Brittany Reyes

Medication work ups (Advanced Med-Surg)

Generic Name: **Amiodarone**

Drug Class: antiarrhythmics (class III)

Indication: Life-threatening ventricular arrhythmias unresponsive to less toxic agents. Unlabeled Use: PO: Management of supraventricular tachyarrhythmias. IV: As part of the Advanced Cardiac Life Support (ACLS) and Pediatric Advanced Life Support (PALS) guidelines for the management of ventricular fibrillation (VF)/pulseless ventricular tachycardia (VT) after cardiopulmonary resuscitation and defibrillation have failed; also for other life-threatening tachyarrhythmias.

Dosage forms: PO, IV

How to administer: PO (Adults): 800– 1600 mg/day in 1– 2 doses for 1– 3 wk, then 600– 800 mg/day in 1– 2 doses for 1 mo, then 400 mg/day maintenance dose. PO (Children): 10 mg/kg/day (800 mg/1.72 m2 /day) for 10 days or until response or adverse reaction occurs, then 5 mg/kg/day (400 mg/1.72 m2 /day) for several weeks, then decrease to 2.5 mg/kg/day (200 mg/1.72 m2 /day) or lowest effective maintenance dose. IV (Adults): 150 mg over 10 min, followed by 360 mg over the next 6 hr and then 540 mg over the next 18 hr. Continue infusion at 0.5 mg/min until oral therapy is initiated. If arrhythmia recurs, a small loading infusion of 150 mg over 10 min should be given; in addition, the rate of the maintenance infusion may increased.

Nursing Considerations: Monitor ECG continuously during IV therapy or initiation of oral therapy. Monitor heart rate and rhythm throughout therapy; PR prolongation, slight QRS widening, T-wave amplitude reduction with T-wave widening and bifurcation, and U waves may occur. QT prolongation may be associated with worsening of arrhythmias and should be monitored closely during IV therapy. Report bradycardia or increase in arrhythmias promptly; patients receiving IV therapy may require slowing rate, discontinuing infusion, or inserting a temporary pacemaker. ● Assess pacing and defibrillation threshold in patients with pacemakers and implanted defibrillators at beginning and periodically during therapy. ● Assess for signs of pulmonary toxicity (rales/crackles, decreased breath sounds, pleuritic friction rub, fatigue, dyspnea, cough, wheezing, pleuritic pain, fever, hemoptysis, hypoxia). Chest x-ray and pulmonary function tests are recommended before therapy. Monitor chest x-ray every 3– 6 mo during therapy to detect diffuse interstitial changes or alveolar infiltrates. Bronchoscopy or gallium radionuclide scan may also be used for diagnosis. Usually reversible after withdrawal, but fatalities have occurred. ● IV:

Assess for signs and symptoms of ARDS throughout therapy. Report dyspnea, tachypnea, or rales/crackles promptly. Bilateral, diffuse pulmonary infiltrates are seen on chest x-ray. ● Monitor BP frequently. Hypotension usually occurs during first several hours of therapy and is related to rate of infusion. If hypotension occurs, slow rate. ● PO: Assess for neurotoxicity (ataxia, proximal muscle weakness, tingling or numbness in fingers or toes, uncontrolled movements, tremors); common during initial therapy, but may occur within 1 wk to several mo of initiation of therapy and may persist for more than 1 yr after withdrawal. Dose reduction is recommended. Assist patient during ambulation to prevent falls. ● Ophthalmic exams should be performed before and regularly during therapy and whenever visual changes (photophobia, halos around lights, decreased acuity) occur. May cause permanent loss of vision. ● Assess for signs of thyroid dysfunction, especially during initial therapy. Lethargy; weight gain; edema of the hands, feet, and periorbital region; and cool, pale skin suggest hypothyroidism and may require decrease in dose or discontinuation of therapy and thyroid supplementation. Tachycardia; weight loss; nervousness; sensitivity to heat; insomnia; and warm, flushed, moist skin suggest hyperthyroidism and may require discontinuation of therapy and treatment with antithyroid agents. ● Lab Test Considerations: Monitor liver and thyroid functions before and every 6 mo during therapy. Drug effects persist long after discontinuation.

Side Effects: CNS: confusional states, disorientation, hallucinations, dizziness, fatigue, malaise, headache, insomnia. EENT: corneal microdeposits, abnormal sense of smell, dry eyes, optic neuritis, optic neuropathy, photophobia. Resp: ADULT RESPIRATORY DISTRESS SYNDROME (ARDS), PULMONARY FIBROSIS, PULMONARY TOXICITY. CV: CHF, WORSENING OF ARRHYTHMIAS, bradycardia, hypotension. GI: anorexia, constipation, nausea, vomiting, abdominal pain, abnormal sense of taste, increased liver enzymes. GU: decreased libido, epididymitis. Derm: TOXIC EPIDERMAL NECROLYSIS (rare), photosensitivity, blue discoloration. Endo: hypothyroidism, hyperthyroidism. Neuro: ataxia, involuntary movement, paresthesia, peripheral neuropathy, poor coordination, tremor.

Contraindications: Patients with cardiogenic shock; Severe sinus node dysfunction; 2nd- and 3rd-degree AV block; Bradycardia (has caused syncope unless a pacemaker is in place); Hypersensitivity to amiodarone or iodine; OB: Can cause fetal hypo- or hyperthyroidism; Lactation: Enters breast milk and can cause harm to the neonate; use an alternative to breast milk; Pedi: Safety not established; products containing benzyl alcohol should not be used in neonates. Use Cautiously in: History of HF; Thyroid disorders; Corneal refractive laser surgery; Severe pulmonary or liver disease; Geri: Initiate therapy at the low end of the dosing range due to decrease hepatic, renal, or cardiac function; comorbid disease; or other drug therapy.

Generic: **Epinephrine**

Drug class: Therapeutic: antiasthmatics, bronchodilators, vasopressors Pharmacologic: adrenergics

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Indication: Subcut, IV, Inhaln: Management of reversible airway disease due to asthma or COPD. Subcut, IM, IV: Management of severe allergic reactions. IV, Intracardiac, Intratracheal, Intraosseous (part of advanced cardiac life support [ACLS] and pediatric advanced life support [PALS] guidelines): Management of cardiac arrest (unlabeled). Inhaln: Management of upper airway obstruction and croup (racemic epinephrine). Local/Spinal: Adjunct in the localization/prolongation of anesthesia.

Dosage forms: SQ, IV, topical, intratracheal, endotracheal, intraspinal, IM, intracardiac

How to administer: Subcut, IM (Adults): Anaphylactic reactions/asthma—0.1– 0.5 mg (single dose not to exceed 1 mg); may repeat q 10– 15 min for anaphylactic shock or q 20 min– 4 hr for asthma Subcut (Children 1 mo): Anaphylactic reactions/asthma—0.01 mg/kg (not to exceed 0.5 mg/dose) q 15 min for 2 doses, then q 4 hr. IV (Adults):Severe anaphylaxis—0.1– 0.25 mg q 5– 15 min; may be followed by 1– 4 mcg/min continuous infusion; cardiopulmonary resuscitation (ACLS guidelines)—1 mg q 3– 5 min; bradycardia (ACLS guidelines)—2– 10 mcg/min). IV (Children): Severe anaphylaxis—0.1 mg (less in younger children); may be followed by 0.1 mcg/kg/min continuous infusion (may bequp to 1.5 mcg/kg/min); symptomatic bradycardia/pulseless arrest (PALS guidelines)—0.01 mg/kg, may be repeated q 3– 5 min higher doses (up to 0.1– 0.2 mg/kg) may be considered; may also be given by the intraosseous route. May also be given by the endotracheal route in doses of 0.1— 0.2 mg/kg diluted to a volume of 3– 5 mL with normal saline followed by several positive pressure ventilations. Inhaln (Adults): Inhalation solution—1 inhalation of 1% solution; may be repeated after 1– 2 min; additional doses may be given q 3 hr; racepinephrine—Via hand nebulizer, 2– 3 inhalations of 2.25% solution; may repeat in 5 min with 2– 3 more inhalations, up to 4– 6 times daily. Inhaln (Children 1 mo): 0.25– 0.5 mL of 2.25% racemic epinephrine solution diluted in 3 mL normal saline. IV, Intratracheal (Neonates): 0.01– 0.03 mg/kg q 3– 5 min as needed. IM (Children 1 mo 30 kg): 0.15 mg (EpiPen Jr); 30 kg: 0.3 mg (EpiPen). Intracardiac (Adults): 0.3– 0.5 mg. Endotracheal (Adults): Cardiopulmonary resuscitation (ACLS guidelines)— 2– 2.5 mg

Nursing Considerations: Bronchodilator: Assess lung sounds, respiratory pattern, pulse, and BP before administration and during peak of medication. Note amount, color, and character of sputum produced, and notify health care professional of abnormal findings. ● Monitor pulmonary function tests before and periodically during therapy. ● Observe for paradoxical bronchospasm (wheezing). If condition occurs, withhold medication and notify health care professional immediately. ● Observe patient for drug tolerance and rebound bronchospasm. Patients requiring more than 3 inhalation treatments in 24 hr should be under close supervision. If minimal or no relief is seen after 3– 5 inhalation treatments within 6– 12 hr, further treatment with aerosol alone is not recommended. ● Assess for hypersensitivity reaction (rash; urticaria; swelling of the face, lips, or eyelids). If condition occurs, withhold medication and notify health care professional immediately. ● Vasopressor: Monitor BP, pulse, ECG, and respiratory rate frequently during IV administration. Continuous ECG, hemodynamic parameters, and urine output should be monitored continuously during IV administration. ● Monitor for chest pain,

arrhythmias, heart rate 110 bpm, and hypertension. Consult physician for parameters of pulse, BP, and ECG changes for adjusting dose or discontinuing medication. ● Shock: Assess volume status. Correct hypovolemia prior to administering epinephrine IV. ● Nasal Decongestant: Assess patient for nasal and sinus congestion prior to and periodically during therapy. ● Lab Test Considerations: May cause transient decrease in serum potassium concentrations with nebulization or at higher than recommended doses. ● May cause increase in blood glucose and serum lactic acid concentrations. ● Toxicity and Overdose: Symptoms of overdose include persistent agitation, chest pain or discomfort, decreased BP, dizziness, hyperglycemia, hypokalemia, seizures, tachyarrhythmias, persistent trembling, and vomiting. ● Treatment includes discontinuing adrenergic bronchodilator and other beta-adrenergic agonists and symptomatic, supportive therapy. Cardioselective beta blockers are used cautiously because they may induce bronchospasm.

Side Effects: CNS: nervousness, restlessness, tremor, headache, insomnia. Resp: PARADOXICAL BRONCHOSPASM (EXCESSIVE USE OF INHALERS). CV: angina, arrhythmias, hypertension, tachycardia.GI: nausea, vomiting. Endo: hyperglycemia

Contraindications: : Hypersensitivity to adrenergic amines; Some products may contain bisulfites or fluorocarbons (in some inhalers) and should be avoided in patients with known hypersensitivity or intolerance. Use Cautiously in: Cardiac disease (angina, tachycardia, MI); Hypertension; Hyperthyroidism; Diabetes; Cerebral arteriosclerosis; Glaucoma (except for ophthalmic use); Excessive use may lead to tolerance and paradoxical bronchospasm (inhaler); OB: Use only if potential maternal benefit outweighs potential risks to fetus; Lactation: High intravenous doses of epinephrine might decrease milk production or letdown. Low-dose epidural, topical, inhaled or ophthalmic epinephrine are unlikely to interfere with breast feeding (NIH); Geri: More susceptible to adverse reactions; may require decrease dose.

Generic: **Dobutamine**

Drug class: Therapeutic: inotropics Pharmacologic: adrenergics

Indication: Short-term (48 hr) management of heart failure caused by depressed contractility from organic heart disease or surgical procedures.

Dosage Forms: IV

How to administer: IV (Adults and Children): 2.5– 15 mcg/kg/min titrate to response (up to 40 mcg/ kg/min). IV (Neonates): 2– 15 mcg/kg/min

Nursing Considerations: Monitor BP, heart rate, ECG, pulmonary capillary wedge pressure (PCWP), cardiac output, CVP, and urinary output continuously during the administration. Report significant changes in vital signs or arrhythmias. Consult physician for parameters for pulse, BP, or ECG changes for adjusting dose or discontinuing medication. ● Palpate peripheral pulses and assess appearance of extremities routinely throughout dobutamine administration. Notify physician if quality of pulse deteriorates or if extremities become cold or mottled. ● Lab Test Considerations: Monitor potassium concentrations during therapy; may cause hypokalemia. ● Monitor electrolytes, BUN, creatinine, and prothrombin time weekly during prolonged therapy. ● Toxicity and Overdose: If overdose occurs, reduction or discontinuation of therapy is the only treatment necessary because of the short duration of dobutamine.

Side Effects: CNS: headache. Resp: shortness of breath. CV: hypertension, increased heart rate, premature ventricular contractions, angina pectoris, arrhythmias, hypotension, palpitations. GI: nausea, vomiting. Local: phlebitis. Misc: hypersensitivity reactions including skin rash, fever, bronchospasm or eosinophilia, nonanginal chest pain.

Contraindications: Hypersensitivity to dobutamine or bisulfites; Idiopathic hypertrophic subaortic stenosis. Use Cautiously in: History of hypertension (increased risk of exaggerated pressor response); MI; Atrial fibrillation (pretreatment with digitalis glycosides recommended); History of ventricular atopic activity (may be exacerbated); Hypovolemia (correct before administration); Pregnancy or lactation (safety not established).

Generic: **Dopamine**

Drug Class: Therapeutic: inotropics, vasopressors Pharmacologic: adrenergics

Indication: Adjunct to standard measures to improve: BP, Cardiac output, Urine output in treatment of shock unresponsive to fluid replacement. Increase renal perfusion (low doses).

Dosage Forms: IV

How to Administer: IV (Adults): Dopaminergic (renal vasodilation) effects—1– 5 mcg/kg/min. Beta-adrenergic (cardiac stimulation) effects—5– 15 mcg/kg/min. Alpha-adrenergic (increased peripheral vascular resistance) effects—15 mcg/kg/min; infusion rate may be increased as needed. IV (Children and Infants): 1– 20 mcg/kg/min, depending on desired response (1– 5 mcg/kg/min has been used to improve renal blood flow). IV (Neonates): 1– 20 mcg/kg/min

Nursing Considerations: ● Monitor BP, heart rate, pulse pressure, ECG, pulmonary capillary wedge pressure (PCWP), cardiac output, CVP, and urinary output continuously during administration. Report significant changes in vital signs or arrhythmias. Consult physician for parameters for pulse, BP, or ECG changes for adjusting dose or discontinuing medication. ● Monitor urine output frequently throughout administration. Report decreases in urine output promptly. ● Palpate peripheral pulses and assess appearance of extremities routinely during dopamine administration. Notify physician if quality of pulse deteriorates or if extremities become cold or mottled. ● If hypotension occurs, administration rate should be increased. If hypotension continues, more potent vasoconstrictors (norepinephrine) may be administered. ● Toxicity and Overdose: If excessive hypertension occurs, rate of infusion should be decreased or temporarily discontinued until BP is decreased. Although additional measures are usually not necessary because of short duration of dopamine, phentolamine may be administered if hypertension continues.

Side Effects: CNS: headache. EENT: mydriasis (high dose). Resp: dyspnea. CV: arrhythmias, hypotension, angina, ECG change, palpitations, vasoconstriction. GI: nausea, vomiting. Derm: piloerection. Local: irritation at IV site.

Contraindications: Tachyarrhythmias; Pheochromocytoma; Hypersensitivity to bisulfites (some products). Use Cautiously in: Hypovolemia; Myocardial infarction; Occlusive vascular diseases; Geri: Older patients may be more susceptible to adverse effects; OB: Pregnancy and lactation (safety not established).

Generic: **Lidocaine**

Drug Class: Therapeutic: anesthetics (topical/local), antiarrhythmics (class IB)

Indication: IV: Ventricular arrhythmias. IM: Self-injected or when IV unavailable (during transport to hospital facilities). Local: Infiltration/mucosal/topical anesthetic. Patch: Pain due to post-herpetic neuropathy.

Dosage forms: IV, IM, endotracheal

How to administer: IV (Adults): 1– 1.5 mg/kg bolus; may repeat doses of 0.5– 0.75 mg/kg q 5– 10 min up to a total dose of 3 mg/kg; may then start continuous infusion of 1– 4 mg/min. Endotracheal (Adults): Give 2– 2.5 times the IV loading dose down the endotracheal tube, followed by a 10 mL saline flush. IV (Children): 1 mg/kg bolus (not to exceed 100 mg), followed by 20– 50 mcg/kg/ min continuous infusion (range 20– 50 mcg/kg/min); may administer second bolus of 0.5– 1 mg/kg if delay between bolus and continuous infusion. Endotracheal (Children):

Give 2– 3 mg/kg down the endotracheal tube followed by a 5 mL saline flush. IM (Adults and Children 50 kg): 300 mg (4.5 mg/kg); may be repeated in 60– 90 min.

Nursing Considerations: Antiarrhythmic: Monitor ECG continuously and BP and respiratory status frequently during administration. ● Anesthetic: Assess degree of numbness of affected part. ● Transdermal: Monitor for pain intensity in affected area periodically during therapy. ● Lab Test Considerations: Serum electrolyte levels should be monitored periodically during prolonged therapy. ● IM administration may cause increase CPK levels. ● Toxicity and Overdose: Serum lidocaine levels should be monitored periodically during prolonged or high-dose IV therapy. Therapeutic serum lidocaine levels range from 1.5 to 5 mcg/mL. ● Signs and symptoms of toxicity include confusion, excitation, blurred or double vision, nausea, vomiting, ringing in ears, tremors, twitching, seizures, difficulty breathing, severe dizziness or fainting, and unusually slow heart rate. ● If symptoms of overdose occur, stop infusion and monitor patient closely.

Side Effects: Applies mainly to systemic use CNS: SEIZURES, confusion, drowsiness, blurred vision, dizziness, nervousness, slurred speech, tremor. EENT: mucosal use—por absent gag reflex. CV: CARDIAC ARREST, arrhythmias, bradycardia, heart block, hypotension. GI: nausea, vomiting. Resp: bronchospasm. Hemat: methemoglobinemia. Local: stinging, burning, contact dermatitis, erythema.MS: chondrolysis. Misc: allergic reactions, including ANAPHYAXIS.

Contraindications: Hypersensitivity; cross-sensitivity may occur; Third-degree heart block. Use Cautiously in: Liver disease, HF, patients weighing 50 kg, and geriatric patients (decrease bolus and/or maintenance dose); Respiratory depression; Shock; Heart block; OB, Lactation: Safety not established; Pedi: Safety not established for transdermal patch.

Generic: **atropine**

Drug Class: Therapeutic: antiarrhythmics Pharmacologic: anticholinergics, antimuscarinics

Indication: IM: Given preoperatively to decrease oral and respiratory secretions. IV: Treatment of sinus bradycardia and heart block. IV: Reversal of adverse muscarinic effects of anticholinesterase agents (neostigmine, physostigmine, or pyridostigmine). IM, IV: Treatment of anticholinesterase (organophosphate pesticide) poisoning. Inhaln: Treatment of exercise-induced bronchospasm.

Dosage form: IV, IM, endotracheal, SQ

How to administer: IM, IV, Subcut (Adults): 0.4– 0.6 mg 30– 60 min pre-op. IM, IV, Subcut (Children 5 kg): 0.01– 0.02 mg/kg/dose 30– 60 min preop to a maximum of 0.4 mg/dose; minimum: 0.1 mg/dose. IM, IV, Subcut (Children 5 kg): 0.02 mg/kg/dose 30– 60 min preop then q 4– 6 hr as needed. Bradycardia IV (Adults): 0.5– 1 mg; may repeat as needed q 5 min, not to exceed a total of 2 mg (q 3– 5 min in Advanced Cardiac Life Support guidelines) or 0.04 mg/kg (total vagolytic dose). IV (Children): 0.02 mg/kg (maximum single dose is 0.5 mg in children and 1 mg in adolescents); may repeat q 5 min up to a total dose of 1 mg in children (2 mg in adolescents). Endotracheal (Children): use the IV dose and dilute before administration.

Nursing Considerations: Assess vital signs and ECG tracings frequently during IV drug therapy. Report any significant changes in heart rate or BP, or increased ventricular ectopy or angina to health care professional promptly. ● Monitor intake and output ratios in elderly or surgical patients because atropine may cause urinary retention ● Assess patients routinely for abdominal distention and auscultate for bowel sounds. If constipation becomes a problem, increasing fluids and adding bulk to the diet may help alleviate constipation. ● Toxicity and Overdose: If overdose occurs, physostigmine is the antidote.

Side effects: CNS: drowsiness, confusion, hyperpyrexia. EENT: blurred vision, cycloplegia, photophobia, dry eyes, mydriasis. CV: tachycardia, palpitations, arrhythmias. GI: dry mouth, constipation, impaired GI motility. GU: urinary hesitancy, retention, impotency. Resp: tachypnea, pulmonary edema. Misc: flushing, decreased sweating.

Contraindication: Hypersensitivity; Angle-closure glaucoma; Acute hemorrhage; Tachycardia secondary to cardiac insufficiency or thyrotoxicosis; Obstructive disease of the GI tract. Use Cautiously in: Intra-abdominal infections; Prostatic hyperplasia; Chronic renal, hepatic, pulmonary, or cardiac disease; OB, Lactation: Safety not established; IV administration may produce fetal tachycardia; Pedi: Infants with Down syndrome have increased sensitivity to cardiac effects and mydriasis. Children may have increased susceptibility to adverse reactions. Exercise care when prescribing to children with spastic paralysis or brain damage; Geri: Increased susceptibility to adverse reactions.

Generic: **Mannitol**

Drug class: osmotic diuretics

Indication: Acute oliguric renal failure, Edema, Increased intracranial or intraocular pressure, Toxic overdose

Dosage forms: IV

How to administer: 50– 100 g as a 5– 25% solution; may precede with a test dose of 0.2 g/kg over 3– 5 min. Reduction of intracranial/intraocular pressure—0.25– 2 g/kg as 15– 25% solution over 30– 60 min (500 mg/kg may be sufficient in small or debilitated patients).Diuresis in drug intoxications— 50– 200 g as a 5– 25% solution titrated to maintain urine flow of 100– 500 mL/hr

Nursing considerations: Monitor vital signs, urine output, CVP, and pulmonary artery pressures (PAP) before and hourly throughout administration. Assess patients for signs and symptoms of dehydration (decreased skin turgor, fever, dry skin and mucous membranes, thirst) or signs of fluid overload (increased CVP, dyspnea, rales/crackles, edema). ● Assess patients for anorexia, muscle weakness, numbness, tingling, paresthesia, confusion, and excessive thirst. ● Increased Intracranial Pressure: Monitor neurologic status and intracranial pressure readings in patients receiving this medication to decrease cerebral edema. ● Increased Intraocular Pressure: Monitor for persistent or increased eye pain or decreased visual acuity. ● Lab Test Considerations: Renal function and serum electrolytes should be monitored routinely throughout the course of therapy.

Side effects: CNS: confusion, headache. EENT: blurred vision, rhinitis. CV: transient volume expansion, chest pain, HF, pulmonary edema, tachycardia.GI: nausea, thirst, vomiting. GU: renal failure, urinary retention. F and E: dehydration, hyperkalemia, hypernatremia, hypokalemia, hyponatremia. Local: phlebitis at IV site.

Contraindications: : Hypersensitivity; Anuria; Dehydration; Active intracranial bleeding; Severe pulmonary edema or congestion.

Generic: **Phenytoin**

Drug Class: antiarrhythmics, anticonvulsants

Indication: Treatment/prevention of tonic-clonic (grand mal) seizures and complex partial seizures. Unlabeled Use: As an antiarrhythmic, particularly for ventricular arrhythmias associated with digoxin toxicity, prolonged QT interval, and surgical repair of congenital heart diseases in children. Management of neuropathic pain, including trigeminal neuralgia

Dosage form: PO, IV

How to administer: Loading dose of 15– 20 mg/kg as extended capsules in 3 divided doses given every 2– 4 hr; maintenance dose 5– 6 mg/kg/day given in 1– 3 divided doses; usual dosing range 200– 1200 mg/day

Nursing Considerations: Monitor closely for notable changes in behavior that could indicate the emergence or worsening of suicidal thoughts or behavior or depression. ● Assess oral hygiene. Vigorous cleaning beginning within 10 days of initiation of phenytoin therapy may help control gingival hyperplasia. ● Assess patient for phenytoin hypersensitivity syndrome (fever, skin rash, lymphadenopathy). Rash usually occurs within the first 2 wk of therapy. Hypersensitivity syndrome usually occurs at 3– 8 wk but may occur up to 12 wk after initiation of therapy. May lead to renal failure, rhabdomyolysis, or hepatic necrosis; may be fatal. ● Observe patient for development of rash. Discontinue phenytoin at the first sign of skin reactions. Serious adverse reactions such as exfoliative, purpuric, or bullous rashes or the development of lupus erythematosus, Stevens-Johnson syndrome, or toxic epidermal necrolysis preclude further use of phenytoin or fosphenytoin. Assess mental status (orientation, mood, behavior) before and periodically during therapy. Monitor closely for notable changes in behavior that could indicate the emergence or worsening of suicidal thoughts or behavior or depression. ● Seizures: Assess location, duration, frequency, and characteristics of seizure activity. EEG may be monitored periodically throughout therapy. ● Monitor BP, ECG, and respiratory function continuously during administration of IV phenytoin and throughout period when peak serum phenytoin levels occur (15– 30 min after administration). ● Arrhythmias: Monitor ECG continuously during treatment of arrhythmias. ● Lab Test Considerations: Monitor CBC, serum calcium, albumin, and hepatic function tests prior to and monthly for the first several months, then periodically during therapy. ● May cause serum alkaline phosphatase, GGT, and glucose levels. ● Monitor serum folate concentrations periodically during prolonged therapy. ● Toxicity and Overdose: Monitor serum phenytoin levels routinely. Therapeutic blood levels are 10– 20 mcg/mL (8– 15 mcg/mL in neonates) in patients with normal serum albumin and renal function. In patients with altered protein binding (neonates, patients with renal failure, hypoalbuminemia, acute trauma), free phenytoin serum concentrations should be monitored. Therapeutic serum free phenytoin levels are 1– 2 mcg/mL. ● Progressive signs and symptoms of phenytoin toxicity include nystagmus, ataxia, confusion, nausea, slurred speech, and dizziness

Side Effects: Most listed are for chronic use of phenytoin CNS: SUICIDAL THOUGHTS, ataxia, agitation, confusion, dizziness, drowsiness, dysarthria, dyskinesia, extrapyramidal syndrome, headache, insomnia, weakness. EENT: diplopia, nystagmus. CV: hypotension (q with IV phenytoin), tachycardia. GI: gingival hyperplasia, nausea, constipation, drug-induced hepatitis, vomiting. Derm: STEVENS-JOHNSON SYNDROME, TOXIC EPIDERMAL NECROLYSIS, hypertrichosis, rash, exfoliative dermatitis, pruritus, purple glove syndrome. Hemat: AGRANULOCYTOSIS, APLASTIC ANEMIA, leukopenia, megaloblastic anemia, thrombocytopenia. MS: osteomalacia, osteoporosis. Misc: fever, lymphadenopathy

Contraindication: alcohol intolerance (phenytoin injection and liquid only); Sinus bradycardia, sinoatrial block, 2nd- or 3rd-degree heart block, or Stokes-Adams syndrome (phenytoin injection only); Concurrent use of delavirdine. Use Cautiously in: All patients (may increase risk of

suicidal thoughts/behaviors); Hepatic or renal disease (increased risk of adverse reactions; dose reduction recommended for hepatic impairment); Patients with severe cardiac or respiratory disease (use of IV phenytoin may result in an risk of serious adverse reactions); OB: Safety not established; may result in fetal hydantoin syndrome if used chronically or hemorrhage in the newborn if used at term; use with extreme caution; Lactation: Safety not established; Pedi: Suspension contains sodium benzoate, a metabolite of benzyl alcohol that can cause potentially fatal gasping syndrome in neonates; Geri: Use of IV phenytoin may result in an risk of serious adverse reactions

Generic: **Baclofen**

Drug class: antispasticity agents, skeletal muscle relaxants

Indication: Treatment of reversible spasticity due to multiple sclerosis or spinal cord lesions. IT: Treatment of severe spasticity of cerebral or spinal origin. Unlabeled Use: Management of pain in trigeminal neuralgia.

Dosage Form: PO, IT

How to administer: PO (Adults): 5 mg 3 times daily. May increase q 3 days by 5 mg/dose up to 80 mg/ day (some patients may have a better response to 4 divided doses).IT (Adults): 100–800 mcg/day infusion; dose is determined by response during screening phase.

Nursing Consideration: Assess muscle spasticity before and periodically during therapy. ● Observe patient for drowsiness, dizziness, or ataxia. May be alleviated by a change in dose. ● IT: Monitor patient closely during test dose and titration. Resuscitative equipment should be immediately available for life-threatening or intolerable side effects. ● Lab Test Considerations: May cause increase in serum glucose, alkaline phosphatase, AST, and ALT levels.

Side effects: CNS: seizures, dizziness, drowsiness, fatigue, weakness, confusion, depression, headache, insomnia. EENT: nasal congestion, tinnitus. CV: edema, hypotension. GI: nausea, constipation. GU: frequency. Derm: pruritus, rash. Metab: hyperglycemia, weight gain. Neuro: ataxia. Misc: hypersensitivity reactions, sweating.

Contraindications: Contraindicated in: Hypersensitivity. Use Cautiously in: Patients in whom spasticity maintains posture and balance; Patients with epilepsy (may decrease seizure threshold); Renal impairment (pdose may be required); OB, Lactation: Safety not established;

Pedi: Children 4 yr (intrathecal) (safety not established); Geri: Geriatric patients are at increased risk of CNS side effects.

Generic: **Methylprednisolone**

Drug Class; anti-inflammatory, immunosuppressant, corticosteroids

Indication: Used systemically and locally in a wide variety of chronic diseases including: Inflammatory, Allergic, Hematologic, Neoplastic, Autoimmune disorders, Immunosuppressant. May be suitable for alternate-day dosing in the management of chronic illness. Replacement therapy in adrenal insufficiency. Unlabeled Use: Adjunctive therapy of hypercalcemia. Management of acute spinal cord injury. Adjunctive management of nausea and vomiting from chemotherapy

Dosage Forms: PO, IM, IV

How to administer: PO (Adults): Multiple sclerosis—160 mg/day for 7 days, then 64 mg every other day for 1 mo. Other uses—2– 60 mg/day as a single dose or in 2– 4 divided doses. Asthma exacerbations—120– 180 mg/day. IM, IV (Adults): Most uses: methylprednisolone sodium succinate—40– 250 mg q 4– 6 hr. High-dose “pulse” therapy: methylprednisolone sodium succinate—30 mg/kg IV q 4– 6 hr for up to 72 hr. Multiple sclerosis: methylprednisolone sodium succinate—160 mg/day for 7 days, then 64 mg every other day for 1 mo. Adjunctive therapy of Pneumocystis jirovecii pneumonia in AIDS patients: methylprednisolone sodium succinate—30 mg twice daily for 5 days, then 30 mg once daily for 5 days, 15 mg once daily for 10 days. Acute spinal cord injury: methylprednisolone sodium succinate—30 mg/kg over 15 min initially, followed 45 min later with 5.4 mg/kg/hr for 23 hr (unlabeled).

Nursing Considerations: Indicated for many conditions. Assess involved systems before and periodically during therapy. ● Assess patient for signs of adrenal insufficiency (hypotension, weight loss, weakness, nausea, vomiting, anorexia, lethargy, confusion, restlessness) before and periodically during therapy. ● Monitor intake and output ratios and daily weights. Observe patient for peripheral edema, steady weight gain, rales/crackles, or dyspnea. Notify health care professional if these occur. ● Children should have periodic evaluations of growth. ● Lab Test Considerations: Monitor serum electrolytes and glucose. May cause hyperglycemia, especially in persons with diabetes. May cause hypokalemia. Patients on prolonged therapy should routinely have hematologic values, serum electrolytes, and serum and urine glucose evaluated. May WBC counts. May decrease serum potassium and calcium and increase serum sodium concentrations. ● Guaiac test stools. Promptly report presence of guaiac-positive stools. ● May Serum cholesterol and lipid values. ● Suppresses reactions to allergy skin tests. ● Periodic

adrenal function tests may be ordered to assess degree of hypothalamic pituitary-adrenal axis suppression in systemic and chronic topical therapy

Side effects: Adverse reactions/side effects are much more common with high-dose/long-term therapy CNS: depression, euphoria, headache,qintracranial pressure (children only), personality changes, psychoses, restlessness. EENT: cataracts,qintraocular pressure. CV: hypertension. GI: PEPTIC ULCERATION, anorexia, nausea, vomiting. Derm: acne,pwound healing, ecchymoses, fragility, hirsutism, petechiae. Endo: adrenal suppression, hyperglycemia. F and E: fluid retention (long-term high doses), hypokalemia, hypokalemic alkalosis. Hemat: THROMBOEMBOLISM, thrombophlebitis. Metab: weight gain, weight loss. MS: muscle wasting, osteoporosis, avascular necrosis of joints, muscle pain.Misc:cushingoid appearance(moon face, buffalo hump),qsusceptibility to infection.

Contraindications: Active untreated infections (may be used in patients being treated for tuberculous meningitis); Lactation: Avoid chronic use; Known alcohol, bisulfite, or tartrazine hypersensitivity or intolerance (some products contain these and should be avoided in susceptible patients); Administration of live virus vaccines. Use Cautiously in: Chronic treatment (will lead to adrenal suppression; use lowest possible dose for shortest period of time); Pedi: Chronic use will result inp growth; use lowest possible dose for shortest period of time; Stress (surgery, infections); supplemental doses may be needed; Potential infections may mask signs (fever, inflammation); OB: Safety not established; Pedi: Neonates

Generic: **Alteplase**

Drug Class: Thrombolytic

Indication: Acute myocardial infarction (MI). Acute ischemic stroke. Pulmonary embolism (PE). Occluded central venous access devices. Unlabeled Use: Deep venous thrombosis (DVT). Acute peripheral arterial thrombosis.

Dosage Form: IV

How to Administer: Myocardial Infarction (Accelerated or Front-Loaded Regimen) IV (Adults): 15 mg bolus, then 0.75 mg/kg (up to 50 mg) over 30 min, then 0.5 mg/ kg (up to 35 mg) over next 60 min; usually accompanied by heparin therapy. Myocardial Infarction (Standard Regimen) IV (Adults 65 kg): 60 mg over 1st hr (6– 10 mg given as a bolus over first 1– 2 min), 20 mg over the 2nd hr, and 20 mg over the 3rd hr for a total dose of 100 mg. IV (Adults 65 kg): 0.75 mg/kg over 1st hr (0.075– 0.125 mg/kg given as a bolus over first 1– 2 min), 0.25 mg/kg over the 2nd hr, and 0.25 mg/kg over the 3rd hr for a total dose of 1.25 mg/kg (not to exceed 100 mg total).

Acute Ischemic Stroke IV (Adults): 0.9 mg/kg (not to exceed 90 mg), given as an infusion over 1 hr, with 10% of the dose given as a bolus over the 1st min. Pulmonary Embolism IV (Adults): 100 mg over 2 hr; follow with heparin. Occluded Venous Access Devices IV (Adults and Children 30 kg): 2 mg/2 mL instilled into occluded catheter; if unsuccessful, may repeat once after 2 hr. IV (Adults and Children 30 kg): 110% of the lumen volume (not to exceed 2 mg in 2 mL) instilled into the occluded catheter; if unsuccessful, may repeat once after 2 hr.

Nursing Considerations: Begin therapy as soon as possible after the onset of symptoms. ● Monitor vital signs, including temperature, continuously for myocardial infarction and at least every 4 hr during therapy for other indications. Do not use lower extremities to monitor BP. Notify health care professional if systolic BP 180 mm Hg or diastolic BP 110 mm Hg. Thrombolytic therapy should not be given if hypertension is uncontrolled. Inform health care professional if hypotension occurs. Hypotension may result from the drug, hemorrhage, or cardiogenic shock. ● Assess patient carefully for bleeding every 15 min during the 1st hr of therapy, every 15– 30 min during the next 8 hr, and at least every 4 hr for the duration of therapy. Frank bleeding may occur from sites of invasive procedures or from body orifices. Internal bleeding may also occur (decreased neurologic status; abdominal pain with coffee-grounds emesis or black, tarry stools; hematuria; joint pain). If uncontrolled bleeding occurs, stop medication and notify health care professional immediately. ● Assess patient for hypersensitivity reaction (rash, dyspnea, fever, changes in facial color, swelling around the eyes, wheezing). If these occur, inform health care professional promptly. Keep epinephrine, an antihistamine, and resuscitation equipment close by in the event of an anaphylactic reaction. ● Assess neurologic status throughout therapy. Altered sensorium or neurologic changes may be indicative of intracranial bleeding. ● Myocardial Infarction: Monitor ECG continuously. Notify health care professional if significant arrhythmias occur. IV lidocaine or procainamide (Pronestyl) may be ordered prophylactically. Monitor cardiac enzymes. Radionuclide myocardial scanning and/or coronary angiography may be ordered 7– 10 days after therapy to monitor effectiveness of therapy. ● Assess intensity, character, location, and radiation of chest pain. Note presence of associated symptoms (nausea, vomiting, diaphoresis). Administer analgesics as directed. Notify health care professional if chest pain is unrelieved or recurs. ● Monitor heart sounds and breath sounds frequently. Inform health care professional if signs of HF occur (rales/crackles, dyspnea, S3 heart sound, jugular venous distention, relieved CVP). ● Acute Ischemic Stroke: Assess neurologic status. Determine time of onset of stroke symptoms. Alteplase must be administered within 3– 4.5 hr of onset (within 3 hrs in patients older than 80 years, those taking oral anticoagulants, those with a baseline National Institutes of Health Stroke Scale score 25, or those with both a history of stroke and diabetes). ● Pulmonary Embolism: Monitor pulse, BP, hemodynamics, and respiratory status (rate, degree of dyspnea, ABGs). ● Deep Vein Thrombosis/Acute Arterial Occlusion: Observe extremities and palpate pulses of affected extremities every hour. Notify health care professional

Side effects: CNS: INTRACRANIAL HEMORRHAGE. EENT: epistaxis, gingival bleeding. Resp: bronchospasm, hemoptysis. CV: reperfusion arrhythmias, hypotension, RECURRENT ISCHEMIA/THROMBOEMBOLISM. GI: GI BLEEDING, nausea, RETROPERITONEAL BLEEDING, vomiting. GU: GU TRACT BLEEDING. Derm: ecchymoses, flushing, urticaria.

Hemat: BLEEDING. Local: hemorrhage at injection site, phlebitis at injection site. MS: musculoskeletal pain. Misc: allergic reactions including ANAPHYLAXIS, fever.

Contraindications: : Active internal bleeding; History of cerebrovascular accident (for MI and PE only); Recent (within 3 mo) intracranial or intraspinal injury or trauma; Intracranial neoplasm, arteriovenous malformation, or aneurysm; Known bleeding diathesis; Severe uncontrolled hypertension (systolic BP 185 mmHg or diastolic BP 110 mmHg specifically for stroke indication); Evidence or suspicion of intracranial hemorrhage on pretreatment evaluation (for stroke indication only); Recent (within 3 mo) stroke (for stroke indication only); History of intracranial hemorrhage (for stroke indication only); Seizure at the onset of stroke (for stroke indication only); Current use of oral anticoagulants or an INR 1.7 or a prothrombin time 15 sec (for stroke indication only); Administration of heparin 48 hr before the onset of stroke with an elevated aPTT at presentation (for stroke indication only); Platelet count 100,000/mm3 (for stroke indication only); Hypersensitivity (for central venous access device occlusion indication only). Use Cautiously in: Recent (within 10 days) major surgery, trauma, GI or GU bleeding; Cerebrovascular disease; Systolic BP 175 mmHg and/or diastolic BP 110 mmHg; High likelihood of left heart thrombus; Hemostatic defects; Severe hepatic impairment; Hemorrhagic ophthalmic conditions; Septic thrombophlebitis; Previous puncture of a non compressible vessel; Subacute bacterial endocarditis or acute pericarditis; Severe neurological deficit (NIHSS 22) at presentation (for stroke indication only); Major early infarct signs on CT scan (for stroke indication only); Known or suspected infection in catheter (for central venous access device occlusion indication only); Geri: 75 increased risk of intracranial bleeding; OB, Lactation, Pedi: Safety not established. Exercise Extreme Caution in: Patients receiving concurrent anticoagulant therapy (increased risk of intracranial bleeding).

Generic: **Propofol**

Drug Class: general anesthetic

Indication: Induction of general anesthesia in children 3 yr and adults. Maintenance of balanced anesthesia when used with other agents in children 2 mo and adults. Initiation and maintenance of monitored anesthesia care (MAC). Sedation of intubated, mechanically ventilated patients in intensive care units (ICUs).

Dosage Form: IV

How to admin: Induction—40 mg q 10 sec until induction achieved (2– 2.5 mg/kg total). Maintenance—100– 200 mcg/kg/min. Rates of 150– 200 mcg/kg/ min are usually required during first 10– 15 min after induction, then decrease by 30– 50% during first 30 min of

maintenance. Rates of 50– 100 mcg/kg/min are associated with optimal recovery time. May also be given intermittently in increments of 25– 50 mg

Nursing Considerations: Assess respiratory status, pulse, and BP continuously throughout propofol therapy. Frequently causes apnea lasting 60 sec. Maintain patent airway and adequate ventilation. Propofol should be used only by individuals experienced in endotracheal intubation, and equipment for this procedure should be readily available. ● Assess level of sedation and level of consciousness throughout and following administration. ● When using for ICU sedation, wake-up and assessment of CNS function should be done daily during maintenance to determine minimum dose required for sedation. Maintain a light level of sedation during these assessments; do not discontinue. Abrupt discontinuation may cause rapid awakening with anxiety, agitation, and resistance to mechanical ventilation. ● Monitor for propofol infusion syndrome (severe metabolic acidosis, hyperkalemia, lipemia, rhabdomyolysis, hepatomegaly, cardiac and renal failure). Most frequent with prolonged, high-dose infusions (5 mg/kg/ hr for 48 hr) but has also been reported following large-dose, short-term infusions during surgical anesthesia. If prolonged sedation or increasing dose is required, or metabolic acidosis occurs, consider alternative means of sedation. ● Toxicity and Overdose: If overdose occurs, monitor pulse, respiration, and BP continuously. Maintain patent airway and assist ventilation as needed. If hypotension occurs, treatment includes IV fluids, repositioning, and vasopressors.

Side effects: CNS: dizziness, headache. Resp: APNEA, cough. CV: bradycardia, hypotension, hypertension. GI: abdominal cramping, hiccups, nausea, vomiting. Derm: flushing. Local: burning, pain, stinging, coldness, numbness, tingling at IV site. MS: involuntary muscle movements, perioperative myoclonia. GU: discoloration of urine (green).Misc: PROPOFOL INFUSION SYNDROME, fever.

Contraindications: Hypersensitivity to propofol, soybean oil, egg lecithin, or glycerol; OB: Crosses placenta; may cause neonatal depression; Lactation: Enters breast milk; effects on newborn unknown. Use Cautiously in: Cardiovascular disease; Lipid disorders (emulsion may have detrimental effect); intracranial pressure; Cerebrovascular disorders; Hypovolemic patients (lower induction and maintenance dosage reduction recommended); Pedi: Not recommended for induction of anesthesia in children 3 yr, or for maintenance of anesthesia in infants 2 mo ; not for ICU or pre-procedure sedation; Geri: Lower induction and maintenance dose reduction recommended.