X	X	X	X	X	X	X
NORTH DAKOTA	X	X	X	X	X	X	X	X	X
OHIO	X	X	X	X	X	X	X	X	X
OKLAHOMA	X	X	X	X	X	X	X	X	X
OREGON	X	X	X	X	X	X	X	X	X
PENNSYLVANIA	X	X	X	X	X	X	X	X	X
RHODE ISLAND	X	X	X	X	X	X	X	X	X
SOUTH CAROLINA	X	X	X	X	X	X	X	X	X
SOUTH DAKOTA	X	X	X	X	X	X	X	X	X
TENNESSEE	X	X	X	X	X	X	X	X	X
TEXAS	X	X	X	X	X	X	X	X	X
UTAH	X	X	X	X	X	X	X	X	X
VIRGINIA	X	X	X	X	X	X	X	X	X
WASHINGTON	X	X	X	X	X	X	X	X	X
WEST VIRGINIA	X	X	X	X	X	X	X	X	X
WISCONSIN	X	X	X	X	X	X	X	X	X
WYOMING	X	X	X	X	X	X	X	X	X

## State Laws

Controlled Substance	II	III	IV	V	VI	State
Alprazolam						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Buprenorphine						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Carfentanyl						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Codeine						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Hydrocodone						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Hydroxyzine						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Meperidine						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Morphine						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Naloxone						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Oxycodone						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Propofol						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Tramadol						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Valium						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Xanax						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo

## State Laws

Controlled Substance	II	III	IV	V	VI	State
Alprazolam						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Buprenorphine						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Carfentanyl						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Codeine						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Hydrocodone						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Hydroxyzine						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Meperidine						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Morphine						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Naloxone						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Oxycodone						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Propofol						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Tramadol						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Valium						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo
Xanax						Ala, Ark, Cal, Del, Fla, Ga, Ill, Ind, Iowa, Ky, La, Me, Mich, Miss, Mo, N.J., N.C., N.D., Pa., S.C., Tenn, Tex, Va, W.V., Wisc, Wyo

## Narcotic Side Effects

- Constipation
- Drowsiness
- Confusion
- Nausea and vomiting
- Liver Toxicity
- Addiction/abuse potential
- Itching
- Breathing problems

## Morphine

- First active ingredient isolated from a plant.
- Works on CNS to decrease feeling of pain.
- Used in both acute and chronic pain, moderate to mild.
- High potential for abuse and dependency.
- Frequently used for MI and labor.
- Schedule II drug.

## Codeine

- Used to treat mild to moderately severe pain.
- Side Effects:
  - Constipation
  - Drowsiness
  - Sweating
  - Mild itch or rash
- Should NOT drink while on codeine.
- Can slow or stop breathing.

## Codeine

- Codeine by itself is a Schedule II drug.
- With products containing no more than 90mg of codeine per dosage unit it is a Schedule III drug.
- Pregnancy:
  - Category C
  - However, prolonged use during pregnancy can lead to dependence in neonate.
  - It is found in breast milk.
- Comes in combinations:
  - With APAP
  - With ASA

## Codeine

- Codeine and Tylenol
  - Tylenol #2: 15mg codeine/300mg APAP
    - 1-2 tabs every 4 hours
  - Tylenol #3: 30mg codeine/300mg APAP
    - 1-2 tabs every 4 hours
  - Tylenol #4: 60mg codeine/300mg APAP
    - 1 tab every 4 hours
- Max dose of Codeine in 24 hours: 360mg
- Max dose of APAP in 24 hours: 3000mg

## Codeine

- Codeine with Aspirin
  - Empiric with codeine #3: 30mg codeine/325mg ASA
    - 1-2 tabs every 4-6 hours
  - Empiric with Codeine #4: 60mg codeine/325mg ASA
    - 1-2 tabs every 4-6 hours

## Hydrocodone

- Used to treat moderate to severe pain and an anti-tussive for cough management.
- It is stronger than codeine, but only 59% as potent as morphine in analgesic properties.
- The side effects of constipation and sedation are lesser in hydrocodone.
- It gives a sense of euphoria, especially in higher doses.
- Most common side effects:
  - Dizziness and lightheadedness
- Trade names are: Lortab, Norco, Vicodin, Vicoprofen

## Hydrocodone

- Vicodin
  - 5mg hydrocodone/300mg of APAP
    - 1-2 tabs every 4-6 hours
    - Max: 8 tabs in 24 hours
- Vicodin ES
  - 7.5mg hydrocodone/300mg of APAP
    - 1 tab every 4-6 hours
    - Max: 6 tabs in 24 hours

## Hydrocodone

- Vicodin HP
  - 10mg hydrocodone/300mg APAP
    - 1 tab every 4-6 hours
    - Max: 6 tabs in 24 hours
- Vicoprofen
  - 7.5mg hydrocodone/200mg ibuprofen
    - 1 tab every 4-6 hours
    - Max: 5 tabs in 24 hours

## Hydrocodone

- In 2012, hydrocodone was the most prescribed drug.
- In 2015, hydrocodone was not even in the top ten.
- Kentucky, Georgia and Arkansas were ready for this change.
  - All of these states had laws in place that were ready for the schedule change.
- They stated the following: "ODs in these states may prescribe hydrocodone-combination drugs, but do not have general authority to prescribe Schedule II controlled substances. If hydrocodone-combination drugs are rescheduled in the future as Schedule II optometrist in these states will continue to be able to prescribe them."

## Oxycodone

- Used to treat moderate to severe pain.
- It has a greater analgesic effect than morphine.
- It is a Schedule II drug.
- Produces high levels of euphoria, so very addictive and high abuse potential.
- In Pregnancy it is listed as a Category B, as long as it is not paired with APAP or ASA.

## Oxycodone

- Can slow or stop breathing.
- DO NOT drink alcohol when taking Oxycodone.
- Common side effects:
  - Mild drowsiness, headache, dizziness, tired feeling
  - Stomach pain, nausea, vomiting, constipation, loss of appetite
  - Dry mouth
  - Mild itching
- Trade names: Percodan, Percocet, OxyContin

## Oxycodone

- Percodan:
  - 4.835mg oxy/325mg ASA
  - 1 tab every 6 hours
- Percocet:
  - 2.5mg oxy/325 APAP
  - 1-2 tabs every 6 hours
  - 5mg oxy/325mg APAP
  - 1 tab every 6 hours
  - **Most frequently Rx'd dose**
  - 7.5mg oxy/325mg APAP
  - 1 tab every 6 hours
  - 10mg oxy/325 APAP
  - 1 tab every 6 hours

## Tramadol

- Used for moderate to severe pain.
- Considered to be an "opioid-like" drug.
- Works by two mechanisms of action:
  1. Binds the opioid receptor
  2. Inhibits uptake of serotonin and norepinephrine
- Analgesic efficacy lies between codeine and morphine.
- It is a Schedule IV drug.

## Tramadol

- Should not give to people that have a history of seizures.
- Common side effects:
  - Constipation
  - Itchiness
  - Nausea
- Several drug interactions:
  - Antidepressants, MAOI's, SSRI's, digoxin, Coumadin and several others
- Pregnancy category C
- Not as addictive as the other narcotics
- Trade names: Ultram, Ultracet

## Tramadol

- Ultram
  - 50mg
  - 1 tab every 4-6 hours
  - Max dose is 300mg/day
- Ultracet
  - 37.5mg tramadol/325mg APAP
  - 1-2 tabs every 4-6 hours
  - Max 8 tabs/day

## Conjunctiva Rip

- 60 year old white male, presented with severe OS pain. Pt has lost right arm at the elbow and wears a prosthesis with a metal piece on the end. He was working on his farm, trying to open a bag of fertilizer with a pair of pliers. The pliers slipped and he scratched his eye. He was wearing a GP lens at the time of the accident. Extreme pain, "7 out of 5" on the severity scale, +tearing, thinks he is photophobic, but can't keep eye open.
- \*\*\*drop of proparacaine was given to get testing completed.
- VAs OD, 20/25, OS >20/200 (no GP)
- Entrance testing: normal

## Conjunctival Rip

- Anterior Segment:
  - \*\*\*another drop of proparacaine given, had to hold lids.
- OD: trace injection bulbar, cornea clear (GP still on), chamber dark and quiet.
- OS: gr 3+ diffuse injection, large laceration nasal running slightly superior to edge of cornea both bulbar area and looks to be slightly in sclera, +staining, no fluid coming from wound. Cornea had mild defect in limbal region inferior nasal (possibly due to a secondary cut by GP lens). No cell and flare.

## Conjunctival Rip

- Assessment:
  - 1. Conjunctival/scleral laceration OS nasal, moving nasal-superior
    - No orbital contents leaking/bulging out of wound.
- Plan
  - 1. Call OMD in Indy for consult. After discussion it was decided pt needed to head to Indianapolis for suturing of wound and further examination.
  - Pt was in a great deal of pain, no joke kind of pain. Looking back on it now, I wish I could have been able to Rx him something to help manage the pain for the 1+ hour drive to Indy and wait time.

## Disciform Keratitis



## Disciform Keratitis

- 38 year old male referred to us for management due to insurance. Pt has HSK disciform keratitis OD. Pt is a 4 out of 5 on the severity scale. Pt states the pain can vary from day to day. +redness, +watering, +burning, +visual decrease, +photophobia. Has been going on for one month, seen at ER and misdiagnosed the first time. Pt has been using Zirgan 5x/day OD and has recently discontinued Omnipred. Pt just moved to the US 2 months prior from Iran. Trying to get into a Master's program on campus. Pt has a history of contact lens wear, 6 month replacement. Has been out of the lenses since the flare up. Currently wearing glasses.
- Medications: Zirgan OD
- Allergies: None

## Disciform Keratitis

- VAs: OD: 20/400 pHNI, OS: 20/400 pHNI
- Entrance testing: Normal
- Anterior Segment: OD: trace diffuse injection, large central dendrite, opacified on edges, mild stromal involvement, mild edema, no cell or flare
- OS: normal

## Disciform Keratitis

- Assessment: 1. Herpes Simplex Disciform Keratitis OD  
2. Secondary Corneal Edema OD
- Plan: Ed pt on the flare up of the HSK. Pt to d/c use of Omnipred until further notice. Pt to start Zirgan 5 times/day. Pt has left over from ER. Pt to RTC on 01/22/2013 for follow up. Ed pt if any increased redness, photophobia, pain or decreased vision to call the emergency number. Stressed the importance of f/u visit and ed pt that healing could take weeks. Ed pt that he could use Ibuprofen for the pain. Pt voiced understanding.

## When writing the Rx

- Write it for **24 hours** at a time.
  - Reassess after that time.
- Write out the number of tabs on the Rx form.
- Usually a time limit on how long you can put patient on opioids.
  - Most states: 72 hours
- Remember if it is a hydrocodone combination:
  - No refills.
  - Needs to be paper, unless you meet the requirements.
- Do not write a script for any issue that is not related to the eye.

## Last thoughts

- We all treat pain on some level.
- Don't be afraid to go to the next level when necessary.
- Ask for help if you are unsure.

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