Pain Management in the Optometric Practice

Steven Ferrucci, OD, FAAO
Chief, Optometry; Sepulveda VA
Professor; SCCO/MBKU

Optometric indications
- Corneal/conjunctival trauma
  - abrasion
  - foreign body
- Traumatic hyphema
- Surgery
  - Refractive
  - Cataract
  - Retinal

Disclosures
- Speakers bureau/advisory board:
  - Alcon
  - Allergan
  - Macula Risk
  - MacuLogix
  - ThromboGenics

Before treatment
- Determine etiology of pain and treat before beginning pain management!
- Nature of pain:
  - FOLDAR: frequency, onset, location, duration, association, relief
  - Severity
- What have you done already that helps/doesn’t help?

Before treatment
- Assess the level of pain before initiating treatment
  - Numerical scale
    - Pictures: Wong-Baker
  - Make sure level is *decreasing* with treatment

Before treatment
- Medical history
  - pregnancy, alcohol use, anti-depressants
- Drug history
  - CNS medications, coumadin, digoxin, OTC’s, etc.
- Allergy history
  - Esp. ASA etc.

Optometric indications
- For ocular pain, process is usually acute
  - Need for pain relief for only 24-36 hours or less
- Most often, topical only may be enough
  - Cycloplegia
  - Topical NSAIDs
Topical Pain Relievers

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Topical Pain Relievers

Cycloplegics
- Tropicamide: 0.5-1%; qid; 4-6 hrs
- Cyclopentolate: 0.5, 1, 2%; tid; 2-24 hrs
- Homatropine: 2, 5%; bid-qid; 1-3 days
- Scopolomine: 0.25%, bid, 3-7 days
- Atropine: 0.5,1,2%; bid-tid; 6-12 days

Cycloplegics
- block acetylcholine, a stimulatory neurotransmitter of the ANS
- Cause pupillary dilation and relaxation of ciliary body
- Relaxation of ciliary spasm causes pain reduction as well as stabilizes the blood-aqueous, decreasing inflammation

Topical Pain Relievers

NSAID's
- Inhibition of prostaglandin synthesis by blocking of cyclooxygenase (COX)
- Classic Triad effect
  - Reduced inflammation
  - Maintained pupil dilation
  - Induced analgesic effect

Topical Pain Relievers

Non-steroidal Anti-inflammatory Agents
- Ketorolac (Aclaral): 0.5%; qid
- Diclofenac (Voltaren): 0.1%; qid
- Bromfenac (Provenal): 0.07%; qid
- Nepafenac (Nevanac): 0.01%; tid
- Flurbiprofen (Ocuflon): 0.03%
- Suprofen (Profenal): 1%

Steroid options
- Durezol, lotemax ung

Ketorolac 0.5% (Acular)

Indications
- Post cataract surgery inflammation
- Post refractive surgery inflammation
- Allergic conjunctivitis
- QID
- Burns/stings >voltares
- Associated with corneal melt

Ketorolac (Acular)

- 3 formulations:
  - regular
  - LS: less sting 0.4%
  - PF: preservative free
  - used mainly with refractive sx

Acuvail (ketorolac tromethamine 0.45%)

Preservative free NSAID

Indications
- Treatment of pain and inflammation following cataract surgery
- Ph 6.8 so far less stinging
- Contains CMC, so acts like a tear
### Acuvail (ketorolac tromethamine 0.45%)
- FDA approved July, 2009
  - Commercially available Sept 2009
- Two studies revealed less AC reaction and less pain day one with Acuvail vs. vehicle
  - 72% with pain of 0 vs 40%
- Not cheap
  - $120 for 30-vials

### Prolensa (bromfenac 0.07%)
- By B&L
- Replaces Bromday/Xibrom
- FDA approved April 2011
- Indications
  - For treatment of post-operative inflammation and ocular pain following cataract surgery
- TID
  - Start day before surgery
  - Pro-drug converted into NSAID once inside the eye
- ≈$120 for 3 ml

### Nepafenac 0.3% suspension (ILEVRO)
- Non-Ocular Adverse reactions (1-4%)
  - HA, HTN, N/V, and sinusitis
- Other
  - Use in patients < 10 not established
  - Caution in nursing mothers
  - Category C: avoid in late pregnancy
  - Not to be administered while wearing CLs

### Diclofenac 0.1% (Voltaren)
- Indications
  - Post cataract surgery inflammation
  - Post refractive surgery inflammation
  - Traumatic corneal injury
- Less stinging than Acular
- Corneal melt with generic previously reported

### Nepafenac 0.3% suspension (ILEVRO)
- FDA approved Oct 2012 (Alcon)
- Available January 2013
- In 1.7 and 4 ml bottles
- Suspension: needs to be shaken

### Nepafenac 0.3% suspension (ILEVRO)
- Adverse Reactions (5-10%)
  - Capsular opacity, decreased visual acuity, foreign body sensation, increased IOP and sticky sensation
  - 1-5%: conj edema, corneal edema, lid margin crusting, ocular discomfort, ocular hyperemia, ocular pain, ocular pruritus, photophobia, tearing and vitreous detachment
<table>
<thead>
<tr>
<th><strong>Flurbiprofen 0.03% (Ocufen)</strong></th>
<th><strong>Lotemax 0.5% Ophthalmic Ointment</strong></th>
<th><strong>Diluted proparacaine?</strong></th>
</tr>
</thead>
</table>
| **Indications**  
– Inhibition of Pupil miosis during surgery  
– Several off-label uses  
  • post cataract surgery  
  • post refractive surgery | **Indications**  
– Treatment of Post Operative Pain and inflammation following ocular surgery  
– ½ inch ribbon qid x 2 weeks starting day after surgery | **Indications**  
– Small Canadian study evaluated 0.05% (or 1/10th) diluted proparacaine for corneal injuries  
– Proparacaine arm had significant improvement in pain reduction vs. AT’s  
  • No ocular complications  
  • No delayed wound healing |

<table>
<thead>
<tr>
<th><strong>Suprofen 1% (Profenal)</strong></th>
<th><strong>Lotemax 0.5% Ophthalmic Ointment</strong></th>
<th><strong>Oral Analgesics</strong></th>
</tr>
</thead>
</table>
| **Indications**  
– Inhibition of pupil miosis during surgery  
– Also used off-label  
– Not widely used | **Indications**  
In 2 studies of 805 patients:  
– Less post operative inflammation at post op day 8 vs. vehicle (34-32% vs. 11-14%)  
– Higher rate of pts pain free at post op day 8 (73-78% vs. 41-45%) | **Three main categories**  
– Over-the-counter  
– Aspirin, tylenol, advil  
– Non-Narcotic prescription  
– Narcotic prescription |

<table>
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<tr>
<th><strong>Durezol (difluprednate 0.05%)</strong></th>
<th><strong>Lotemax 0.5% Ophthalmic Ointment</strong></th>
<th><strong>Over-The –Counter</strong></th>
</tr>
</thead>
</table>
| **First steroid to receive an indication for postoperative pain management** | **Contraindications:**  
– Viral disease of cornea/conj (HSV), mycobacterial or fungal infection of eye  
– Should not be used in children  
– May interfere with amblyopia therapy by hindering ability to see out of operated eye  
**Adverse effects:**  
– AC reaction (25%): , conjunctival hyperemia, corneal edema, eye pain (4-5%); HAs (1.5%)  
– IOP increased > 10 mm in 3 pts  
– Check IOP after 10 days of use | **Steve Ferrucci, OD, FAAO** |
Aspirin (Acetylsalicylic acid)
- Over the counter
  - Generic, Bayer, Excedrin etc
  - 325 mg, 500 mg
  - Dose: 650-975 mg q 4 hr
  - Not great for pain relief
  - 81 mg for stroke prevention

Acetaminophen
- Contraindications
  - Liver disease
  - Alcoholism
  - Hypersensitivity to APAP in past
  - < 18 with viral illness (flu, pox)
  - Reye’s syndrome
  - More than 3 alcoholic beverages/day
  - Aspirin allergy
  - Pregnancy
  - Category D: positive evidence of risk

Excedrin
- Various amounts of ASA and APAP
  - Tension
  - Migraine
  - Extra-strength
  - 65 mg caffeine
  - Pain reliever aid
  - 2 tabs q 6 hr
  - Not to exceed 8/24 hrs

Aspirin (Acetylsalicylic acid)
- Contraindications
  - Upper GI disease (ulcers)
  - Bleeding disorders
  - < 18 with viral illness (flu, pox)
  - Reye’s syndrome
  - More than 3 alcoholic beverages/day
  - Aspirin allergy
  - Pregnancy
  - Category D: positive evidence of risk

OTC NSAID’s
- Ibuprofen
  - Advil, Motrin, Generic
  - 200, 400, 600, 800 mg q 4 hr
  - Max dose 2400 mg/day
  - Less GI toxicity ≤1600 mg/day
  - Best used for anti-inflammatory control

If all else fails...
- Non-Narcotic
- Prescription

Acetaminophen (APAP)
- Tylenol
  - Much better pain reliever than ASA
  - No platelet or anti-inflammatory function
  - 325 mg, 500 mg (extra strength)
  - Dose: 650-975 mg q 4 hr
  - Max: 3000 mg/day
  - 8 regular, or 6 extra-strength
  - OK with pregnancy

OTC NSAIDs
- Naproxen sodium (Aleve, Anaprox)
  - 220 mg q 8-12 hr
  - 2 pills as loading dose
  - No more than 3 pills per 24 hrs
- Ketoprofen (Orudis OTC)
  - 25-75 mg q 4-6 hr

Non-Narcotic
- Prescription

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### Prescription NSAIDs

- **Naproxen (Naprosyn)**
  - 500 mg initial dose, then 250 mg q6-8h
- **Fenoprofen (Nalfon)**
  - 200 mg q4-6 hr
- **Oxaprozin (Daypro)**
  - 600-1200 mg qd
  - For RA only

- **Indomethacin (Indocin)**
  - 25 mg bid-tid
  - no general pain indication
- **Ketorolac (Toradol)**
  - 10 mg qid
- **Etodolac (Lodine)**
  - 200-400 mg qd

### Prescription NSAIDs: COX-2 Inhibitors

- **Rofecoxib (Vioxx)**
- **Valdecoxib (Bextra)**
- both "voluntarily" removed from market by manufacturers based on 3 yr study which showed increased risk for cardiovascular events, such as stroke and heart attack.
- **Celecoxib (Celebrex)**
  - 400 mg loading dose, then additional 200 mg day one
  - 200 mg bid after

### Other uses for oral NSAIDs

- **Uveitis**
  - inflammatory control
  - may prevent rebound when tapering chronic cases
- **Episcleritis**
- **Scleritis**
  - very useful drugs

### NSAIDs

- **Contraindications**
  - upper GI disease
  - hypersensitivity to NSAID or ASA
  - diabetics with kidney disease
  - avid alcohol use
  - pregnancy

### Oral Narcotic Agents

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DEA Schedules

- **Schedule I**
  - High Abuse potential
  - No approved medical use
  - Only available for investigational use
  - Examples: MJ, LSD, heroin
- **Schedule II**
  - High Abuse potential
  - Written prescription only with no refills
  - Examples: amphetamines, cocaine

- **Schedule III**
  - Moderately high abuse potential
  - Written or telephone prescriptions with refills allowed
  - Examples: Tylenol with codeine
- **Schedule IV**
  - Moderate abuse potential
  - Written or telephone prescriptions with refills allowed
  - Examples: phenobarbital
- **Schedule V**
  - Low abuse potential
  - No prescription needed
  - Examples: Robitussin A-C (contains less than 100 mg codeine per 100 ml)

State Laws

- **CA State Law for Optometrists**
  - Schedule III if direct indication for ocular pain
  - No more than 3 days (72 hrs)!!!

- **PA State Law For Optometrists**
  - Codeine with ASA or APAP; hydrocodone; pentazocine; tramadol
  - No RX analgesics
  - NJ State Law For Optometrists
  - Schedule III
  - No more than 3 days

- **NY State Law For Optometrists**
  - Schedule III
  - Written pharmacy prescription

- **NC State Law for Optometrists**
  - Schedule II-V

- **RI State Law For Optometrists**
  - Schedule III-V for no more than one 72 hour supply

- **CT State Law For Optometrists**
  - Schedule III
  - No more than 72 hours

- **FL State Law For Optometrists**
  - No oral pain meds

- **CT State Law For Optometrists**
  - Schedule II-V
  - Must be for the diagnosis or treatment of disease or conditions of the human eye, adnexa or eyelids

- **MA State Law For Optometrists**
  - No RX analgesics

- **SC State Law For Optometrists**
  - Schedule III

- **TN State Law for Optometrists**
  - Therapeutically certified ODs may utilize any pharmaceutical agent rational to the treatment of eye disease

- **NY State Law For Optometrists**
  - Schedule III
  - Over 72 hours may not be done without consultation with the patient's physician

- **NV State Law For Optometrists**
  - Schedule III
  - Therapeutically certified ODs may utilize any pharmaceutical agent rational to the treatment of eye disease

- **NH State Law For Optometrists**
  - Schedule III-V
  - Must be for the diagnosis or treatment of disease or conditions of the human eye, adnexa or eyelids

- **AR State Law For Optometrists**
  - Schedule III

- **GA State Law For Optometrists**
  - Schedule III
  - Over 72 hours may not be done without consultation with the patient's physician

- **WA State Law For Optometrists**
  - Schedule III-V
  - Limited to 7 days per single condition
### State Laws
- **Nevada**
  - Schedule III
  - 72 hours only, no refills
- **Utah**
  - Schedule III for pain of the eye or adnexa
  - Not to exceed 72 hrs in duration and may not be refilled
- **Oregon**
  - OD shall consult with MD prior to extending treatment with schedule III analgesics beyond 7 days

### Codeine
- **Tylenol with codeine**
  - Tylenol 2: 15 mg codeine/300 mg APAP
  - 1-2 tabs q 4-6hr
  - Tylenol 3: 30 mg codeine/300 mg APAP
  - 1-2 tabs q 4-6 hr
  - Max dose: 360 mg codeine and 3000 mg APAP

### Hydrocodone
- **Tylenol 3: 30 mg codeine/300 mg APAP**
  - 1-2 tabs q 4-6 hr
  - Max: 10 tab/day

### Morphine
- Standard drug of reference when discussing opioid effects/pain management
- Very poor when administered orally
- Many side effects
- Serious potential for abuse and addiction

### Codeine
- Useful for mild to moderate pain
- Can be fairly sedating
- GI effects common, esp. constipation
- Combined with either ASA or APAP
  - w/ APAP, works on separate CNS areas
  - w/ ASA also has anti-inflammatory action
- DEA Class III
  - Potentially causes mild or low physical dependence, but possibility of high psychological dependence if abused

### Hydrocodone
- Vicodin: hydrocodone 5 mg/300 mg APAP
  - 1-2 tabs q 4-6 hr
  - max dose 8/day
- Vicodin ES: hydrocodone 7.5 mg/750 mg APAP
  - 1 tab q4-6 hr
  - max dose 5/day

### Codeine with aspirin
- 30 mg codeine/325 mg ASA: Empirin with codeine #3
  - 1 tab q 4-6 hr
- 60 mg codeine/325 mg ASA: Empirin with codeine #4
  - 1 tab q 4-6 hr

### Hydrocodone
- Vicodin HP: 10 mg vocodin/660 mg APAP
  - 1 tab q 4-6 hr
  - max dose 6/day
- Vicoprofen: 7.5 mg vicodin/200 mg IB
  - 1-2 tabs q4-6 hr
  - max dose 5/day
Hydrocodone
- Trade names
  - NORCO
  - LORTAB
- Hydrocodone: one of most prescribed agents in US
  - 131 million prescriptions for 47 million patients in 2011
- More than #1 antibiotic and HTN med

Vicodin Update #2
- January 2013: FDA advisory panel recommended by 19 to 10 vote to move hydrocodone drugs to DEA class II
  - Due to addiction potential and number of deaths due to drug related fatalities
  - LA times study: of 3,773 prescription drug fatalities from 2006 to 2011, 945 deaths related to hydrocodone
  - Hydrocodone one of most prescribed agents in US; 131 million prescriptions for 47 million patients in 2011

Vicodin Update
- January 13, 2011 FDA asked drug manufacturers to limit strength of acetaminophen to no more than 325 per unit does
- Must be effective by January 2014

Oxycodone
- Percodan: 4.75 mg oxy/325 mg ASA
  - 1 tab q 4-6 hr
- Percocet: 5 mg oxy/325 mg APAP
  - 1 tab q 4-6 hr
- Tylox: 5 mg oxy/500 mg APAP
  - 1 tab q 4-6 hr

Vicodin Update #2
- Raised concerns by many groups, including AOA
- Issue is if category II, we may not be able to prescribe in most states
  - Will limit access for many patients

Vicodin Update
- Vicodin: hydrocodone 5 mg/300 mg APAP
  - Daily dose not to exceed 8 tablets
- Vicodin ES: hydrocodone 7.5 mg/300 mg APAP
  - Daily dose not to exceed 6 tablets
- Vicodin HP: 10 mg vicodin/300 mg APAP
  - Daily dose not to exceed 6 tablets

Oxycodone
- Similar in potency to morphine
- 10-12x more potent than codeine
- Possibly less side effects than morphine or codeine
- Produces euphoria, so serious abuse potential exists
- DEA class II

Propoxyphene
- Synthetic Opioid
- About 2/3 as potent as codeine
- Causes more drowsiness than codeine
- Combined with ASA or APAP
- DEA Class IV
- Pulled from market in US and Europe due to increased heart attacks

Propoxyphene
- Darvon compound 65: 65 mg prop/389 mg ASA/ 32.4 mg caffeine
  - 1 tab q 4-6 hrs
- Darvocet-N 50: 50 mg prop/325 mg APAP
- Darvocet-N 100: 100 mg prop/650 APAP
Tramadol
- Opioid-like drug
  - synthetic analogue of codeine but non-narcotic
  - binds to opioid receptors
  - prevents re-uptake of serotonin and norepinephrine
- Similar potency to tylenol #3
- Abuse/addiction potential very low
- Not DEA classified

Tylenol Plus Ibuprofen
- Some studies suggest that perhaps two tylenol with one IB is not inferior to Tylenol #3 for post operative pain relief
  - More cost effective
  - Fewer side effects
  - Greater patient satisfaction

To consider
- Prescribe analgesics on 24 hr basis
  - Tylenol #3
  - Sig: 1-2 tab q 4-6 hrs
  - Disp: #12 (TWELVE)

Tramadol
- Minimal side effects:
  - dizziness, N&V, HA, somnolence
- Drug interactions: many
  - tegretol, SSRIs, MAOIs, tricyclics, digoxin, coumadin
  - Avoid with h/o seizures

Narcotic agents: Side Effects
- Abuse/addiction potential
- CNS effects
- Liver toxicity
- Renal failure/urinary retention
- Nausea and vomiting
- Constipation

To consider
- Start with simplest treatment first
  - Topicals
  - OTC APAP or IB
  - Prescriptions
  - Narcotics

To consider
- Mild: OTC Tylenol or IB
  - Mild/moderate pain
    - Tylenol #3 (30 mg codeine/300 mg APAP) 1-2 tabs q4-6 hr
  - Moderate/severe pain
    - Vicodin (5 mg hydrocodone/500 mg APAP) 1-2 tabs q4-6 hr
- Severe pain: oxycodone (can’t do in most states)
  - Percocet (5 mg oxy/325 mg APAP, or Percodan/4.5 mg oxy/325 ASA) 1 tab q4-6 hrs

Tramadol
- Ultram: 50 mg tramadol
  - 1-2 tabs q 4-6 hr
  - max does 400 mg/day
- Ultracet: 37.5 mg tramadol/325 mg APAP
  - 1-2 tabs q 4-6 hr

To consider
- Prescribe analgesics on 24 hr basis
  - Tylenol #3
  - Sig: 1-2 tab q 4-6 hrs
  - Disp: #12 (TWELVE)
To consider

- Make sure **only** Rx for eye related pain
- Most states, 72 hrs max!
- Review laws in your state

**Case 1**

**Case 4**

To consider

- Don’t be afraid to use opioids if needed
  - ADDICTION AND ABUSE POTENTIAL IS LOW WHEN USED APPROPRIATELY AND FOR SHORT TERM!

**Case 2**

**Case 5**

**Case 3**

**Case 6**