

- Antidepressants
- Anti-arthritis
- Erectile Dysfunction
- Menopause
- Maintenance medications.
 - Anti-hypertensives
 - Diabetes meds
 - Cholesterol meds.

13 **COMMON MEDICATIONS**

- Consumers respond to the media
- DCM Direct Consumer Marketing *

14 **WHY KNOW BASICS ABOUT SYSTEMIC MEDICATIONS ?**

- The drugs tell us more about the patient than they might divulge.
 - 2 or 3 anti-hypertensives means difficult to control blood pressure.
 - Several anti psychotics / antidepressants means they are not just for simple mood elevation.
- There are a few drug-drug interactions that count.

15 **THE TOP 200 DRUGS!**

THE TOP 50 DRUGS!

ALL OF THE DRUGS

I CAN THINK OF !

16 **THE CLASSES OF MEDS THAT COUNT**

- Cardiovascular agents
- Analgesics
- Antidepressants
- Anti-thrombotics

17 **CARDIOVASCULAR AGENTS**

- Diuretics
- Beta-Blockers
- Calcium Channel Blockers
- ACE inhibitors
- Angiotensin Receptor Blocker*
- Cardiac Glycosides
- Alpha Blockers

18 **DIURETICS**

- "THIAZIDE", "EMIDE" Drugs
 - Hydrochlorothiazide, HCTZ
 - Furosemide, LASIX
- IND: Hypertension (2nd line), Edema from CHF, hepatic and renal failure.

- MOA: Inhibit renal re-absorption of sodium and increase the excretion of water and potassium.
- DDI: NSAID Decreased diuretic (anti-hypertensive effect) with long term use. (Not dental short term use).

19 BETA BLOCKERS

- “olol”, “alol”, ilol”
 - Propranolol, Inderal
 - Atenolol, Tenormin
 - Metoprolol, Toprol, Lopressor
 - Bisoprolol, Zebeta
 - Carvedilol, Coreg
 - Labetalol, Normodyne
- IND: Hypertension, angina, rhythm disorders, migraines and tremors.
- MOA: Competitively block beta adrenergic receptors decreasing HR, CO, and renin release.
- DDI: Non selective beta blockers and epi in L A, can result in a dangerous hypertensive episode with a bradycardia. (Not dental short term use).
NSAID Decreased anti-hypertensive effect with long term use.

20 BETA BLOCKERS

- “olol”, “alol”, ilol”
 - Propranolol, Inderal - non sel. B. B. (NSBB)
 - Atenolol, Tenormin
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21 NSBB PROPRANOLOL

- Unique epinephrine response, (probably and inadvertent vascular injection)
 - Significant elevation in blood pressure and a serious bradycardia. Unexpected paradoxical reaction. *
- Epi in general with CV disease. Just not the problem that texts would like to make it. Literature can never duplicate problems.
 - Resting epi. output .007 mg/min.
 - Stimulated epi. output .280 mg/min.
 - 1 cart. 1:100,000 .018 mg
 - 1 cart. 1:200,000 .009mg
 - Pain and stress is the problem, not epi. in the LA.

22 CALCIUM CHANNEL BLOCKERS

- “dipines”
 - Nifedipine, Procardia
 - Amlodipine, Norvasc
 - Felodipine, Plendil
 - Diltiazem, Cardizem
 - Verapamil, Verapamil SR
- IND: HTN, Angina, Arrhythmias
- MOA: Inhibit calcium ions from entering slow channels of vascular smooth muscle and myocardium. This relaxes smooth muscle and myocardium and slows conduction velocity.
- DDI: Macrolides and “conazoles” inhibit hepatic metabolism.

23 ACE DRUGS

- ACE inhibitors “prils”
 - Angiotensin converting enzyme inhibitor
 - Prevent conversion of angiotensin 1 to angiotensin 2
- A2RB (AT2RI) “sartans”
 - Angiotensin 2 receptor blocker

- Blocks the action of angiotensin 2
- Both prevent the action of angiotensin 2
- The ACE inhibitors have a unique oral complication of “scalded mouth syndrome”

24 **ACE DRUGS**

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- “prils”
 - Enalapril, VASOTEC
 - Lisinopril, ZESTRIL
 - Quinapril, ACCUPRIL
 - Ramipril, ALTACE
- IND: Hypertension, CHF
- MOA: Inhibit conversion of AT1 to AT2 or block AT2R
- DDI: NSAID Decreased anti-hypertensive effect with long term use. (Not dental short term use).
- “sartans”
 - Losartan, COZAAR
 - Valsartan, DIOVAN
 - Irbasartan, AVAPRO

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26 **CARDIAC GLYCOSIDES**

- Digoxin / Lanoxin
- Tx. For CHF and rhythm disorders.
 - The drug is not a problem, but the drug identifies the AT RISK HEART.

27 **THE CLASSES OF MEDS THAT COUNT**

- Cardiovascular agents
- Analgesics
- Antidepressants
- Anti-thrombotics

28 **CHRISTENSEN, CLINICIANS REPORT, 1-10**

29 **ANALGESICS**

- The number one prescribed group in the U. S.
- Hydrocodone with Acetaminophen tops all lists.
- Acetaminophen and it’s liver toxicity and accidental overdose is a concern.

30 **HOW WILL THE FDA DEAL WITH TYLENOL ?**

31 **HOW WILL THE FDA DEAL WITH TYLENOL ?**

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33 **FDA’s CONCERN ABOUT TYLENOL**

- By 2005, Tylenol had become the most common cause of acute liver failure in the U.S.
 - 50% of these were unintentional overdoses.
 - HEPATOLOGY, 12-'05, p1364-1372
- FDA labeling changed in 2006.
 - The statistics have remained unchanged .
- 2009 FDA hearings considered considerable changes in Tylenol labeling and availability

- Silence since 7-09

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36 **PHARMACOLOGY**

METABOLISM

- Did you do well in PHARMACOLOGY AND BIOCHEMISTRY??
- Pharmacologically, Tylenol is always compared to ASA
- Clinically, we compare Tylenol to ibuprofen.

37 **N-acetyl-P-Aminophenol**

A. P. A. P.

ACETAMINOPHEN

- Acetaminophen became commercially successful in the 1950's.
- Analgesic and antipyretic activity is equivalent to ASA but no anti-inflammatory activity.
- Classified as a COX – 3 agent
 - It is thought to be a “COX 3 inhibitor”, and preferentially inhibits COX – 3, present in the central nervous system. This explains the lack of anti-inflammatory activity and the lack of GI lesions (irritation).
 - Hepatic metabolism with toxic metabolites
 - Urine excretion 5-10% unchanged
 - Overdose is hepato-toxic and frequently fatal.

38 **CHARACTERISTICS**

39 **TYLENOL METABOLISM**

TYLENOL OVERDOSE

- 4000 mg is considered the current daily maximum dose (2, ES Tylenol 4x/d)
- Hepato-toxicity is thought to occur at 6000 mg. (12, ES Tylenol)
 - Tylenol is a suicide drug!
- How does this toxicity occur in accidental overdoses?
 - Pain - increasing recommended doses.
 - Multiple Meds - Pain pills plus sleep aids.
 - Inadvertent Scripts - multiple practitioners.

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41 **TYLENOL METABOLISM**

42 **TYLENOL METABOLISM**

43 **WHAT ABOUT ALCOHOL ??**

44 **DON'T STOP ALCOHOL !**

45 **DO YOU CONSIDER THE TYLENOL DOSE IN YOUR USUAL PAIN SCRIPTS??**

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48 **IF TYLENOL IS LIMITED OR BANNED, WHAT ARE THE OPTIONS ?**

- Low dose APAP prescriptions.
 - This is available now if you or a patient is concerned.

49 **IF TYLENOL IS LIMITED OR BANNED, WHAT ARE THE OPTIONS ?**

- Low dose APAP prescriptions.
 - This is available now if you or a patient has a concern.
- APAP free prescriptions.
 - Ibuprofen
 - Oxycodone
 - Propoxyphene group

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52 **THERE ARE CHOICES THAT CAN BE MADE**

53 **THE THOUGHT PROCESS SHOULD BEGIN,**

HOW TO DEAL WITH TYLENOL

54 **THE CLASSES OF MEDS THAT COUNT**

- Cardiovascular agents
- Analgesics
- Antidepressants
- Anti-thrombotics

55 **THE CHEMISTRY OF WELL BEING**

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57 **THE CHEMISTRY OF WELL BEING**

NEUROTRANSMITTERS

- Serotonin
 - Controls mood, Improves sleep, relieves stress.
- Nor-epinephrine
 - Creates alertness and counteracts lethargy
- Dopamine
 - Controls emotional response and movement.
- Endorphin
 - An endogenous opioid

58 **THE CHEMISTRY OF WELL BEING**

- Therapeutic ANTIDEPRESSANTS
 - TCA Tricyclic Antidepressant
 - SSRI Selective Serotonin Re-uptake Inhibitor
 - SNRI Serotonin and Nor-epinephrine Re-uptake Inhibitor
 - Miscellaneous class
- "ine" is a common suffix

59 **ANTIDEPRESSANTS**

- TCA
 - Amitriptyline ELAVIL
- SSRI
 - Fluoxetine PROZAC
 - Paroxetine PAXIL
 - Sertraline ZOLOFT
- SNRI
 - Desvenlafaxine PRISTIQ
 - Duloxetine CYMBALTA
 - Venlafaxine EFFEXOR
- Miscellaneous
 - Bupropion WELLBUTRIN

60 SEROTONIN

- The feel good chemical
- Most serotonin is in the gut - regulates peristalsis. (platelets)
- CNS serotonin regulates mood, appetite, sleep and some cognition.
- Re-uptake inhibition leaves more in the synapse to act in the CNS

61 SEROTONIN

AND DENTISTRY ?

- A therapeutic amount produces:
 - Euphoria - ECSTASY
 - Mood elevation, better coping, restful sleep, relief of anxiety, relief of Obsessive Compulsive Behavior.
 - A toxic amount produces:
 - SEROTONIN SYNDROME
 - Increase in HR, twitching, HTN, agitation, confusion, hallucinations, seizures.
 - Usually a DDI MAOI - SSRI
St. John's Wort - SNRI
- Tramadol (ULTRAM) - SSRI

62 THE CLASSES OF MEDS THAT COUNT

- Cardiovascular agents
- Analgesics
- Antidepressants
- Anti-thrombotics

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64 ANTI-THROMBOTIC USES

- Prophylaxis/treatment of deep vein thrombosis
- Prevention of pulmonary/systemic embolism
- Atrial fibrillation
- Acute MI
- Stroke
- Valvular heart disease
- Mechanical prosthetic heart valves
- Unstable angina

65 TYPES OF ANTI-THROMBOTIC AGENTS

66 ANTI-THROMBOTICS

- Are not taken casually
- Used to prevent blood clots, stroke and heart attacks.
- No tooth is worth more than the patients life! *
- Therefore, stopping these is not the current standard of care.
 - Working around them is the accepted technique.
- A physicians recommendation or agreement to DC one of the agents does not absolve us of liability.

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ADDITIONAL AHA STATEMENTS

- “In the majority of cases, stent thrombosis is a catastrophic event, resulting in life-threatening complications.”
- “must be made aware of the potentially catastrophic risks of premature discontinuation of thienopyridine therapy.”
- “Elective procedures for which there is significant risk of perioperative or postoperative bleeding should be deferred.”

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THE GENERAL DENTAL DILEMA

- Should I refer? Can I manage this potential bleeding risk?
- The physician said “just D.C. the ASA, Plavix, or warfarin” ???
- All literature follows the previous recommendations with the note **ADDITIONAL LOCAL MEASURES** should be employed.
- What about DDI??

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ADDITIONAL LOCAL MEASURES

- An extra squeeze of the alveolus.
- An extra effort with gauze pressure.
- Suture when you might not normally do so.
- Gelfoam
- Surgicel
- Thrombin powder
- Tranexamic acid rinse post operatively *

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ANTI-THROMBOTIC DRUGS

- Aspirin
 - Platelet function inhibitor
 - Always considered, rarely evaluated – Platelet Function Assay
 - Clinical bleeding is unpredictable
- Plavix (clopidogrel)
 - Platelet aggregation inhibitor
 - Always considered, rarely evaluated – Platelet Function Assay
 - Clinical bleeding is unpredictable

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ANTI-THROMBOTIC DRUGS

- Ticlid (ticlopidine)
 - Platelet aggregation inhibitor
 - Rarely evaluated – Platelet Function Assay
- Aggrenox (aspirin + dipyridamole)

- Platelet function inhibitor
- Rarely evaluated – Platelet Function Assay

79 **ANTI-THROMBOTIC DRUGS**

- COUMADIN (warfarin)
 - Anticoagulant
 - Always considered, always evaluated - PT by means of the INR
 - Clinically significant
- LOVENOX - Low Molecular Weight Heparin (LMWH)
 - Anticoagulant
 - Always considered, evaluation is rarely productive
 - Rarely clinically significant
- Heparin – anticoagulant Usually and In-patient medication.
 - Always considered, always evaluated - PTT
 - Clinically significant

80 **RECOMMENDED MEDICAL THERAPEUTIC INR TARGETS**

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83 **SUMMARY**

- Current literature advocates NOT removing patients from antithrombotics.
- The health sequelae for an embolic event outweighs the hemorrhage risk with most dental interventions.
- Local measures should be part of the plan.
- Coumadin and Heparin do require pre operative test values to be within safe limits.

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