

WRITING ORAL PRESCRIPTIONS



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BEFORE YOU PRESCRIBE...

- Do they need it?
- Allergic to ?
- Other medications, will they interact?
- Pregnant? Nursing? Trying?
- Most concerning systemic issues
 - Kidney failure/Liver failure
- How can I increase compliance?
 - Generic options/Less times per day dosing/OTC
 - 90 day supply

OCULAR ANTIBIOTIC USES

- Preseptal cellulitis
- Dacryocystitis
- Dacryoadenitis
- Canaliculitis
- Chlamydia
- Dry eye/posterior blepharitis/ocular rosacea

AMOXICILLIN

- Penicillin antibiotic (aminopenicillin)
- Extended coverage over standard PCN
- Good for staph infections because resistant to beta lactamases
- Also has some gram negative coverage
 - Gram negative resistance increasing
- Inexpensive

AMOXICILLIN DOSAGE

- Skin and soft tissue infections
- Adults 875mg q12h
- Children 20-40mg/kg/day divided q8h
 - How supplied
 - 125mg/5ml
 - 200mg/5ml
 - 250mg/5ml
 - 400mg/5ml

ALLERGIC TO PENICILLIN?

- Can't use amoxicillin or Augmentin
- Small percentage of patients will also be allergic to cephalosporins
 - Literature suggests anywhere from 3-10% cross-sensitivity
- Can prescribe a macrolide to be safe
 - Erythromycin, clarithromycin, azithromycin
- Could also use a –cycline or –quinolone
 - Doxycycline or Levaquin

CEPHALEXIN

- Brand name KEFLEX®
- First generation cephalosporin
- Good gram positive coverage (Staph/Strep)
- Cheap
- Adult dose is 500mg bid
- Also available in suspension for children
 - 20-40mg/kg/day divided q8h

ZITHROMAX (Azithromycin)

- Macrolide antibiotic
- Dosing regimen increases compliance
- OK in pregnancy and children
- Less GI effects than erythromycin
- Less drug interactions than other macrolides
- Drug of choice for chlamydial conjunctivitis

ZITHROMAX

- Z-pack
 - 500mg day one; 250mg days 2-5
 - Great for compliance
 - For milder infections
- Treatment of chlamydia with 1 g dose
 - Prescribe four 250mg tablets or two 500mg tablets
 - Take all at once

DOXYCYCLINE

- Great antibiotic and anti-inflammatory agent
- Can take with food and dairy
- Cannot use in children younger than 8
- Cannot use in pregnancy/nursing
- Causes photosensitivity and photophobia
- Esophageal ulceration
 - Wait two hours before lying down after dose
- Long-term therapy associated with pseudotumor cerebri (rare)

OCULAR USES

- Antibiotic use
 - 100mg bid x 10 days
- Posterior bleph/dry eye/rosacea
 - 50mg bid x 4-6 weeks then
 - 50mg qd x 3-6 months or indefinitely

ONCE DAILY DOXYCYCLINE

- 40mg capsule (30mg immediate release and 10mg delayed release)
- Brand Name Oracea® 40mg
- Great for long term usage once controlled
- Increased compliance over bid dosing
- Approved for acne rosacea but could be used long term for dry eye/blepharitis

Why suspect MRSA?

- Purulent with or without abscess
- Initial appearance like a pimple or spider bite
- Pain and edema out of proportion with clinical appearance
- History of previous MRSA infection
- History of recent hospitalization
- Health care worker
- Student athlete
- Prison inmate
- Unresponsive to standard antibiotic therapy

Sulfamethoxazole/Trimethoprim

- aka Septra DS or Bactrim DS
- 2 antibiotics working synergistically to stop production of bacterial folic acid and therefore bacterial DNA
- Less drug resistance
- High penetration rate into various tissues
- Covers a wide variety of gram positive and gram negative organisms including:
 - Staph, strep, haemophilus
 - Ocular toxoplasmosis
 - MRSA
 - Best oral choice if not allergic
 - May need 2 DS tablets bid instead of 1 DS tablet bid

Sulfamethoxazole/Trimethoprim

- Cannot be used in sulfa allergic patients
- Risk of sulfa allergy is approximately 3%
 - Allergy generally presents as rash
 - Can develop delayed life-threatening Stevens-Johnson syndrome
 - Risk of allergy increased if allergic to other medications/substances (such as PCN)
 - Allergy to non-antibiotic sulfonamides is rare
- Drug interaction
 - Most common/more serious is with Warfarin/Coumadin

SULFA ALLERGY

- Sulfa allergy not sulfur allergy
- Rash is common sign; usually seen in the antibiotic class of sulfonamides (like Septra® or sulfacetamide ointment)
- Less likely to see in non-antibiotic meds
- Diamox®, Neptazane®, Azopt®, Trusopt®, Cosopt®
- Even less likely to see with topical medications
- Sulfites and sulfates are chemically different-no cross reactivity with sulfa allergies

Clindamycin

- Lincosamide antibiotic that disrupts bacterial protein synthesis
- Highly gram positive in coverage
- Category B
- More associated with pseudomembranous colitis than other antibiotics
- MRSA dosage 300mg po TID
 - MRSA clindamycin resistance is variable by location. Check with local health dept./hospital for culture and sensitivity reports in your area
- Also used for treatment of ocular toxoplasmosis

Oral Fluoroquinolones

- Can use in PCN and/or sulfa allergic patients
- Can NOT use in children/pregnancy/nursing
- Caution in athletes secondary to tendon rupture
- Blocks bacterial DNA synthesis
- **Ciprofloxacin (CIPRO®)** is prototype
 - Heavily prescribed for urinary tract infections
 - Overprescribed in the 1990s
 - Little staphylococcal coverage now
 - **Not recommended for ocular skin/soft tissue infections**
 - Mainly used for gram negative urinary tract infections

Levaquin

- A fourth-generation fluoroquinolone
- OK in PCN and/or sulfa allergic patients
- OK for ocular skin/soft tissue infections
- Covers MRSA on sensitivity testing
 - Least recommended due to increasing resistance of hospital acquired MRSA infections to fluoroquinolones
 - Recommended use with Rifampin to avoid monotherapy and increased resistance
 - Levaquin 500mg QD and Rifampin 300mg BID

ANTIBIOTIC PEARLS

- Are orals enough?
- Take full course of therapy
- Recommend hot compresses 4-6 times a day
- Literature and court rulings suggest antibiotics and birth control do not interact (except Rifampin)
 - Still counsel and document
- Can cause thrush, vaginal yeast infections
 - Take doses with yogurt
- Stop antibiotic if patient reports severe diarrhea/blood in stool
 - Concerns of pseudomembranous colitis

PRESCRIBING FOR CHILDREN

- In most cases, children 12 years old and older can be dosed as adults unless otherwise noted
- Look up dosage for child
 - Given in mg/kg/day
- Determine how many kg child weighs
 - 1 kg=2.2 lbs
- Multiply mg and kg to get total DAILY dose
- Divide by number of doses per day
- Choose closest available dosage strength

AUGMENTIN

- Augmentin = Amoxicillin + Clavulanic acid
- Cannot use if penicillin allergic
- Clavulanic acid is a “suicide inhibitor”
 - Protects amoxicillin from beta-lactamases
 - Does not have antibiotic action itself
- Allows increased coverage with less destruction by beta-lactamases
- Also covers anaerobes
 - Good for human and animal bites

PEDIATRIC EXAMPLE

- 5 year old with preseptal cellulitis
- Mom says child weighs 40 lb.
- NKDA
- On Zyrtec for seasonal allergies



AUGMENTIN PEDIATRIC INFO

- 20-40 mg/kg/day of amoxicillin in divided doses every 8-12 hours
- If patient weighs 88 lb. or more, dose as adult

DOSAGE CALCULATION

- 40mg/kg/day divided q8h
- 18 kg x 40mg=727 mg/day
- Divide 727 mg by 3 (i.e. q8h)
- =242mg q8h

STEP 1

$$40 \text{ lb.} \div 2.2 = 18 \text{ kg}$$

STEP 2

$$18 \text{ kg} \times 40 \text{ mg/kg/day} = 727 \text{ mg/day}$$

STEP 3

$$727 \text{ mg/day} \div 3 = 242 \text{ mg q8h}$$

STEP 4

Round to 250 mg q8h

HOW SUPPLIED

- AUGMENTIN 125 mg/5 mL
– 75 mL bottle, 100 mL bottle, 150 mL bottle
- AUGMENTIN 200 mg/5 mL
– 50 mL bottle, 75 mL bottle, 100 mL bottle
- AUGMENTIN 250 mg/5 mL
– 75 mL bottle, 100 mL bottle, 150 mL bottle
- AUGMENTIN 400 mg/5 mL
– 50 mL bottle, 75 mL bottle, 100 mL bottle

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450 Medical Ctr Blvd, #305 Webster, TX 77598 (281) 332-1397	11914 Astoria Boulevard, #325 Houston, TX 77089 (281) 484-2030	21700 Kingsland Blvd. Katy, TX 77450 (281) 578-4815
NAME <u>Morgan Smith</u> AGE <u>5</u>		
ADDRESS _____ DATE <u>3-3-18</u>		
Rx Augmentin 250/5 1 tsp q8h x 10 days		
REFILLS- <u>0</u> Jill Autry, O.D.		

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15400 SW Frwy Sugar Land, TX 77478 (281)277-1010	
NAME <u>Kelsey Michaels</u> AGE <u>5</u>	
ADDRESS _____ DATE <u>05-30-2018</u>	
Rx Augmentin 250 mg chewable 1 po q8h x 10 days #30	
REFILLS- <u>ZERO</u> Jill Autry, O.D.	

AUGMENTIN-ES
<ul style="list-style-type: none"> • Augmentin ES-600mg <ul style="list-style-type: none"> - 90 mg/kg/day divided every 12 hours <ul style="list-style-type: none"> • 75 ml, 125 ml, 200 ml

DOSAGE CALCULATION

- Augementin ES 600mg/5ml
- 90mg/kg/day divided q12h
- 18 kg x 90mg=1,620 mg/day
- Divide 1,620 mg by 2 (i.e. q12h)
- =810 mg every 12 hours

STEP 1

$$40 \text{ lb.} \div 2.2 = 18 \text{ kg}$$

STEP 2

$$18 \text{ kg} \times 90 \text{ mg/kg/day} = 1,620 \text{ mg/day}$$

STEP 3

$$1,620 \text{ mg/day} \div 2 = 810 \text{ mg q12h}$$

STEP 4

How many ml is 810 mg?

$$\frac{600 \text{ mg}}{5 \text{ ml}} = \frac{810 \text{ mg}}{x}$$

$$x = 6.75$$

Or 7ml q 12h

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<p>NAME <u><i>Morgan Smith</i></u> AGE <u>5</u></p> <p>ADDRESS _____ DATE <u>3-3-18</u></p> <p>Rx <i>Augmentin ES 600/5</i> <i>7ml q12h x 10 days</i></p> <p>REFILLS-- <u>0</u> <u><i>Jill Autry, O.D.</i></u></p>		

Body Weight (kg)	Volume of AUGMENTIN ES-600 Powder for Oral Suspension providing 90 mg/kg/day
8	3.0 mL twice daily
12	4.5 mL twice daily
16	6.0 mL twice daily
20	7.5 mL twice daily
24	9.0 mL twice daily
28	10.5 mL twice daily
32	12.0 mL twice daily
36	13.5 mL twice daily

PAIN CONTROL

- Schedule II, III, and IV analgesics
- Non-scheduled pain meds
- Corneal abrasions, post-op PRK, post-op pterygium surgery, etc.
- Do not use in infectious processes, will mask pain of worsening infection
- Short term therapy only recommended
- Need DEA # to prescribe scheduled meds

ALLERGIC TO CODEINE?

- Most internists still use hydrocodone because it is a synthetic form of codeine
- Most codeine “allergies” are just GI side effects
- True IgE mediated allergic reaction low

HYDROCODONE COMBINATIONS

- As of October, 2014, now Class II status
- Significantly more pain relief and duration of action compared to codeine
- Used routinely in “codeine allergic” patients
- Induces euphoria
- Highly addictive
- Also has antitussive properties

HYDROCODONE PRODUCTS

- Vicodin (APAP w/hydrocodone)
 - 300mg APAP + 5mg hydrocodone
 - Schedule II
- Vicodin ES (APAP w/hydrocodone)
 - 300mg APAP + 7.5mg hydrocodone
 - Schedule II
- Vicoprofen
 - 200mg ibuprofen + 7.5mg hydrocodone
 - When Tylenol® is contraindicated/liver disease
 - Schedule II

APAP & LIVER FAILURE

- 42% of acute liver failure cases in the US result from acetaminophen-induced toxicity
- Of those who overdosed unintentionally, 62% were using opioid-containing compounds
- Most commonly hydrocodone/APAP combinations
- Counsel patients concerning amount of APAP in prescribed medication
- New max dosage: 3000mg/day
- Avoid additive APAP alone or in combination products such as cough and cold remedies

SIDE EFFECTS OF PAIN MEDS

- Constipation
- Nausea and vomiting
- Sedation
- Dizziness
- Itching
- Respiratory depression
- Addiction

CONSIDER ULTRAM®

- Tramadol (Ultram®) 50 mg tablets
- Schedule IV medication as of 2014
- 1-2 q4-6h prn pain
- Central acting synthetic opioid analgesic
- Also inhibits serotonin and norepinephrine reuptake
- Similar in efficacy to Tylenol #3
- Similar side effect profile and addiction profile
- Controversial in opioid allergy

ORAL ANTIVIRALS

- Found in tears
- Can use for epithelial disease if patient can't use Viroptic®/Zirgan® secondary to toxicity/severe dry eye/availability
- Does not help in the treatment of stromal disease
- Treat stromal disease with Pred Forte® 1% brand name product
- Cover steroid with Viroptic®/Zirgan® or oral antiviral

ORAL ANTIVIRALS

- Herpes simplex keratitis
- In place of topical treatment
 - Acyclovir 400mg 5x day x 10 days
 - Famvir® 250mg tid x 7 days
 - Valtrex® 500mg tid x 7 days
- For prevention of recurrences
 - Acyclovir 400mg qd-bid
 - Famvir® 250mg qd
 - Valtrex® 500 qd

ORAL ANTIVIRALS

- For Herpes Zoster (shingles) treatment
- For Bell's Palsy treatment
- Must start within 72 hrs for best effect; preferably within 24 hrs
- Acyclovir 800mg 5X day
- Famvir 500mg tid
- Valtrex 1 gram tid

ORAL STEROID USES

- Allergic reactions
- Anterior uveitis uncontrolled with topical steroids
- Posterior uveitis (non-infectious)
- Herpes zoster (along with oral antivirals)
- Scleritis
- Arteritic ischemic optic neuropathy
 - "Giant Cell"
- Optic neuritis
- Orbital pseudotumor
- Other optic neuropathies

ORAL STEROID PEARLS

- Consider Medrol Dosepak for many ocular conditions
 - For allergic reactions, zoster, anterior uveitis
 - Less serious inflammatory conditions
- Take with food or milk
- Generally start 60-80 mg/day
 - Must taper dosage over 1-2 weeks depending on response
 - 40-60 mg x 2-3 days does not need taper
 - Otherwise taper by 20% every few days unless on steroids for months (then taper more slowly)

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NAME Joe Johnson AGE _____

ADDRESS _____ DATE 3-3-18

Rx **Medrol Dose Pack**
TUD

REFILLS-- 0

Jill Autry, O.D.

STEROID SIDE EFFECTS

- Increased intraocular pressure
 - Only 5% of general population are steroid responders
 - 95% of glaucoma patients are steroid responders
 - Topical will increase in 2-4 weeks
 - Oral/IV can increase within 3-4 days
- Cataract
 - Usually posterior subcapsular
- Steroid induced diabetes/decrease control
- Adrenal suppression
- Reduced immunity/infections
- Mood swings/erratic behavior

DIAMOX (Acetazolamide)

- Nonbacteriostatic sulfonamide
- Decreases carbonic anhydrase
 - Decreases hydrogen and bicarb ion formation
- Results in decreased aqueous production in the ciliary body
- Results in alkaline diuresis in the kidney but tolerance develops quickly
- Contraindicated in renal, hepatic, or respiratory disease

DIAMOX (Acetazolamide)

- Decreases carbonic anhydrase in the ciliary body which decreases aqueous humor formation
- Decreases IOP by 40-60%
- Starts to work in 1 hour, peak effect at 4 hours
- Comes in 125mg, 250mg, 500mg sequels
- Angle closure dose:
 - (2) 250mg tablets initially—order iridotomy
- Non-angle closure dosing:
 - 250-500mg bid

DIAMOX
(Acetazolamide)

- Treatment of acute angle closure glaucoma
- Treatment of less acute increased IOP
- Treatment of post-surgical IOP spikes
- Treatment of pseudotumor cerebri
- Controversial treatment of serous retinal detachments
- Also used to prevent "altitude sickness"

DIAMOX
(Acetazolamide)

- Treatment of pseudotumor cerebri or other chronic treatment
- Need CBC with differential as baseline
- Start 500mg sequels bid
- Often results in tingling, "pins and needles" in extremities
 - Can lower dose to 250mg bid
 - Can try Neptazane 50mg tid

DIAMOX SIDE EFFECTS

- Paresthesias ("pins and needles")
- Kidney stones
- Acute respiratory failure
- Acid-base imbalances
- Blood dyscrasias (aplastic anemia)
- Induced myopia
- Metallic taste

Oral glaucoma agents

- Methazolamide (Neptazane)
 - Comes in 25mg and 50mg
 - Use in addition to maximum topical glaucoma treatment
 - Often before initiating trabeculectomy/XEN

PREGNANCY

- OK in pregnancy
 - Augmentin, erythromycin, Zpack, amoxicillin, Keflex
 - Tylenol #3, Vicodin, Acetaminophen
 - Acyclovir and other oral antivirals
 - Claritin and other non-sedating antihistamines
 - Routine dilation
 - Topical steroids for serious ocular inflammation

PREGNANCY

- Relative contraindication in pregnancy
 - Aspirin
 - Ibuprofen
 - Oral steroids
- Contraindicated in pregnancy
 - Doxycycline, Fluoroquinolones
 - Diamox/Neptazane

NSAIDS

- Ibuprofen (aka Motrin®, Advil®)
 - 200mg available OTC
 - Can double, triple, or quadruple OTC dose to get Rx dosages
- Toradol® 10mg q6h
 - Starting 3 days before PRK can decrease pain
 - Use for 3 days post-op as well
 - Often avoid other controlled analgesics

Other orals

- Loratadine and pseudoephedrine 12-hr
 - Generic Claritin D 12-hr
 - Take qam dose only x 10 days for pain on eye movements secondary to suspected sinus congestion
- Diphenhydramine 25mg
 - Generic Benadryl
 - OTC for sleep
