Disease	*Etiology*	*General Info*	*Dental Management*
Hypertension	Idiopathic/Essential-90% Secondary-10% (kidney dx, drug induced, thyroid disorder)	Normal - <120/80; Prehypertension – 120-139 / 80-89 Stage I – 140-159 / 90-99; Stage II - ≥160 / ≥100 Adrenergic Receptors: α1 & α2 – peripheral arterioles = vasoconstriction β1 – heart = ↑cardiac output and heart rate β2 – skeletal muscle arterioles = vasodilation α1 α2 β1 β2 Epi +++ +++ +++ +++ Norepi ++ ++ ++ + Levonor + ++ ++ +	-Defer elective tx if ≥180/110 -Caution with epi with non-selective β-blockers (Propranolol/Inderal and Nadolol/Corgard) -Norepi & Levonordephrin potentially ↑ BP – less effect with epi (limit to 2 carp. 1:100,000) -Control of orthostatic hypotension -Monitor BP before and during appt(stage II)
Ischemic Heart Disease	Coronary atherosclerosis	Signs & Symptoms: Very few unless MI – -chest pain -shortness of breath -sweating -easy fatigue	<u>Recent MI (w/in 1 month) or Unstable Angina:</u> -Avoid elective tx -If tx is necessary; MD consult -Prophylactic ntro -Consider N2O2; sedation; pulse ox; monitor BP -Caution with epi <u>Past MI or Stable Angina:</u> -Short morning appt. -Monitor vitals -Nitro ready -Stress reduction (good local, sedation) -Limit epi
Congestive Heart Failure	Right or left-sided heart failure due to: Coronary heart disease, HTN, cardiomyopathy, valvular heart disease, myocarditis, IE, Pulmonary embolism, endocrine disease	Right-sided HF effects: increased pressure and fluid retention, venous congestion, and peripheral edema Left-sided HF effects: Increased pressure and fluid retention, pulmonary hypertension, and edema Drug management may include: diuretics, ACE inhibitors, beta-blockers, digitalis, nitrates	-For pts taking Digitalis avoid epi (max 0.036 epi and consult with MD) -Short, stress free appts. -Semisupine or upright chair position -Consider orthostatic hypotension -Avoind NSAIDs Watch for digitalis toxicity (tachycardia, hypersalivation, visual disturbances) -Consider N2O2 sedation
Infective Endocarditis	Fungal or Bactial (90% due to Strep or Staph)	40% mortality rate Signs and Symptorms: Fever, heart murmurs, + blood culture, petechiae (80% within 2 wks)	Premed only for high risk: -prosthetic heart valve -previous IE -congenital heart disease (unrepaired, sx w/in

		Antibiotic regimen: Amox – 2g; Cephalexin – 2g; Clindo – 600mg Children – Amox/Ceph 50mg/kg; Clindo – 20mg/kg -Amox good for 6h – additional 2g if longer -If on antibiotics, then switch to different class or wait 10 days	6mo, residual defects) -heart transplant with valvulopathy <20% of endo procedures cause bacteremia
Stroke	Ischemia or hemorrhage to the brain – cerebrovascular disease	Signs: paralysis, speech impaired, anxiety, dizziness TIA – transient ischemic attack – mini stroke due to temporary disturbance of blood supply	-Delay care for 6mo. -No elective care for TIAs -Short AM appts. -Stress reduction – N2O2 -Monitor vitals -Limit epi
Asthma	Etiology not well understood Types: -Allergic (extrinsic) – 35% seasonal allergens -Nonallergic (intrinsic) -Drug induced -Exercise induced -Infectious	Typical symptoms: dyspnea (breathlessness); wheezing, cough, chest tighness and flushing Management of attack in office: -Administer fast acting bronchodilator (epinephrine – Primatene Mist) – repeat q 5 min until EMS arive -If needed, subcutaneous 0.3-0.5 mL of epi 1:1000 -Activate EMS	Determine character of Asthma: -type (allergic or nonallergic; precipitating factors; age of onset; level of control (recent emergency care); meds and management -consult with MD if severe and persisitant -Avoid precipitating factors -Reduce risk – pt brings inhaler to appt and prophylax if moderate to severe asthma -Drugs to avoid: ASA; NSAIDs; narcs and barbiturates; E-mycin if pt taking theophylline -Recognized signs & symptoms – difficultly breathing, tachypnea -Pt may be sensitive to sulfite preservative in LA – choose LA w/out epi
COPD	Cigarette smoking – chronic airflow limitation that is not fully reversible	Two most common disease of COPD: Chronic Bronchitis – excessive tracheobronchial mucous production (blue bloaters – cyanotic with chronic cough) Emphysema – distention of the air spaces distal to the terminal bronchioles due to destruction of alveolar walls/septa (pink puffers – barrel chested with exertional dyspnea)	-Upright chair position -Normal use of LA -No N2O2 if severe case -Pulse ox to monitor - Supplemental O2 if below 95%
Sickle Cell Anemia	Inherited – distortion of the RBC into a sickle shape results from deoxygenation, decreased blood pH or when the pt becomes dehydrated	**Kaya 2004 IEJ** – SCA is a genetic and systemic disease which may cause pulp necrosis without necessarily having an identifiable etiology. SCA causes radiographically observable differences in jaw structure, especially in the mandible. The clinical problem is directly associated with the defective RBC. The patients are prone to infection because the macrophages are involved in the phagocytosis of the RBC and not available for destroying bacteria. The distorted cells may also occlude the Microvasculature and impede blood flow to an area. This mechanism is suspected by **Ingle & Taintor 1985** to be the cause of pulpal necrosis and repeated episodes of pain as described by **Andrews 1983** in sickle	-Manage infections aggressively -Use prophylactic antibiotics for major surgical procedures -Caution with vasoconstrictors -Avoid ASA – codeine and acetaminophen in moderate dosage -Use N2O2 with >50% O2 -Short stress free appts.

		cell patients. Radiographic observation- "stepladder" appearance of the widening trabeculation due to increased marrow space (increase hematopoiesis). This increased marrow space is accompanied by thinning cortical plate and irregularities in density.	
Hyperparathyroidism	Primary- caused by adenoma (80%), carcinoma of parathyroid, or PTH release from ectopic malignant tumor. Tx= surgical removal of parathyroid. Secondary- caused by renal disease, vit d deficiency, Ca malabsorption states. Tx= renal dialysis or transplant.	Classic signs = stones, bones, groans • Ectopic calcifications- kidney stones • Bone lesions- lytic lesions (brown tumors, a giant cell granuloma) ground glass appearance with decreased trabeculation • Vague abdominal pain, fatigue, weakness • Emotional liability, psychoses	Lytic lesions may resemble PA pathology
Diabetes	Type I – immune mediated beta-cell destruction or idiopathic Type II – insulin resistance with relative insulin deficiency Gestational – abnormal glucose tolerance during pregnancy	Cardinal symptoms: Polydispia, polyuria, polyphagia, weight loss and loss of strength HbA1c reflects glucose level in the blood over the 6-12wk period preceeding the test. Normal pts are between 6-8%. Well controlled diabetics will stay below 7%. Normal premeal plasma glucose levels are 90-130 mg/dL Type I tx includes insulin therapy: Rapid acting – lispro, aspart Short acting – regular Intermediate acting – NPH, Lente Long acting – Ultralente, glargine Type II tx includes oral hypoglycemics: Glipizide, Glyburide, Glimepiride – sulfonylureas Metfromin, Glucovance – biguanides Acubose – gamma-glucosidase inhibitors	**Bender IB, Bender AB. Diabetes mellitus and the dental pulp. J Endod 2003.** Diabetics are particularly prone to bacterial or opportunistic infections. This vulnerability is caused by a generalized circulatory disorder whereby the blood vessels are damaged by the accumulation of atheromatous deposits in the tissues of the blood vessels lumen. In addition, blood vessels, particularly capillaries, develop a thickened basement membrane, which impairs a leukotactic response, and there is a decrease in the polymorphonuclear leucocyte microbicidal ability and failure to deliver the humoral and cellular components of the immune system. Because the dental pulp has limited or no collateral circulation, it is more prone to be at risk for infection. **Fouad AF, Burleson J. The effect of diabetes mellitus on endodontic treatment outcome:**

		Management includes: -Consider HbA1c levels -Schedule am appts – pt should eat normal meal before appt. -Have sugar available in case of insulin rxn -Tx of infections aggresively	**data from an electronic patient record. J Am Dent Assoc 2003.** A multivariate analysis showed that in cases with preoperative periradicular lesions, a history of diabetes was associated with a significantly reduced successful outcome. CONCLUSIONS: Patients with diabetes have increased periodontal disease in teeth involved endodontically and have a reduced likelihood of success of endodontic treatment in cases with preoperative periradicular lesions. CLINICAL IMPLICATIONS: Patients with diabetes who are treated endodontically should be assessed carefully and be treated with effective antimicrobial root canal regimens, particularly in cases with preoperative lesions.
Pseudomembranous Colitis	Overgrowth of *Clostridium difficile*	Overgrowth results from the loss of competitive anaerobic gut bacteria, most commonly through the use of broad-spectrum antibiotics, but it can also result from heavy metal intoxication, sepsis, and organ failure Signs and symptoms: loose and watery stools or bloody diarrhea, accompanied by abdominal cramps and fever	-Discontinue antimicrobial agent (in mild cases this may resolve) -Oral metronidazole (250mg qid for 10 days) or Vancomycin
Peptic Ulcer Disease	*Heliobacter pylori* & overuse of NSAIDs	Erosion of enamel may be present with GERD Acid –blocking drugs, such as cimetidine, decrease the metabolism of certain dentally prescribed drugs(i.e. diazepam, lidocaine)	-Avoid ASA & NSAIDs -Avoid corticosteroids -Examine oral cavity for signs of fungal infection -Stress free environment
Inflammatory Bowel Disease	Immune dysfunction in response to environ. factors in genetically susceptible persons	Ulcerative Colitis – inflammatory rxn of the large intestine with remissions and exacerbations; aphthous-like lesions affect up to 20% of pts. with UC Crohn's Disease – chronic, relapsing idiopathic disease that is characterized by segmental distribution of intestinal ulcers interrupted by normal appearing mucosa (any portion of the bowel may be involved); Atypical mucosal ulcerations and diffuse swelling of the lips and cheeks may occur	-Schedule appts. during remissions -Additional steroids may be needed for surgical procedures
Adrenal Insufficiency	-Addison's disease = primary adrenocortical insufficiency -Secondary	Considerations: -Inability to tolerate stress -Delayed healing -Susceptibility to infection	-No corticosteroid supplementation for pts taking corticosteroids for routine dental procedures -For minor oral surgical procedures administer

	insufficiency results from hypothalamic or pituitary disease or administration of corticosteroids	-Hypertension -bronzing of the skin; pigmentation of the lips/oral mucosa Consider steroid supplementation is corticosteroids were taken within the past 2 wks – consult with MD	25mg hydrocortisone prior to procedure (50-100mg hydrocortisone for major oral surg – approx. 4mg dexamethasone) – hospital setting -Monitor BP throughout procedure -Provide good pain control
Hyperthyroidism	Grave's disease – autioimmune disease	Other causes for excess of T4 and T3 in the bloodstread (throtoxicosis) include: ectopic thyroid tissue, mutinodular goiter, thyroid adenoma, subacute thyroiditis or pituitary disease Signs and symptoms include: nervousness, fatigure, rapid heartbeat and palpitations, heat intolerance, weight loss & exophthalmos	-Once under good medical management, no tx modifications are indicated -If thryrotoxicosis is not well controlled, then consult with MD; oral infections managed aggresively
Hypothyroidism	Hashimoto's disease is the most common cause of goitrous hypothyroidism - autoimmune	Tx with synthetic T3 or T4 (Synthroid) Pts with untx hypothyroidism are sensitive to narcotics, barbiturates and tranquilizers Stressful situations such as cold, operations, infections or trauma my precipitate a hypothyroid (myxedema) coma in untx pts.	-Once under good medical management, no tx modifications are indicated -If hypothyroid state is not well controlled, then consult with MD
HIV / AIDS	Human immunodeficiency virus – family of lentiviruses	-HIV can infect most human cell; however, the cells most commonly infected are these with CD4 receptors, including T-helper (CD4 cells) and macrophages -Tx with HAART (highly active antiretroviral therapy) -AIDs is considered with CD4 lymphocyte count <200 -Common oral findings when CD4 count <500: oral candidiasis, hairy leukoplakia, kaposi's sarcoma, necrotizing ulcerative perio	No dental modifications indicated for HIV infection with CD4 count >200 Pts in advanced stages of disease should receive emergency and preventive care only -Consider antibiotic prophylaxis due to immunosuppresion
Organ transplantation		Concerns of infection from drug induced immunosuppresion Pre-transplant eval & aggressive tx	MD consult – determine status of pt & discuss need for prophylactic antibiotics Following transplantation: -Immediate posttransplant period (6mo) – limit care to emergency needs -Stable graft period – tx as normal with frequent recalls -Chronic rejection period – emergency dental care
Cancer		Oral manifestations of radiation & chemotherapy: -Mucositis -Candidiasis -Xerstomia -Trismus -Cervical caris -Osteonecrosis	-Perform only emergency tx during chemo -Consult MD re antibiotic prophylaxis -If radiation tx >6000cGy, every effort to avoid osteonecrosis (endo tx only & no surgergy)

		-Bleeding tendency -Infection -Poor healing	
Pregnancy/Breast Feeding		Oral manifestations include: "pregnancy gingivitis", pyogenic granuloma, tooth mobility FDA pregnancy **class B** drugs: LA – Lidocaine with epi (Artic., Bupiv, & Mepi. all class C) Analgesics – Acetominophen Antibiotics – Pen, metronidazole & clindamycin	-Consult MD if concerns about pt status -Second trimester and most of third are best for elective tx -Avoid drugs harmful to fetus -In late third trimester, do not place pt in supine position for prolonged periods Lactation concern: -Administer drugs just after breastfeeding -Most drugs have little pharm significance to lactation
Bleeding Disorders	-Anticoagulation therapy -Congenital disorders	Oral manifestations include: excessive bleeding, hematomas, petechiae, ecchymoses *Thrombocytopenia*: decreased platelet count (concerns below 50,000/mm3 of blood – idiopathic or due to leukemia *Hemophilia A*: factor VIII deficiency *Hemophilia B or Christmas disease*: factor IX deficiency *Von Willebrand's disease*: defect of vWF; secondary factor VIII deficiency – inherited defect of platelet adhesion	-MD Consult -For anticoagulation therapy (coumadin), INR 3.5 or less for most surgical procedures (INR taken day of surgery) -Avoid ASA compounds & NSAIDs; use Tylenol with or without codeine for post-op pain control
Vitamin D resistant Rickets	X-linked dominant trait	-decreased reabsorpion of phosphate by the renal tubule (causing hypophosphatemia) -decreased absorption of calcium and phosphorous from the GI tract	**Bender IB, Naidorf IJ. Dental observations in vitamin D-resistant rickets with special reference to periapical lesions. J Endod 1985.** Pulp horn extension into the DEJ is pathognomonic for Vitamin D resistant rickets. Clinically- frontal bossing, bowing of legs, short enlarged wrists and ankles Dental- hypoplastic/hypo calcified enamel, draining sinus tract, gingival swelling, apical abscesses Radiograph- enlarged pulp chambers, wide root canals, and loss of lamina dura, rg band that surrounds region of DEJ and pulp horn.
Liver Disease	Viral Hepatitis or alcoholic liver disease	Hep A – transmission through fecal contamination of food or water; mild severity and self limiting Hep B – Transmitted through mucous, blood or sexual; greater morbidity & mortality; vaccine available Hep C – mainly transmitted by blood; iv drug users Chronic hepatitis may occur with Hep B,C,D; Hep A & E resolve	-MD consult to determine liver dysfunction -Minimize the use of drugs metabolized by the liver (LAs, Analgesics, Sedatives, Antibiotics) -Universal precautions

		with usually no complication Bleeding tendency and lichenoid eruptions may be an issue for Hepatitis pts.	
STDs	Viral and Bacterial	**Gonorrhea** – *Neisseria gonorrhoeae* is etiology; Many antibiotic resistant forms; discharge and pain upon urination; gonococcal stomatitis is uncommon (resembles lichen planus or herpes) **Syphilis** – *Treponema pallidum* (spirochete); produces skin and mucous membrane lesions in acute phase, and bone, visceral, cardio, and neurologic disease in chronic phase; oral or genetal chancre in primary syphilis; Congenital syphilis may demonstrate dental abnormalities (Hutchinson's incisors or mulberry molars) **Genital Herpes** – HSV types 1 & 2 (oral mainly type I & genital type 2); many infection asymptomatic; primary and recurrent types (remains latent in regional ganglion) – recurrent only on attached epithelium **HPV** – over 100 genotypes; HPV 16 & 18 have high malignant transformation rate; asymptomatic condyloma (oral or genital) **Infectious Mononucleosis** – cause by Epstein-Barr virus (EBV); fever, sore throat, tonsillar inlargement, lymphadenopathy, malaise, fatigue, liver and spleen enlargement; oral petechiae may be seen.	-If suspected disease, refer to MD -Oral lesions should be excised and submitted for biopsy -For oral herpes infection, postpone elective dental care until lesion is healing (scab phase) -Consider antivirals during prodromal stage of HSV -Delay routine dental tx for 4 wk with infectious mononucleosis
G-6 PD Deficiency	Inherited	More common in African-Americans and other ethnic groups (Mediterranean, Middle East & Asian) Blockage of the hexose monophosphate shunt pathway in individuals with G-6PD deficiency allows accumulation of harmful oxidants with RBCs leading to hemolytic anemia	Recognize infection is the event most commonly triggering hemolysis 40 drugs may induce including Aspirin and acetaminophen
Pernicious Anemia	Deficiency of intrinsic factor, a substance secreted by the stomach parietal cells that is necessary for absorption of vit B12 – likely autoimmune	Oral manifestations include: -Parasthesias of oral tissues (burning, tingling, numbness) -Delayed healing (severe cases), infection, bald red tongue, angular cheilosis -Petechial hemorrhages	No modifications – detection and medical tx
Epilepsy	Idopathic - >50% Other causes: hypoglycemia, drug withdrawl, infection	Classic Grand mal seizure – aura (visual disturbance), epileptic "cry", tonic phase (muscle rigidity,pulpal dilation and eyes rolling back & loss of consciousness) clonic activity (jerking movement of limbs, forcible jaw closing and head rocking), urinary incontinence	-Identify pt by hx: type of seizure, degree of control, precipitating factors -Seizure managed with a ligated mouth prop at the beginning of appt -Protect pt during a seizure (turn pt to side, supine chair position, passively restrain),

			manage airway, and discontinue tx afterward -Recongnize gingival overgrowth caused by phenytoin (Dilantin)
Methemoglobinemia	Congenital and Acquired - Methemoglobin is a form of hemoglobin that does not bind oxygen (associated with benzocaine, prilocaine and articaine)	Cyanosis-like state in the absence of cardiac or respiratory abnormalities. Administration of prilocaine to patients with congenital methemoglobinemia or other clinical syndromes in which the oxygen-carrying capacity of blood is reduced should be avoided because of the increased risk of producing clinically significant methemoglobinemia. The methemoglobin reductase enzyme system continually reduces the Fe+++ to the Fe++ at a rate of .5 g/dl per hour thus maintaining a level of less than 1% methemoglobin in the blood at any given time. As blood levels of methemoglobin increase, clinical signs and symptoms of cyanosis and respiratory distress may become noticeable.	**Pathways** -Spray benzocaine is more likely to induce -Refrain from excessive amounts LAs Management is not by administering O2, but by slow IV administration of 1% methylene blue or IV or IM ascorbic acid, which accelerates the metabolic pathways that produce ferrous atoms.
Malignant Hyperthermia	Inherited autosomal dominant disorder	Triggered by exposure to certain drugs used for general anesthesia (specifically all volatile anesthetics), nearly all gas anesthetics, and the neuromuscular blocking agent succinylcholine. In susceptible individuals, these drugs can induce a drastic and uncontrolled increase in skeletal muscle oxidative metabolism which overwhelms the body's capacity to supply oxygen, remove carbon dioxide, and regulate body temperature, eventually leading to circulatory collapse and death if not treated quickly.	Amide LA are not likely to trigger episodes
Paget's Disease – osteitis deformans	Unknown - chronic bone disorder that is due to irregular breakdown and formation of bone tissue	Elevated alkaline phospatase levels in blood Signs and symtpons: bone pain, headaches and hearing loss, increase in head size, bowing of limb or curvature of spine may occur in advanced cases	Bisphosphonate tx – consider B-ONJ
Bisphosphonate Associated ONJ	Suppressed bone turnover due to drug tx –Inhibits osteoclastic function and induces apoptosis -Drug may remain in the body for years	Use in tx of osteoporosis, Paget's disease and hypercalcemia of malignancy (Multiple myeloma & metastasis of breast, lung & prostate cancers) IV formulations are more likely to cause ONJ: etidronate(Didronel), pamidronate(Aredia) or zeldronic acid(Zometa)	-Provide routine dental care -Atraumatic dental procedures -High risk with sx tx (especially IV Bisphos) -Consider endo vs. TE -If infection, aggressive use of systemic antibiotics is indicated
Joint Replacement	Joint guidelines from ADA & AAOS	Antibiotic prophylaxis is recommended for high risk pts: -Immunocompromised/Immunosuppressed pts. (i.e. type I diabetes, RA, SLE) -First 2ys following joint replacement -Previous joint infections -Hemophilia	-MD consult if necessary -Antibiotic guidelines as with IE
Systemic Lupus	Autoimmune disease	Discoid Lupus only affects the skin; SLE is more serious	MD consult due to likely corticosteroid tx and

Erythematosis	(unknown etiology)	Signs and symptoms: Butterfly rash and polyarthritis	possible thrombocytopenia (abnormal bleeding) Oral lesions likely – resemble lichen planus or leukoplakia
Sjogrens Syndrome	Autoimmune complex (EBV may be involved)	Triad of clinical conditions: -keratoconjunctivits sicca -xerostomia -connective tissue disease (rheumatoid arthritis) Predominately affects women	Dental management of xerostomia, glossitis, mucositis, parotid gland hypertrophy, angular cheilosis, dysgeusia (taste dysfunction) and increased caries rate
Lyme Disease	Borrelia burgdorferi (spirochete)	Tickborn illness – signs and symptoms include: -Rash (erythema migrans) -fatigue, malaise -arthritis -neuralgia	-Identify symptoms: Bell's Palsy can be caused by Lyme disease TX: Referral to MD – doxycycline 3wks (early stages); IV antibiotics (late stages)
Basal Cell Nevus Syndrome	Autosomal dominant with variable expressivity	Multiple OKCs, calcification falx cerebri, and multiple cutaneous nevi establish a diagnosis. It is characterized by five major components, including multiple nevoid basal cell carcinomas, jaw cysts, congenital skeletal abnormalities, ectopic calcifications, and plantar or palmar pits. Other features include a host of benign tumors, ocular defects, and cleft lip and palate.	Rule out if histologic dx of OKC
Renal Failure	3 most common causes: -Diabetes -Hypertension -Chronic glomerulonephritis	May cause secondary hyperparathyroidism leading to lytic bone lesions; oral petechiae and candidiasis are common Most dialysis pts receive Hemodialysis; tx is q 2-3 days through a surgically placed AV graft or fistula placed in the forearm; heparin is usually administered during the procedure to prevent clotting Abnormal bleeding due to platelet destruction and altered platelet aggregation and decreased platelet factor III	-Consult with MD -Perform dental tx on day following dialysis (no antibiotic prophylaxis required) -Avoid meds metabobolized by the kidney and nephrotoxic drugs (Acetominophen in high doses, ASA, NSAIDs & acyclovir) -Bleeding concerns for surgery -Aggressive management of infection