

AVOID LIABILITY: KNOW YOUR PATIENTS' MEDICATIONS AND THEIR IMPACT ON DENTAL TREATMENT

Hosted by

***West Virginia University
School of Dentistry***

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Are all generic drugs equal?

Orange Book

(Approved Drug Products with
Therapeutic Equivalence Evaluations)

Alliance for Safe Online Pharmacies (ASOP)

No. 1 ***LEVOTHYROXINE*** (generic)

- Synthroid®
- replacement therapy (hypothyroidism)
 - incidence is about 5% in the U. S.
 - women 9x more likely than men
 - subclinical hypothyroidism
- local anesthetic with vasoconstrictor is **NOT** contraindicated
- Fluoride is **NOT** contraindicated with levothyroxine

No. 2 ***LISINOPRIL*** (generic)

- Antihypertensive Medication Compliance
- Zestril®, Prinivil®
- **ACE** (Angiotensin Converting Enzyme) inhibitor (**ACEi**)
- Dental Implications
 - Orthostatic (postural) hypotension-**watch out!**
 - Scalded mouth syndrome
 - Non-productive cough
 - NSAID interaction with long-term use
 - Angioedema

- **Other ACE inhibitors**
 - benazepril (Lotensin®)
 - captopril (Capoten®)
 - enalapril (Vasotec®, Epaned®)
 - fosinopril (Monopril®)
 - moexipril (Univasc®)
 - pirindopril (Aceon®, Coversyl®)
 - quinapril (Accupril®)
 - trandolapril (Mavik®)
 - Tekturna® (aliskiren)-direct renin inhibitor

DIOVAN® (valsartan)

- **Angiotensin Receptor Blocker (ARB)**
- antihypertensive
- Dental Implications
 - Orthostatic hypotension
 - Scalded mouth syndrome
 - Non-productive cough (less than ACE Inhibitors)
 - NSAID interaction with long-term use
 - Other popular ARBs
 - candesartan (Atacand®)
 - irbesartan (Avapro®)
 - losartan (Cozaar®)
 - olmesartan (Benicar®)

No. 3 ***HYDROCODONE WITH ACETAMINOPHEN*** (generic)

- opiate & non-opiate analgesic
- addictive
- second most abused drug by general dentists
- Schedule II (as of **October 6, 2014**)
- opiate metabolism-CYP2D6
 - genetic differences
 - **NO CODEINE in CHILDREN -see AAP & FDA**
- most common side effect of opiates: Nausea and vomiting
- Hydrocodone is more efficacious than codeine as an analgesic but causes less nausea & vomiting
- opiate-induced N/V occurs in CRTZ located in medulla
- **analgesic efficacy is not related to N/V**
- phenothiazines will block the CRTZ
 - drug interactions between phenothiazines and opiates

Rx Hydrocodone with acetaminophen 7.5/325 mg
Disp. Twelve (12) tablets
Sig: Take one tablet by mouth every four to six
hours as needed for the relief of pain.
Do not exceed six tablets in 24 hours

****THE PHARMACOLOGY OF ACETAMINOPHEN****

- The analgesic effect of acetaminophen occurs predominantly in the Central Nervous System (CNS)
- Mechanism of action
 - cyclo-oxygenase 3 (COX₃) inhibition
 - located in the central nervous system (CNS)
 - some peripheral effects
- Clinical Effects
 - analgesic
 - antipyretic
 - No gastritis
 - No effects on uric acid-gout☺
 - No anti-platelet effects
 - **NO ANTI-INFLAMMATORY EFFECTS**
- **Maximum daily dose of acetaminophen is 3000 mg**
- **Maximum effective dose of acetaminophen is 1000 (650) mg**

No. 4

ATORVASTATIN (generic)

- HMG-CoA reductase Inhibitor
- Decrease serum total and LDL cholesterol
- grapefruit juice interactions
- Lipitor®
- Similar medications:
 - rosuvastatin (Crestor®)
 - lovastatin (Mevacor®, Altoprev®)
 - simvastatin (Zocor®)
 - pravastatin (Pravachol®)*
 - pitavastatin (Livalo®)
 - fluvastatin (Lescol®)
- possible side effects of statins
 - muscle weakness
 - increased blood glucose or HbA1c
 - decreased cognitive ability-questionable
- **CONTRAINDICATED IN PREGNANCY AND**
BREAST FEEDING

- Do statins influence pulpal morphology?
- New cholesterol lowering medications-expensive
 - PCSK9 inhibitors-mechanism
 - alirocumab (Praluent®) –Sanofi/Regneron
 - evolocumab (Repatha®)-Amgen
 - **price is coming down 😊**

No. 5 ***METOPROLOL TARTRATE/SUCCINATE*** (generic)

- Selective Beta Blocking Agent (Beta₁ blocking agent)
- Indications
 - antihypertensive
 - premature atrial (PACs) and/or ventricular contractions (PVCs)
 - other abnormal cardiac rhythms
- Lopressor®, /Toprol XL®
- **DO NOT DISCONTINUE ABRUPTLY**
- Long-term use of NSAIDs (~ 3 weeks) may diminish hypotensive effectiveness of beta blockers
- Other selective Beta₁ blocking agents
 - nebivolol (Bystolic®)
 - atenolol (Tenormin®)
 - bisoprolol (Zebeta®)
 - acebutolol (Sectral®)
 - esmolol (Brevibloc®)
 - betaxolol (Kerlone®)

No. 6 ***AMLODIPINE BESYLATE*** (generic)

- calcium channel blocker
- antihypertensive
- gingival hyperplasia
- Norvasc®
- Other calcium channel blockers
 - diltiazem(Cardizem®, Tiazac®)
 - felodipine (Plendil®)
 - nifedipine (Adalat®, Procardia®)
 - verapamil (Covera-HS®, VerelanPM®, Calan)
 - nicardipine (Cardene®)
- ***clarithromycin interaction-could be fatal***

- No. 7** **METFORMIN** (generic)
- type II diabetes mellitus
 - appoint in the morning
 - Glucophage®
 - other uses

- No. 8** **OMEPRAZOLE** (generic)
- hydrogen ion pump inhibitor (PPI)
 - **GastroEsophageal Reflux Disease (GERD)**
 - possible side effects related to altered stomach Ph
 - increased risk for hip, wrist, and spine fracture
 - increased risk for Clostridium difficile
 - decreased serum magnesium
 - possible Vitamin B₁₂ deficiency
 - similar medications
 - esomeprazole (Nexium®)
 - lansoprazole (Prevacid®)
 - dexlansoprazole (Dexilent®, Kapidex®)
 - rabeprazole (Aciphex®)
 - pantoprazole (Protonix®)
 - Zegarid®-a rapid release form of omeprazole
- VIMOVO®**
- naproxen 375 mg or 500 mg /esomeprazole 20 mg
 - “to relieve signs and symptoms of osteoarthritis, rheumatoid arthritis, and ankylosing spondylitis and to decrease the risk of developing stomach (gastric) ulcers in people who are at risk of developing gastric ulcers with NSAIDs”

- YOSPRALA®**
- enteric-coated aspirin 81 mg or 325 mg /omeprazole 40 mg
 - “secondary prevention of cardiovascular and cerebrovascular events and who are at risk of developing aspirin-associated gastric ulcers”

- No. 9** **ALBUTEROL** (generic)
- Beta 2 receptor agonist
 - bronchodilator
 - asthma, COPD
 - prevention of exercise-induced bronchospasm
 - **use caution** with aspirin/NSAIDs in some patients
 - Ventolin HFA®, Proair HFA®

- **ADVAIR DISCUS®**
 - fluticasone and salmeterol
 - maintenance treatment of asthma
 - no problems with vasoconstrictor
 - oral candidiasis/aspergillus niger
- **FLUCONAZOLE** (generic)
 - oral antifungal
 - Diflucan®
 - 100 mg BID first day and 100 mg/day for 13 days
 - contraindicated with patients taking clopidogrel (Plavix®)

No. 10 **GABAPENTIN** (generic)

- Neurontin®
- analgesic for neuropathic pain
 - fibromyalgia
 - diabetic neuropathy
 - post-herpetic neuropathy
- abuse potential?

No. 11 **IBUPROFEN** (generic)

- NonSteroidal Anti-Inflammatory Drug (NSAID)
- COX₁ & COX₂ inhibitor
- Maximum daily dose is 3200 mg for acute pain
- Motrin®, Motrin-IB®, Advil® (OTC)

Rx Ibuprofen Tablets 400 mg

Disp. 16 tablets

**Sig: Take 1-2 tablets 3-4 times per day
as needed for the relief of pain**

Do not exceed eight tablets within 24 hours

- **Pediatric dosing**
 - **7.5 mg/kg every 6 -8 hours**
 - **30 mg/kg/day-maximum dose**
- Other useful NSAIDs (Cox1 and Cox 2 inhibitors)
 - etodolac (generic)-Lodine® is discontinued
 - 200-400 mg every 6 to 8 hours
 - ketoprofen (generic)-Orudis® is discontinued
 - 50-75 mg every 6 to 8 hours-immediate release
 - 200 mg per day for extended release

- meloxicam (Mobic®)-Long acting
 - 7.5mg - 15 mg per day
 - do not exceed 15 mg per day

No. 12 **TRAZADONE** (generic)

- Desyrel®
- Antidepressant
- Serotonin/Norepinephrine Reuptake Inhibitor (SNRI)
- **Use caution with vasoconstrictors**
- vilazodone (Viibryd®)
- lurasidone (Latuda®)
- **profound xerostomia with this group**

No. 13 **WARFARIN** (generic)

- Coumadin®
- Anticoagulant
- produces hypoprothrombinemia (Vitamin K antagonist)
- INR is used to measure effectiveness
- Drug Interactions
 - Tetracyclines
 - NSAIDs
 - aspirin
 - “statins”

New Oral Anticoagulants

- Non-Vitamin K Oral Anticoagulants (**NOAC**)
- Direct-Acting Oral Anticoagulants (**DOAC**)
 - dabigatrin (Pradaxa)
 - direct thrombin inhibitor
 - twice a day dosing
 - Boehringer Ingelheim
 - idarucizumab (Praxbind)
 - reversal agent
 - Boehringer Ingelheim
 - \$4200/reversal
 - rivaroxiban (Xarelto)
 - direct factor Xa inhibitor
 - once a day dosing
 - Johnson & Johnson
 - apixaban (Eliquis)
 - direct factor Xa inhibitor
 - Bristol Myers Squibb

- edoxaban (Savaysa)
 - direct factor Xa inhibitor
 - Daiichi Sankyo Co.
- andexanet (Andexxa)
 - reversal agent for factor Xa inhibitors
 - limited approval by FDA in May 2018
 - effective for rivaroxaban and apixaban only

No. 14 **AMOXICILLIN** (generic)

- Broad spectrum antibiotic
- Antibiotic of choice for most orofacial infections is **penicillin V**

Rx **Penicillin V tablets 500 mg**

Disp: 30 tablets

**Sig: Take two tablets by mouth to start
then one tablet every six hours
for seven days for infection**

- ***Subacute Bacterial Endocarditis***
Antibiotic Prophylaxis

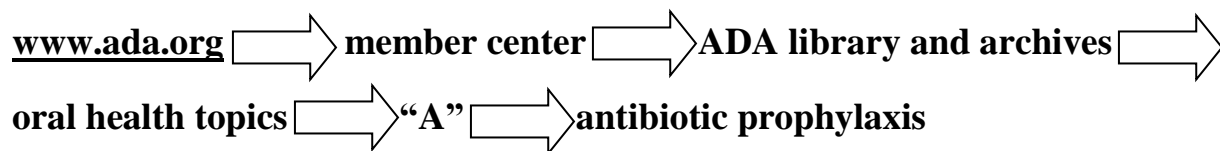
**Cardiac Conditions Associated with the Highest Risk of
Adverse Outcome from Endocarditis for Which Prophylaxis
With Dental Procedures is Recommended**

1. prosthetic cardiac valves, including transcatheter-implanted
 prostheses and homografts
2. prosthetic material used for cardiac valve repair (annuloplasty
 rings and chords)
3. a history of infective endocarditis
4. a cardiac transplant with valve regurgitation due to a
 structurally abnormal valve
5. the following congenital (present from birth) heart disease:
 - a. unrepaired congenital cyanotic heart disease, including
 palliative shunts and conduits
 - b. any repaired congenital heart defect with residual
 shunts or valvular regurgitation at the site of
 or adjacent to the site of a prosthetic patch or
 prosthetic device

Antibiotic Prophylaxis for Patients with Orthopedic Prostheses

“The ADA and the American Academy of Orthopaedic Surgeons have found that the evidence does not support routine prescription of antibiotic prophylaxis for joint replacement patients undergoing dental procedures. This finding is based on a collaborative systematic review of the scientific literature.” -www.ada.org/news

“In 2014, the ADA Council on Scientific Affairs assembled an expert panel to update and clarify the clinical recommendations found in the 2012 evidence-based guideline, *Prevention of Orthopaedic Implant Infection in Patients Undergoing Dental Procedures*. As was found in 2012, the 2014 updated systematic review found no association between dental procedures and prosthetic joint infections. Based on this review, the 2014 Panel concluded that prophylactic antibiotics given prior to dental procedures are *not recommended* for patients with prosthetic joint implants.” www.ada.org



Guest Editorial: ADA Guidance for Utilizing Appropriate Use Criteria in the Management of the Care of Patients with Orthopedic Implants Undergoing Dental Procedures. Journal of American Dental Association-February 2017

www.orthoguidelines.org

“Appropriate Use Criteria”

SBE prophylaxis antibiotics

**Rx Amoxicillin tablets 500 mg
 Disp: 4 tablets
 Sig: Take four tablets by mouth 30-60 minutes
 before dental appointment**

Rx Cephalexin tablets 500 mg
Disp: 4 tablets
Sig: Take four tablets by mouth 30-60 minutes
before dental appointment

- *Patients who are allergic to penicillins*

Rx Clindamycin tablets 150 mg
Disp: 4 tablets
Sig: Take four tablets by mouth 30-60 minutes
before dental appointment

Rx Azithromycin tablets 250 mg
Disp: 2 tablets
Sig: Take two tablets by mouth 30-60 minutes
before dental appointment

Rx Clarithromycin tablets 250 mg
Disp: 2 tablets
Sig: Take two tablets by mouth 30-60 minutes
before dental appointment

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