Inflammation and bacteria associated with periodontal disease have been linked to 6 out of the 7 leading causes of death in the United States: Heart Disease, Cancer, Chronic Lower Respiratory Disease (including Asthma), Stroke, Alzheimer's Disease, Diabetes. **THE BIG THREE** of Oral-Systemic associations are **HEART DISEASE, STROKE AND DIABETES**

- Evaluation begins with a thorough review of your patient's medical history, Medical Model: Interview patient and record narrative, Questionnaire: Discuss patient responses.
- DRUGS! All medications the patient is taking (or supposed to be taking).
- Cursory examination of signs/symptoms of disease.
- Collection of vital signs.
- Obtain medical consult when necessary, with patient's supervising physician.

CARDIOVASCULAR DISEASE

Symptomatic heart failure patients are higher risk for MI, arrhythmias, ACUTE heart failure (sudden death) and may not be good candidates for elective dental procedures that require long chair time appointments.

Chair position may influence the ability to breath (some cannot tolerate supine position). Vasoconstrictors may be contraindicated based on other meds (e.g. Digoxin for angina, non-selective beta blockers for hypertension).

HEART ATTACK/MYOCARDIAL INFARCTION

If the event has occurred within very recent past: (6 months), consider postponing elective dental care due to highest risk window for second, or third events is within 6 months of first event.

Look at meds! Pt may be on antianginals, anti-coagulants, adrenergic antagonists (alpha/beta blockers), digitalis, etc. Interactions with vasoconstrictors, higher anxiety/stress. **ASK QUESTIONS!**

PREMED ONLY FOR

- **Any** history of infective endocarditis (previous, relapse or recurrent infective endocarditis).
- Cardiac (Heart) transplant recipients who develop cardiac valvulopathy.
- Prosthetic cardiac valves/prosthetic material used for cardiac valve repair.
    - Transcatheter implanted prosthetic devices
    - Annuloplasty, rings, or clips
    - Left ventricular assist devices or implantable 'heart'/implanted loop recorder & monitoring device.
- *CONGENITAL* heart disease (CHD)

Amber D. Riley, MS, RDH, FAAFS, FIACME

ARiley@DeCoEducation.com

- **Unrepaired** cyanotic congenital heart disease, including palliative shunts and conduits.
- Any completely repaired congenital heart defect with prosthetic material or device within six (6) months after the procedure.
- Repaired CHD with residual defect/s at or adjacent to the site of the prosthetic material.
- Surgical or transcatheter pulmonary artery valve or conduit placement.

DO NOT PREMED FOR

- Mitral Valve Prolapse with or without regurgitation.
- Any joint replacement at any time.
- Coronary Artery Bypass Graft/Angioplasty.
- Cardiac Artery Stents *beyond 6 months of placement.*
- Defibrillators/Pacemakers/Watchman® devices.

PREMEDICATION STANDARDS 30-60 minutes prior to procedure, if patient forgets, safest window is up to two hours after the treatment has been provided to take prophylaxis as prescribed. (References in resource appendix).

- ORAL **2G AMOXICILLIN** for adults and 50mg/kg for children
    - If allergic to penicillin/ampicillin drug class:
        - 2g or 50mg/kg for children of cephalexin,
        - azithromycin or clarithromycin 500mg adults or 15mg/kg for children,
        - or doxycycline 100mg for adults or 2.2mg/kg for children under 45kg and 100mg for children weighing over 45kg.

HEMATOLOGIC ALTERATION **(**PT'S TAKING ANTICOAGULANTS)

Prescribed for: Atrial Fibrillation, Coronary artery disease, deep vein thrombosis — can lead to pulmonary embolism, Ischemic stroke, myocardial infarction / heart attack, pulmonary embolism, prevention of restenosis around vascular stents.

Monitoring efficacy of the anticoagulant drug therapy: **Coumadin/warfarin**

Prothrombin Time Test

ARiley@DeCoEducation.com

Results can be presented in two ways.

In Seconds:

- The average time range for blood to clot is about ***10 to 14 seconds***. A number higher than that range means it takes blood longer than usual to clot. A number lower than that range means blood clots more quickly than normal.

As INR: International Normalized Ratio

- This ratio — which allows for easier comparisons of test results from different laboratories — is used if a patient is taking blood-thinning medications (Coumadin)
- In healthy people an INR of 1.1 or below is considered normal. ***An INR range of 2.0 to 3.0 is generally an effective therapeutic range for people taking Coumadin/warfarin for disorders such as atrial fibrillation or a blood clot in the leg or lung***. In certain situations, such as having a mechanical heart valve, you might need a slightly higher INR.

ANTICOAGULANT DRUGS: COUMADIN/WARFARIN* (oral)**,** HEPARIN (injection)**,** XARELTO (oral), PRADAXA (oral), ELIQUIS (ORAL)

**** DO NOT PRESCRIBE METRONIDAZOLE (FLAGYL) OR FLUCONAZOLE (DIFLUCAN) TO PATIENTS TAKING COUMADIN. THESE DRUGS INHIBIT THE CYTOCHROME CYP2C9 NEED TO METABOLIZE COUMADIN. LIFE THREATENING DRUG INTERACTION****

****THC (the psychoactive cannabinoid in marijuana) inhibits Cytochrome CYP2CP needed to metabolize Coumadin/warfarin, thus INCREASING the blood levels. LIFE THREATENING INTERACTION****

HERBAL SUPPLEMENTS THAT POTENTIATE BLEEDING: Birch Bark, Cayenne, Cumin, Evening Primrose Oil, Garlic, Ginger, Ginkgo Biloba, Grapeseed Extract, THC and some evidence to CBD, Milk Thistle, Onion extract, St. John's Wort, Turmeric. Nutritional supplements: Omega-3 & 6 Fatty Acids, Vitamin C & E.

DIABETES

SEVENTH LEADING CAUSE OF DEATH IN THE UNITED STATES

- A group of metabolic diseases characterized by high blood glucose levels & the *inability to produce or use insulin.*
- A deficiency of the pancreatic HORMONE insulin. This results in a failure to adequately metabolize sugars and starch and thus they accumulate in the blood and urine.
- Type 1: Insulin Dependent Diabetes Mellitus (IDDM)

- Prediabetes (referring to pre-Type 2)
- Type 2: Non-Insulin Dependent Diabetes Mellitus (NIDDM)
- Gestational Diabetes (2-5% of all pregnancies)

TYPE 1: most often early-life onset, referred to as "Juvenile Onset Diabetes"

- Beta cell destruction in pancreas (the insulin producing cells) usually leads to absolute insulin deficiency.
  - Can be immune-mediated: presence of islet cell or insulin antibodies that lead to islet cell destruction
  - Idiopathic: no evidence of auto-immunity

TYPE 2: Most often adult-onset, "Adult Onset Diabetes"

- In healthy people, the liver produces glucose as the body needs during fasting to maintain normal levels of cell energy production, not to forget fat is absolutely an available energy source too, when we are not eating and we do not need insulin to burn fat for energy. When food is eaten, the pancreas releases the hormone insulin which is responsible for glucose absorption. When insulin is released, the liver turns down or turns OFF its glucose production.
- *With Type 2 Diabetes though, the liver fails to "sense" the insulin, and will continue to make glucose. THIS IS INSULIN RESISTANCE.*

INFLAMMATION, NO MATTER FROM WHAT ORIGN, CAUSES THE SAME SYSTEMIC PROCESS OF RESISTANCE TO INSULIN. THIS RESISTENCE LEADS TO TYPE 2 DIABETES, IT IS THE HALLMARK OF TYPE 2 DIABETES.

What is an A1C test?
(HbA1c)

- The A1C test is a blood test that provides information about a person's average levels of blood glucose, ***over the past 3 months***.
- A1C stands for "*Adult Type Hemoglobin **A**"* and '***1c***' is the component of hemoglobin to which glucose binds itself.
- The A1C test is the primary test used in North America for diabetes management and diabetes research.
- Does not require fasting, and can be drawn at any time of the day.

What information do A1C test results provide?

The A1C test is based on the *attachment of glucose to hemoglobin*. In the body, red blood cells are constantly forming and dying, but typically they live for about 3 months. Thus, the A1C test reflects the

ARiley@DeCoEducation.com

average of a person's blood glucose levels over the past 3 months. The A1C test *result is reported as a percentage*. The higher the percentage, the higher a person's blood glucose levels have been.

DENTAL TREATMENT MANAGEMENT OF DIABETIC PATIENTS

- CONTROLLED PATIENTS WITH TYPE 1 OR 2 require little to no special attention unless they develop a significant oral or dental infection that is accompanied by swelling or fever.
- Intravenous sedation that requires fasting prior to the appointment: protocol is HALF the usual insulin dose and then supplementing with IV glucose during the procedure. If patient is well controlled general anesthesia is not contraindicated, however management with local anesthetics is FAR preferable, especially in out-patient settings. Consult with the patient's primary care physician or endocrinologist with your treatment plan including all forms of anesthesia and any medication you intend to prescribe well before the day of service.
- For MOST diabetic patients epinephrine is well tolerated.
- BUT, be aware that epinephrine has a pharmacologic effect that is OPPOSITE that of insulin, so be aware that blood glucose could RISE with its use, but having a diabetic patient "running sweet" is a safer direction than a diabetic patient experiencing a dramatic drop in glucose during your treatment.
- For brittle (high insulin doses), under controlled, and patients with hypertension, recent MI or arrhythmia (less than 6 months), be cautious with high delivery of epinephrine containing anesthetics.
- Post-operative infection is *greatest ongoing risk* in diabetic patients.

HYPOTHYROIDISM, HYPERTHYROIDISM & HASHIMOTO'S DISEASE

Hashimoto's disease is a condition in which the immune system attacks the thyroid gland.

The resulting inflammation from Hashimoto's disease, also known as chronic lymphocytic thyroiditis, often leads to an underactive thyroid gland (hypothyroidism).

Hashimoto's disease is the most common cause of hypothyroidism in the United States. **It primarily affects middle-aged women but also can occur in men and women of any age and in children.**

HYPOthyroidism, when known, a patient normally is managed with a medication regimen and there are no concerns for dental treatment.

PALPATE NECK AND THYROID AREAS OF THESE PATIENTS FOR IRREGULAR LUMPS AND NODULES. USE THYROID COLLAR FOR RADIOGRAPHY, ALWAYS.

- HYPERthyroidism, when uncontrolled may have a hypersensitive reaction to stress and the effects of adrenergic effects of drugs. Therefore, using vasoconstrictors *could be* contraindicated.

- HYPERthyroidism: Patients maybe intolerant to heat, easily upset emotionally, may exhibit tremors.
- Untreated or unmanaged HYPERthyroidism patients may present with exophthalmos: (Bulging eyes).

NEUROLOGIC DISORDERS

STROKE: 200,000 a year

- ISCHEMIC 85% of strokes caused by a blood clot
    - Transient ischemic attack (TIA) "mini-stroke" caused by a temporary clot that is quickly cleared. Usually no longer than 5 minutes.

- HEMORRHAGIC
    - *Intracerebral hemorrhage* – most common of HS, artery in brain bursts, flooding surrounding tissue with blood.
    - *Subarachnoid hemorrhage*-bleeding between the arachnoid membrane and the pia mater covering the brain.

EPILEPSY, SEIZURES & CONVULSIONS

- Ask how often they occur? When was last seizure, what kind of seizure? Triggers such as bright light and odors?
- If a patient does have a seizure in the chair or office: 2+ minutes call 911. Monitor vitals for 30 mins, record them, contact patient's physician and send them home with an escort.

BEHAVIORAL DISORDERS/PSYCHIATRIC TREATMENT

- Knowing this history is helpful to be prepared for unusual behavior during patient treatment. KNOW ALL MEDICATION BEFORE DELIVERING ANESTHESIA OR WRITING Rx.
- The drug LITHIUM is prescribed primarily for Bipolar Disorder to control episodes of mania. It is also prescribed for depression, schizophrenia and eating disorders.

DO NOT PRESCRIBE OR RECOMMEND NSAIDs TO PATIENTS TAKING LITHIUM. NSAIDs inhibit the renal excretion of lithium and will cause plasma levels to increase rapidly to toxic levels. LIFE THREATENING DRUG INTERACTION! Very low therapeutic index! (The line between the effective/therapeutic dose and a toxic one is thin).

Vasoconstrictors are contraindicated in patients taking SNRIs (serotonin-norepinephrine reuptake inhibitors) or TCAs (tricyclic antidepressants) for depression and other mood disorders. These drug classes inhibit the reuptake of norepinephrine, using vasoconstrictors will increase and prolong symptoms of tachycardia, increased blood pressure, anxiety and agitation.

DEMENTIA/ALZHEIMER'S

- Side effect of many drugs used to treat these conditions cause xerostomia.
- Short appointments with non-complex procedures if patient is anxious, hostile and uncooperative.
- Any sedation used with physician consult prior to date of service.
- **LEGAL CONSENT-** Is patient capable of informed consent? If questionable, obtain consent from spouse, next-of-kin, guardian.

LIVER DISEASE

HEPATITIS **(which one?)**

- Viral hepatitis is a concern in dentistry because a patient may be asymptomatic carriers of the disease and can transmit it unknowingly to personnel or other patients
- HEPATITIS B,C & D have carrier stages. Lab tests can identify these patients.
- Chronic Hepatitis caused by B or C may lead to cirrhosis.

CIRRHOSIS

Chronic hepatitis, alcohol-related liver disease most common.

Non-alcoholic fatty liver disease is rising due to increasing rates of obesity.

Why important? Impairment of liver function may result in prolonged bleeding and less efficient metabolism of drugs including local anesthetics and analgesics.

ALLERGY or ADVERSE REACTION

ALLERGY: Itching, Urticaria (Hives), Rash, Swelling, Wheezing, Angioedema (Rapid Subcutaneous Swelling), Runny Nose, Tearing Eyes

ADVERSE REACTION: Nausea, Vomiting, Heart Palpitations, Fainting

ARiley@DeCoEducation.com

ASTHMA

What type? When was your last attack? What Drugs? What Triggers? Do you have your inhalers with you now?

HPV *Human Papillomavirus*

Over 150 types of HPV have been identified. Some have been found to cause neoplasia and are therefore categorized as "high-risk" types. Other types that cause benign lesions are referred to as "low-risk". HPV selectively infects skin and mucosa; infection occurs by direct contact.

- ***At least 40 types of HPV have been identified in the oral mucosa.*** *Of both the high and low risk types, the overall prevalence of HPV in the oral cavity is about 7%.*
- *HPV is known to cause carcinoma of the vaginal cervix. HPV has been identified and associated with causing SCC that forms in the oropharyngeal region: back of throat, tonsils.*
- *If an HPV+ tumor is present, THC (marijuana) in the blood activates the p38 MAPK pathway, which controls programmed cell death (apoptosis). When activated, cell death does NOT occur and allows the cancer cells to grow uncontrollably.*
- ***Important to note: HPV+ squamous cancers have a significantly higher 5+ year survivability than HPV- cancers.***
- *HPV must infect the basal cells of the epithelium. Usually this requires a break in the surface epithelium.*
    - *Verruca vulgaris (common wart)*
    - *Condyloma acuminatum (venereal wart)*
    - *Multifocal epithelial hyperplasia (Heck disease)*
    - ***VERY ubiquitous, the "common cold" of STD's***

HHVs: *Human herpesviruses, Herpes Simplex: Type 1, Type 2.*

TREATMENTS (NOT CURES) for HSV1 (LABIAL COLD SORES)

- *Docosanol 10% antiviral cream, brand name* ***Abreva****. Available OTC.*
- *Acyclovir, antiviral drug, brand name* ***Zovirax****, Rx only.*
- *Valaciclovir, antiviral drug, brand name* ***Valtrex****, Rx only.*
- *Acyclovir 5% & Hydrocortisone 1% creme, brand name* ***Xerese****, Rx only.*

- *Famciclovir, antiviral drug, brand name **Famvir**, Rx only.*

MARIJUANA

- *Most commonly used illicit* drug in the world.*
    - *Tetrahydrocannabinol (THC) is the major psychoactive ingredient in marijuana*
    - *When SMOKED/VAPED, peak effects occur within 20-30 minutes.*
    - *When EATEN, peak effects occur within 2-3 hours.*

Patients using Marijuana

- *Using caution with other methods of intake is prudent. REDUCE UNNECESSARY RISK. The acute phase of cannabis intoxication when smoked peaks at around 30 minutes after intake and lasts 2-4 hours.*
- *Irritated airways, spasms, narrowing, sore throat, cough, increased phlegm production.*
- *Peripheral dilation and tachycardia associated with acute marijuana toxicity after anesthetic is given.*

PREGNANCY

There are some physiology considerations to be made.

- *Fatigue*
- *Tendency toward syncope*
- *Tendency toward postural hypotension*
- ***SECOND TRIMESTER BEST TIME FOR DENTAL TX, but pregnant patients can and SHOULD receive all preventive, interventive and emergency dental treatment regardless of trimester. Do not "orphan" a patient for necessary care simply due to pregnancy. Allowing infection to progress, or treating only with pharmacology through delivery is not supported by literature and is therefore legally negligent.***

Supine Hypotensive Syndrome

- *Occurs in LATE pregnancy. Patient when in a supine position experiences a rapid drop in blood pressure, bradycardia, sweating, nausea, weakness and air hunger.*
- *This phenomenon occurs when venous return to the heart is impaired resulting from compression of the inferior vena cava by the gravid uterus.*
- Ask patient to roll to her left side, this position will lift the uterus off pressure should rapidly return to normal.

TREATMENT MANAGEMENT CONSIDERATIONS FOR PREGNANT PATIENTS

- Analgesic of choice is Acetaminophen (Tylenol), however ***limited, short-term dosing with Tylenol + Opioid compounds*** to manage dental pain during pregnancy is supported in literature as safe with close observation and physician OB-GYN consult. Opioids do cross the placenta; stress here is limited and short-term dosing only when Tylenol is not sufficient to manage short-term dental pain. https://www.cdc.gov/pregnancy/opioids/basics.html .
- Local anesthetics with or without vasoconstrictors are safe (they do cross the placenta, but subtoxic threshold doses have not been shown to cause fetal abnormalities).
- Antibiotics: PCN/AMOX, Erythromycin, Cephalosporin, Metronidazole & clindamycin considered safe.
- Tetracycline & Doxycycline are contraindicated due to their hydroxyapatite bonding causing tooth discoloration, hypoplastic enamel, inhibition of bone growth and other skeletal abnormalities.

MUSCULOSKELETAL DISEASE

ARTHRITIS

- OSTEOARTHRITIS
- RHEUMATOID
  - Know patient's drugs (NSAIDs, Steroids, Immunosuppressive)
  - Bleeding and infection response considerations.
  - Chair positions

LUPUS ERYTHEMATOSUS: Discoid or Systemic

- Discoid: predominately affects the skin, has very few systemic manifestations and is considered relatively "benign".
- Systemic: affects multiple organ systems, involves the skin and is the much more serious form of lupus.
- Females affected 5 times higher than males, auto-immune, more common and more severe among Black and Hispanics, than of Whites.
- Widespread symptoms, multiple organs and tissues.
- Arthritis VERY common (3 out of 4 cases).
- Butterfly rash across face in about 1/3 of patients with SLE.

Renal abnormalities occur in SLE, consider drug and anesthetic metabolism. NO CURE, treatment is palliative: Reduce sun exposure, administration of NSAIDS and glucocorticoids.

- Oral lesions of lips and oral mucosa are reported in about 25% of patients with SLE.
- Lesions are non-specific, may be erythematous with white spots, or radiating peripheral lines, can present as painful ulcerations.
- Lesions often resemble Lichen Planus.
- Additional oral manifestations include xerostomia, dysgeusia (strange or bad taste in mouth) and glossodynia (burning mouth).

FUNCTIONAL CAPACITY

Functional Capacity=Normal Physical Activity

Metabolic Equivalents of Tasks (METs): 1 MET= 3.5mL of O2 per kg of weight at rest

Risk of a serious perioperative cardiovascular event (MI, heart failure) is increased in patients that cannot meet a 4-MET demand during daily activity. *

"Can you walk up a flight of stairs without shortness of breath, fatigue or chest pains?"

Yes. That is a **4 METs** task.

NO? *This patient MAY be at increased risk for medical complications during treatment especially if this limitation is combined with other risk factors.*

**ACC/AHA 2007 Guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery*

A, B, C, D, E & F

A

Antibiotics: Will the patient need them either prophylactically or therapeutically? Is the patient already on an antibiotic?

Analgesics: Is the patient taking ASA or NSAIDs that may increase bleeding? Will the patient require analgesics after the procedure(s)?

Anesthesia: Any potential problems or concerns associated with the use of local anesthetics? Vasoconstrictors?

Allergies: Does the patient have any?

Anxiety: Will the patient require a sedative or anxiolytic?

B

Bleeding: Is abnormal hemostasis a possibility?

Breathing: Any difficulties? Abnormally FAST or SLOW breathing?

Blood Pressure: Is it well controlled? Is it likely it will increase or decrease during dental treatment?

Bleeding: Is abnormal hemostasis a possibility?

Breathing: Any difficulties? Abnormally FAST or SLOW breathing?

Blood Pressure: Is it well controlled? Is it likely it will increase or decrease during dental treatment?

C

Chair Position: Can the patient tolerate a supine chair position? Will the patient have difficulty with rapid position changes?

D

Drugs: Drug interactions, adverse effects associated with the drugs the procedure indicates or drugs the dentist may prescribe?

Devices: Any prosthetic or therapeutic devices that require consideration in patient management? i.e. pacemakers, defibrillators, spinal cord stimulators?

E & F

Equipment: Any issues with necessary dental equipment? Radiation? Laser or electrocautery, N2O2/O2, ultrasonics. Are devices such as a blood pressure monitor or pulse oximeter indicated and available?

Emergencies: Are there any medical urgencies or emergencies that can be anticipated? Can they be prevented by modifying care? Is the patient's physician contact information available? Is a pre-treatment consultation prudent?

Follow-up: What, if any, follow-up care is indicated? Contact at home? Office visit?

RISK ASSESSMENT

American Society of Anesthesiologists

Physical Classification System ASA I-V

Developed to classify patients according to preoperative risk with general anesthetic.

Has been adapted for outpatient medical and dental use regardless of the type of anesthesia used.

As the class increases, so does risk

- **ASA I:** Normal healthy patient
- **ASA II**: Mild systemic disease, no significant impact on daily activity
- **ASA III**: Significant or severe systemic disease that limits daily activity

---

- ASA IV: Severe systemic disease that is a constant threat to life or requires intensive therapy
- ASA V: Moribund, not expected to survive the next 24 hours.

LOCAL (INJECTED) ANESTHETIC

MAX LOCAL ANES AMOUNTS per *MANUFACTURER*
(1.7ml cartridges) REMEMBER DRUG DOSES ARE IN MULTIPLES OF 17 per 1%

- LIDOCAINE (Xylocaine) 2%, **34mg x 1cp.**
    - 500mg MAX (3mg per pound MAX)
- MEPIVACAINE (Carbocaine) 3%, **51mg x 1cp.**
    - 400mg MAX (3mg per pound MAX)
- ARTICAINE (Septocaine) 4% , **68mg x 1cp.**
    - 500mg MAX (3mg per pound MAX)
- PRILOCAINE (Citanest) 4%, **68mg x 1cp.**
    - 400mg MAX (2.7mg per pound MAX)
- BUPIVACAINE (Marcaine) 0.5%, **8.5mg x 1cp.**
    - 90mg MAX (0.9mg per pound MAX)
- CETACAINE topical/subgingival Max 200mg (0.4ml) **1 syringe**
- ORAQIX subgingival compound, **85mg x 1 cp**, Max 425mg, **5 cartridges.**

2017 FDA MAX LOCAL ANES AMOUNTS

The biggest change (and arguably challenge) was the elimination of an *absolute* maximum amount for Articaine 4%, and calculating only by weight, still at about 3mg per pound and Prilocaine by FDA standard may be administered up to 4mg per pound, increasing the absolute max dose to 600mg.

2% Lidocaine 500mg (same and 300mg for kids), 3% plain Mepivacaine 400mg (same),

Bupivacaine 0.5% 90mg (same).

When using the lower values from manufacturers, the limiting drug is the local anesthetic drug, the pharmaceutical. ***When using the FDA values, the limiting drug is epinephrine.***

0.2mg of epinephrine is the maximum dose per appt for healthy patients.

1:50K is .02mg/ml and 0.034mg/ml of epi per 1.7ml cartridge. 5.8 cart. limit

1:100k is .01mg/ml .017mg of epi per 1.7ml cartridge 11.7 cart. limit

1:200k is .005mg/ml and .0085mg of epi per 1.7ml cartridge 23.5 cart. limit??! ***OMG don't.***

Regardless of the calculation standard you choose, the same best practice for both is "THE LOWEST DOSAGE NEEDED TO PROVIDE EFFECTIVE ANESTHESIA SHOULD BE ADMINISTERED".

Mixing local anesthetic drugs

- Systemic effects by combinations of local anesthetics follow the principles of summation.
- In addition to concerns over central nervous system and cardiovascular system toxicity with increasing doses, articaine, benzocaine, prilocaine, tetracaine and lidocaine have been identified as increasing the risk of methemoglobinemia. Whether acquired or congenital, this condition's risk rises with increasing doses. Restricting doses to those that provide adequate anesthesia for appropriate treatment seems prudent; as such, sound clinical judgment should guide decisions in this area.
- Adhere to dosage limits you are choosing (MDA or FDA) and regard all drugs as additive. *DO NOT MAX ON FIRST DRUG DELIVERED.*
- Reduce MAX dose of SECOND drug by 50%.
- Reduce MAX dose of THIRD drug by 75% (3 drugs not recommended-reschedule the patient if you get into this territory!)

Non-narcotic pain management recommendation(s).

Formulated with the understanding that dental pain is ***"acute and episodic, requiring short-term prescribing".*** *With that understanding…*

- *Ibuprofen, Acetaminophen OR a combination of the two will suffice for dental pain in most occurrences.*
- *No patient should go home in pain, or recover in pain.*
- *Narcotics are NOT to be prescribed as first line management.*

ADA consumer directions

(USA) 1000mg APAP + 400mg IBP q8 hours

For prescribers there is very sufficient research supporting modestly higher IBP amounts with or without APAP use providing effective analgesia for short term use in healthy patients.

Reminder:

Max dose of IBP is 3200mg 24 hours

Max dose of APAP is 4000mg per 24 hours

(pharmacists recommend 3000mg APAP or less due to hepatotoxicity)

IBP: Ibuprofen/Advil. APAP: Acetaminophen/Tylenol

1. Prescribe opioids cautiously to those with ANY substance abuse history. Be aware that use can trigger relapse behavior. These are susceptible patients. HAVE A THOROUGH MEDICAL HISTORY, including history on past, and present drug use.
2. Use PDMP (prescription drug monitoring program) prior to prescribing opioids. Ask your patient if they have medications (namely opioids) from other prescribers.
3. Do not offer refills, be cautious and ASK DIRECT QUESTIONS if replacing prescriptions that were "lost, destroyed, stolen".
4. Prescribing over the phone, or via tele-dentistry is discouraged and, in some states, illegal (exemption during declared state of emergency Jan 31, 2020 for COVID-19 in some states).
5. Prescribing *non-combination* opioids is not recommended and do NOT prescribe any opioids if the patient is already taking other sedative mediations*, i.e., benzodiazepines*. HAVE A THOROUGH MEDICAL HISTORY.
6. Prescribe in small dosages, no refills, do not exceed three days or 10 tablets.
7. Educate patients to secure the medication against diversion and how or where to properly dispose unused medication. Even if this means just returning the unused tablets to your office, and you will provide secure disposal for them.
8. Do not prescribe or refill opioids more than 7 days after a procedure without an in-office assessment. Consult with patient's primary care physician.
9. Third refills are strongly discouraged, even in unusual clinical circumstances *i.e., osteonecrosis*. Consult and refer patient to primary care and chronic pain physicians. Prolonged pain management should be under the supervision and coordination of the patient's primary care physician.

Prevention of Viridans Group Streptococcal Infective Endocarditis. A Scientific Statement From the American Heart Association
https://www.ahajournals.org/doi/pdf/10.1161/CIR.0000000000000969

https://dimensionsofdentalhygiene.com/article/closer-look-ahas-antibiotic-prophylaxis-guidelines/

Bacterial Signatures in Thrombus Aspirates of Patients With Myocardial Infarction

Pessi, T., Karhunen, V.,et al. *Circulation*. March 2013, Vol. 127, pp 1219-1228.

Circulation is available at http://circ.ahajournals.org use this link for free download:
https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.112.001254

Cannabinoids Promote Progression of HPV-Positive Head and Neck Squamous Cell Carcinoma via p38 MAPK Activation

Chao Liu, Sayed H. Sadat, et al. Clin Cancer Res June 1 2020 (26) (11) 2693-2703; **DOI:** 10.1158/1078-0432.CCR-18-3301

https://clincancerres.aacrjournals.org/content/26/11/2693 free download

Management of patients with prosthetic joints undergoing dental procedures

Clinical Recommendation:

In general, for patients with prosthetic joint implants, prophylactic antibiotics are *not* recommended prior to dental procedures to prevent prosthetic joint infection.

For patients with a history of complications associated with their joint replacement surgery who are undergoing dental procedures that include gingival manipulation or mucosal incision, prophylactic antibiotics should only be considered after consultation with the patient and orthopedic surgeon.* To assess a patient's medical status, a complete health history is always recommended when making final decisions regarding the need for antibiotic prophylaxis.

Clinical Reasoning for the Recommendation:

- There is evidence that dental procedures are not associated with prosthetic joint implant infections.
- There is evidence that antibiotics provided before oral care do not prevent prosthetic joint implant infections.
- There are potential harms of antibiotics including risk for anaphylaxis, antibiotic resistance, and opportunistic infections like *Clostridium difficile*.
- The benefits of antibiotic prophylaxis may not exceed the harms for most patients.
- The individual patient's circumstances and preferences should be considered when deciding whether to prescribe prophylactic antibiotics prior to dental procedures.

ADA Center for Evidence-Based Dentistry™

* In cases where antibiotics are deemed necessary, it is most appropriate that the orthopedic surgeon recommend the appropriate antibiotic regimen and when reasonable write the prescription.

Sollecito T, Abt E, Lockhart P, et al. The use of prophylactic antibiotics prior to dental procedures in patients with prosthetic joints: Evidence-based clinical practice guideline for dental practitioners — a report of the American Dental Association Council on Scientific Affairs. JADA. 2015;146(1):11-16.

Dear Patient,

We have wonderful news for you! This letter explains why you are no longer required to take an antibiotic prior to your dental appointments.

In January of 2015, The American Dental Association, in cooperation with the American Association of Orthopedic Surgeons published new guidelines that have eliminated the requirement that a patient take antibiotics prior to dental treatment for after having a prosthetic joint or orthopedic implant placed. In 2017 and again in 2021 the American Heart Association continues to uphold this position.

We will still pre-med you if you have any of the following conditions:

- A replacement for one of your heart's valves.
- You have had an infection of, or around, your heart ever in the past (known as Infective Endocarditis)
- You were born with a heart defect and it has been surgically repaired less than 6 months ago.
- You were born with a heart defect that has been repaired, but that repair is failing or leaking and it will require another surgical repair in the future.
- You have had a heart transplant and any of your heart valves are failing.

The guidelines are as follows regarding prosthetic joint replacement: "…for patients with prosthetic joint implants, prophylactic antibiotics are not recommended prior to dental procedures to prevent prosthetic joint infection."

We appreciate your trust in us, and part of our commitment to you, your oral AND physical health is by staying up to date on current research and evidence-based guidelines from which we base our care for you. If you, or by advice of your physician, still wish to take antibiotics prior to your dental appointments, you will need to have that prescription provided to you from them for future dental appointments.

Here are some more resources for you to read about this great update! www.ADA.org, www.AMA-assn.org, www.HEART.org.

Respectfully,