Generic Name: Morphine

Drug class: Opioid analgesic

Indication: Severe pain. Pain severe enough to require daily, around the clock long-term opioid treatment and for which alternative treatment options are inadequate (extended release). Pulmonary edema. Pain associated with MI

Dosage forms: mg, mg/kg

How to administer: PO, PO-ER, IM, SQ, Rect, IV, Epidural, IT

Nursing Consideration:

- Assess type, location, and intensity of pain prior to and 1 hr following PO, subcut, IM, and 20 min (peak) following IV administration.
- Patients on a continuous infusion should have additional bolus doses provided every 15–30 min, as needed, for breakthrough pain.
- Patients taking sustained-release morphine may require additional short-acting opioid doses for breakthrough pain
- *High Alert:* Assess level of consciousness, BP, pulse, and respirations before and periodically during administration. If respiratory rate is 10/min, assess level of sedation. Physical stimulation may be sufficient to prevent significant hypoventilation. Subsequent doses may need to be decreased by 25– 50%. Initial drowsiness will diminish with continued use Geri: Assess geriatric patients frequently; older adults are more sensitive to the effects of opioid analgesics and may experience.
- Prolonged use may lead to physical and psychological dependence and tolerance. This should not prevent patient from receiving adequate analgesia. Most patients who receive morphine for pain do not develop psychological dependence. Progressively higher doses may be required to relieve pain with long-term therapy
- Assess bowel function routinely.
- *Toxicity and Overdose*: If an opioid antagonist is required to reverse respiratory depression or coma, naloxone is the antidote

Side Effects: <u>CNS:</u> confusion, sedation, dizziness, dysphoria, euphoria, floating feeling, hallucinations, headache, unusual dreams. <u>EENT:</u> blurred vision, diplopia, miosis. <u>Resp:</u> RESPIRATORY DEPRESSION. CV: hypotension, bradycardia. <u>GI:</u> constipation, nausea, vomiting. <u>GU:</u> urinary retention. <u>Derm:</u> flushing, itching, sweating. <u>Misc:</u> physical dependence, psychological dependence, tolerance.

Contraindications: Hypersensitivity; Some products contain tartrazine, bisulfites, or alcohol and should be avoided in patients with known hypersensitivity; Acute, mild, intermittent, or postoperative pain (extended/sustained-release); Significant respiratory depression (extended/sustained-release); Acute or severe bronchial asthma (extended/sustained-release); Paralytic ileus (extended/sustained-release). Use Cautiously in: Head trauma; intracranial pressure; Severe renal, hepatic, or pulmonary disease; Hypothyroidism; Seizure disorder; Adrenal insufficiency; History of substance abuse; Undiagnosed abdominal pain

Generic Name: Lorazepam

Drug class: Benzodiazepine

Indication: Anxiety disorder (oral). Preoperative sedation (injection). Decreases preoperative anxiety and provides amnesia. Unlabeled Use: IV: Antiemetic prior to chemotherapy. Insomnia, panic disorder, as an adjunct with acute mania or acute psychosis.

Dosage forms: mg, mg/kg

How to administer: PO, IM, IV

Nursing Considerations:

- Conduct regular assessment of continued need for treatment.
- Pedi: Assess neonates for prolonged CNS depression related to inability to metabolize lorazepam.
- Geri: Assess geriatric patients carefully for CNS reactions as they are more sensitive to these effects. Assess falls risk.
- Anxiety: Assess degree and manifestations of anxiety and mental status (orientation, mood, behavior) prior to and periodically throughout therapy.
- Prolonged high-dose therapy may lead to psychological or physical dependence. Restrict amount of drug available to patient.
- Status Epilepticus: Assess location, duration, characteristics, and frequency of seizures. Institute seizure precautions.
- Lab Test Considerations: Patients on high-dose therapy should receive routine evaluation of renal, hepatic, and hematologic function.
- Toxicity and Overdose: If overdose occurs, flumazenil (Romazicon) is the antidote. Do not use with patients with seizure disorder. May induce seizures

Side effects: CNS: dizziness, drowsiness, lethargy, hangover, headache, ataxia, slurred speech, forgetfulness, confusion, mental depression, rhythmic myoclonic jerking in pre-term infants, paradoxical excitation. EENT: blurred vision. Resp: respiratory depression. CV: rapid IV use only—APNEA, CARDIAC ARREST, bradycardia, hypotension.GI: constipation, diarrhea, nausea, vomiting, weight gain (unusual). Derm: rashes. Misc: physical dependence, psychological dependence, tolerance

Contraindications: Hypersensitivity; Cross-sensitivity with other benzodiazepines may exist; Comatose patients or those with pre-existing CNS depression; Uncontrolled severe pain; Angle-closure glaucoma; Severe hypotension; Sleep apnea; **OB, Lactation**: Use in pregnancy and lactation may cause CNS depression, flaccidity, feeding difficulties, hypothermia, seizures, and respiratory problems in the neonate; discontinue drug or bottle-feed. Use Cautiously in: Severe hepatic/renal/pulmonary impairment; Myasthenia gravis; Depression; Psychosis; History of suicide attempt or drug abuse/substance use disorder; COPD; Sleep apnea; **Pedi:** Use cautiously in children under 12 yr. In increase doses, benzyl alcohol in injection may cause potentially fatal “gasping syndrome” in neonates; **Geri:** Lower doses recommended for geriatric or debilitated patients; Hypnotic use should be short-term.

Generic Name: 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: mg, mg/kg

How to administer: IM, SQ, IV

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

Contraindications: 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 name: Succinylcholine

Drug class: Therapeutic: neuromuscular blocking agents-depolarizing

Indication: Used during surgical procedures to produce skeletal muscle paralysis after induction of anesthesia and provision of opioid analgesics.

Dosage forms: mg, mg/kg

How to administer: IV, IM

Nursing considerations:

- Assess respiratory status continuously throughout use of succinylcholine. Succinylcholine should be used only by individuals experienced in endotracheal intubation, and equipment for this procedure should be immediately available.
- Monitor neuromuscular response to succinylcholine with a peripheral nerve stimulator intraoperatively. Paralysis is initially selective and usually occurs consecutively in the following muscles: levator muscles of eyelids, muscles of mastication limb muscles, abdominal muscles, muscles of the glottis, intercostal muscles, and the diaphragm.
- Monitor ECG, heart rate, and BP throughout use of succinylcholine.
- Assess patient for history of malignant hyperthermia before administration. Monitor for signs of malignant hyperthermia (tachycardia, tachypnea, hypercarbia, jaw muscle spasm, lack of laryngeal relaxation, hyperthermia) throughout administration.
- Observe patient for residual muscle weakness and respiratory distress during the recovery period.
- Lab Test Considerations: May cause hyperkalemia, especially in patients with severe trauma, burns, or neurologic disorders.
- Toxicity and Overdose: If overdose occurs, use peripheral nerve stimulator to determine degree of neuromuscular blockade. Maintain airway patency and ventilation until recovery of normal respirations occurs

Side effects: Resp: APNEA, bronchospasm. CV: arrhythmias, bradycardia, hypotension. FandE: HYPERKALEMIA.MS: RHABDOMYOLYSIS, muscle fasciculation. Misc: ANAPHYLAXIS,MALIGNANT HYPERTHERMIA, myoglobinemia (in children), myoglobinuria (in children), tachyphylaxis

Contraindications: Hypersensitivity to succinylcholine or parabens; Plasma pseudocholinesterase deficiency; **Pedi:** Children and neonates (continuous infusions); Personal history of malignant hyperthermia. Use Cautiously in: History of anaphylaxis to other neuromuscular blockers; Familial history of malignant hyperthermia; History of pulmonary disease, renal or liver impairment; Major trauma, burns, or underlying myopathy (risk of rhabdomyolysis and hyperkalemia, especially in children or adolescents); Glaucoma; Electrolyte disturbances; Receiving digoxin; Fractures or muscular spasm Myastheniagravis or myasthenic syndromes; **Geri:** Geriatric or debilitated patients; **OB**: Has been used in pregnant women undergoing cesarean section; **Pedi:** Children and neonates (risk of malignant hyperthermia).

Generic Name: Propofol

Drug Class: Therapeutic: general anesthetics

Indication: Induction of general anesthesia in children3 yr and adults. Maintenance of balanced anesthesia when used with other agents in children2 mo and adults. Initiation and maintenance of monitored anesthesia care (MAC). Sedation of intubated, mechanically ventilated patients in intensive care units (ICUs)

Dosage forms: mcg/kg/min

How to administer: IV

Nursing considerations:

- Assess respiratory status, pulse, and BP continuously throughout propofol therapy. Frequently causes apnea lasting60 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 the 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 for48 hr) but has also been reported following large-dose, short term infusions during surgical anesthesia. If prolonged sedation or in-creasing dose is required, or metabolic acidosis occurs, consider alter-native 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 disorder

Generic Name: Propranolol

Drug Class: Therapeutic: anti-anginal, antiarrhythmics (Class II),antihypertensives, vascular headache suppressants.

Pharmacologic: beta blocker

Indication: Management of hypertension, angina, arrhythmias, hypertrophic cardiomyopathy, thyrotoxicosis, essential tremors, pheochromocytoma. Also used in the prevention and management of MI, and the prevention of vascular headaches. Unlabeled Use: Also used to manage alcohol withdrawal, aggressive behavior, antipsychotic-associated akathisia, situational anxiety, and esophageal varices. Post-traumatic stress disorder

Dosage Forms: mg, mg/kg

How to Administer: PO, PO-ER, IV

Nursing Considerations:

- Monitor BP and pulse frequently during dose adjustment period and periodically during therapy.
- Abrupt withdrawal of propranolol may precipitate life-threatening arrhythmias, hypertension, or myocardial ischemia. Drug should be tapered over a 2-week period before discontinuation. Assess patient carefully during tapering and after medication is discontinued. Consider that patients taking propranolol for non-cardiac indications may have undiagnosed cardiac disease. Abrupt discontinuation or withdrawal over too short a period (less than 9days) should be avoided.
- Pedi: Assess pediatric patients for signs and symptoms of hypoglycemia, particularly when oral foods and fluids are restricted.
- Patients receiving propranolol IV must have continuous ECG monitoring and may have pulmonary capillary wedge pressure (PCWP) or central venous pressure (CVP) monitoring during and for several hours after administration.
- Assess for orthostatic hypotension when assisting patient up from supine position.
- Monitor intake and output ratios and daily weight. Assess patient rou-tinely for evidence of fluid overload (peripheral edema, dyspnea, rales/crackles, fatigue, weight gain, jugular venous distention).
- Assess for rash periodically during therapy. May cause Stevens-Johnson syndrome. Discontinue therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis and/or eosinophilia.
- Angina: Assess frequency and characteristics of anginal attacks periodically during therapy.
- Vascular Headache Prophylaxis: Assess frequency, severity, characteristics, and location of vascular headaches periodically during therapy.
- PTSD: Assess frequency of symptoms (flashbacks, nightmares, efforts to avoid thoughts or activities that may trigger memories of the trauma, and hypervigilance) periodically throughout therapy.

- Lab Test Considerations: May cause BUN, serum lipoprotein, potassium, triglyceride, and uric acid levels.
- May cause increase ANA titers.
- May cause increase or decrease blood glucose levels. In labile diabetic patients, hypoglycemia may be accompanied by precipitous of BP.
- Toxicity and Overdose: Monitor patients receiving beta blockers for signs of overdose (bradycardia, severe dizziness or fainting, severe drowsiness, dyspnea, bluish fingernails or palms, seizures). Notify health care professional immediately if these signs occur.
- Hypotension may be treated with modified Trendelenburg position and IV fluids unless contraindicated. Vasopressors (epinephrine, norepinephrine, dopamine, dobutamine) may also be used. Hypotension does not respond to beta agonists.
- Glucagon has been used to treat bradycardia and hypotension.

Side Effects: CNS: fatigue, weakness, anxiety, dizziness, drowsiness, insomnia, memory loss, mental depression, mental status changes, nervousness, nightmares. EENT: blurred vision, dry eyes, nasal stuffiness. Resp: bronchospasm, wheezing. CV: ARRHYTH-MIAS, BRADYCARDIA,HF, PULMONARY EDEMA, orthostatic hypotension, peripheral vaso-constriction.GI: constipation, diarrhea, nausea. GU: erectile dysfunction decrease libido. Derm: ERYTHEMA MULTIFORME, EXFOLIATIVE DERMATITIS, STEVENS-JOHNSON SYN-DROME, TOXIC EPIDERMAL NECROLYSIS, itching, rash. Endo: hyperglycemia, hypoglycemia ( \increase in children).MS: arthralgia, back pain, muscle cramps, myopathy. Neuro: paresthesia. Misc: ANAPHYLAXIS, drug-induced lupus syndrome.

Contraindications: Uncompensated HF; Pulmonary edema; Cardiogenic shock; Bradycardia, sick sinus syndrome, or heart block (unless pacemaker present.

Generic Name: Captopril

Drug Class: Therapeutic: antihypertensives

Pharmacologic: ACE inhibitor

Indication: Alone or with other agents in the management of hypertension. Management of heart failure. Reduction of risk of death, heart failure-related hospitalizations, and development of overt heart failure following myocardial infarction. Treatment of diabetic nephropathy in patients with Type 1 diabetes mellitus and retinopathy.

Dosage form: mg, mg/kg

How to administer: PO

Nursing Considerations:

- Hypertension: Monitor BP and pulse frequently during initial dose adjustment and periodically during therapy. Notify health care professional of significant changes.
- Monitor frequency of prescription refills to determine compliance.
- Assess patient for signs of angioedema (dyspnea, facial swelling).
- Heart Failure: Monitor weight and assess patient routinely for resolution of fluid overload (peripheral edema, rales/crackles, dyspnea, weight gain, jugular venous distention).
- Lab Test Considerations: Monitor renal function. May cause increase BUN and serum creatinine. If increase BUN or serum creatinine concentrations occur, may require dose reduction or withdrawal.
- May cause hyperkalemia.
- May cause increase AST, ALT, alkaline phosphatase, and serum bilirubin.
- Assess urine protein prior to and periodically during therapy for up to 1 yr in patients with renal impairment or those receiving150 mg/day of captopril. If excessive or increasing proteinuria occurs, re-evaluate ACE inhibitor therapy.
- May cause positive antinuclear antibody (ANA) titer.
- Monitor CBC with differential prior to initiation of therapy, every 2 wk for the first 3 mo, and periodically for up to 1 yr in patients at risk for neutropenia (patients with renal impairment, or collagen-vascular dis-ease) or at first sign of infection. Discontinue therapy ifneutrophilcountis1000/mm3
- May cause false-positive test results for urine acetone

Side effects: CNS: dizziness, fatigue, headache, insomnia. Resp: cough. CV: hypotension, chest pain, palpitations, tachycardia. GI: taste disturbances, abdominal pain, anorexia, constipation, diarrhea, nausea, vomiting. GU: proteinuria, impaired renal function. Derm: ANGIOEDEMA, rash, pruritis. F and E: hyperkalemia. Hemat: AGRANULOCYTOSIS, neutropenia. Misc: fever

Contraindications: Hypersensitivity; History of angioedema with previous use of ACE inhibitors; Concurrent use with aliskiren in patients with diabetes or moderate-to-severe renal impairment (CCr60 mL/min);OB: Can cause injury or death of fetus – if pregnancy occurs, discontinue immediately; Lactation: Discontinue drug or use formula.

Generic Name: Furosemide

Drug Class: Therapeutic: diuretics

Pharmacologic: loop diuretics

Indication: Edema due to heart failure, hepatic impairment or renal disease. Hypertension

Dosage Forms: mg, mg/kg

How to Administer: PO, IV, IM

Nursing considerations:

- Assess fluid status. Monitor daily weight, intake and output ratios, amount and lo-cation of edema, lung sounds, skin turgor, and mucous membranes. Notify healthcare professional if thirst, dry mouth, lethargy, weakness, hypotension, or oliguria occurs.
- Monitor BP and pulse before and during administration. Monitor frequency of prescription refills to determine compliance in patients treated for hypertension.
- Geri: Diuretic use is associated with increased risk for falls in older adults. Assess falls risk and implement fall prevention strategies.
- Assess patients receiving digoxin for anorexia, nausea, vomiting, muscle cramps, paresthesia, and confusion. Patients taking digoxin are at increased risk of digoxin toxicity because of the potassium-depleting effect of the diuretic. Potassium supplements or potassium-sparing diuretics may be used concurrently to prevent hypokalemia.
- Assess patient for tinnitus and hearing loss. Audiometry is recommended for patients receiving prolonged high-dose IV therapy. Hearing loss is most common after rapid or high-dose IV administration in patients with decreased renal function or those taking other ototoxic drugs.
- Assess for allergy to sulfonamides.
- Assess patient for skin rash frequently during therapy. Discontinue furosemide at first sign of rash; may be life-threatening. Stevens-Johnson syndrome, toxic epidermal necrolysis, or erythema multiforme may develop. Treat symptomatically; may recur once treatment is stopped.
- Lab Test Considerations: Monitor electrolytes, renal and hepatic function, se-rum glucose, and uric acid levels before and periodically throughout therapy. Commonly decrease serum potassium. May cause decrease serum sodium, calcium, and magnesium concentrations. May also cause increase BUN, serum glucose, creatinine, and uric acid levels

Side effects: CNS: blurred vision, dizziness, headache, vertigo. EENT: hearing loss, tinnitus. CV: hypotension. GI: anorexia, constipation, diarrhea, dry mouth, dyspepsia, increase liver enzymes, nausea, pancreatitis, vomiting. GU: increase BUN, excessive urination, nephron calcinosis. Derm: ERYTHEMA MULTIFORME, STEVENS-JOHNSON SYNDROME, TOXIC EPIDERMALNECROLYSIS, photosensitivity, pruritis, rash, urticaria. Endo: hypercholesterolemia, hyperglycemia, hypertriglyceridemia, hyperuricemia. F and E: dehydration, hypocalcemia, hypochloremia, hypokalemia, hypomagnesemia, hyponatremia,

hypovolemia, metabolic alkalosis. Hemat: APLASTIC ANEMIA, AGRANULOCYTOSIS, hemolytic anemia, leukopenia, thrombocytopenia. MS: muscle cramps. Neuro: paresthesia. Misc: fever

Contraindications: Hypersensitivity; Cross-sensitivity with thiazides and sulfonamides may occur; Hepatic coma or anuria; Some liquid products may contain alcohol, avoid in patients with alcohol intolerance.

Generic Name: Digoxin *HIGH ALERT*

Drug Class: Therapeutic: antiarrhythmics, inotropics

Pharmacologic: digitalis glycosides

Indication: Heart failure. Atrial fibrillation and atrial flutter (slow ventricular rate). Paroxysmal atrial tachycardia

Dosage Forms: mg, mcg/kg

How to administer: PO, IM, IV

Nursing Considerations:

- Monitor apical pulse for 1 full min before administering. Withhold dose and notify health care professional if pulse rate is60 bpm in an adult,70 bpm in a child, or 90 bpm in an infant. Also notify healthcare professional promptly of any significant changes in rate, rhythm, or quality of pulse.
- Pedi: Heart rate varies in children depending on age, ask physician to specify at what heart rates digoxin should be withheld.
- Monitor BP periodically in patients receiving IV digoxin.
- Monitor ECG throughout IV administration and 6 hr after each dose. Notify health care professional if bradycardia or new arrhythmias occur.
- Observe IV site for redness or infiltration; extravasation can lead to tissue irritation and sloughing.
- Monitor intake and output ratios and daily weights. Assess for peripheral edema and auscultate lungs for rales/crackles throughout therapy.
- Before administering initial loading dose, determine whether patient has taken any digitalis preparations in the preceding 2–3 wk.
- Geri: Digoxin has been associated with an increased risk of falls in the elderly. Assess for falls risk and implement prevention strategies per facility protocol.
- Lab Test Considerations: Evaluate serum electrolyte levels (especially potassium, magnesium, and calcium) and renal and hepatic functions periodically during therapy. Notify health care professional before giving dose if patient is hypokalemic. Hypokalemia, hypomagnesemia, or hypercalcemia may make the patient more susceptible to digitalis toxicity. Pedi: Neonates may have falsely elevated se-rum digoxin concentrations due to a naturally occurring substance chemically similar to digoxin. Geri: Older adults may be toxic even when serum concentrations are within normal range; assess for clinical symptoms of toxicity even when serum levels are normal.
- Toxicity and Overdose: Therapeutic serum digoxin levels range from 0.5–2ng/mL. Serum levels may be drawn 6–8 hr after a dose is administered, although they are usually drawn immediately before the next dose. Bacteria in the GI tract can metabolize a substantial amount of digoxin before it is absorbed. Patients receiving erythromycin or tetracycline, which kill gut bacteria, can develop toxicity on their usual doses of digoxin. Geri: Older adults are at increased risk for toxic effects of digoxin (appears on Beers list) due to age-

related decreased renal clearance, which can exist even when serum creatinine levels are normal. Digoxin requirements in the older adult may change and a formerly therapeutic dose can be-come toxic.

- Observe for signs and symptoms of toxicity. In adults and older children, the first signs of toxicity usually include abdominal pain, anorexia, nausea, vomiting, visual disturbances, bradycardia, and other arrhythmias. In infants and small children, the first symptoms of overdose are usually cardiac arrhythmias. If these appear, withhold drug and notify health care professional immediately.
- If signs of toxicity occur and are not severe, discontinuation of digitalis glycoside may be all that is required.
- If hypokalemia is present and renal function is adequate, potassium salts may be administered. Do not administer if hyperkalemia or heart block exists. Correct any other electrolyte abnormalities.
- Correction of arrhythmias resulting from digitalis toxicity may be attempted with lidocaine, procainamide, quinidine, propranolol, or phenytoin. Temporary ventricular pacing may be useful in advanced heart block.
- Treatment of life-threatening arrhythmias may include administration of digoxin immune Fab (Digibind), which binds to the digitalis glycoside molecule in the blood and is excreted by the kidneys

Side Effects: fatigue, headache, weakness. EENT: blurred vision, yellow or green vision. CV: ARRHYTHMIAS, bradycardia, ECG changes, AV block, SA block. GI: anorexia, nausea, vomiting, diarrhea. Hemat: thrombocytopenia. Metab: electrolyte imbalances with acute digoxin toxicity

Contraindications: Hypersensitivity; Uncontrolled ventricular arrhythmias; AV block (in absence of pacemaker); Idiopathic hypertrophic subaortic stenosis; Con-strictive pericarditis; Known alcohol intolerance (elixir only).

Generic Name: Nifedipine

Drug Class: Therapeutic: antianginals, antihypertensives

Pharmacologic: calcium channel blockers

Indication: Management of: Hypertension (extended release only), Angina pectoris, Vasospastic (Prinzmetal's) angina. Unlabeled Use: Prevention of migraine headache. Management of HF or cardiomyopathy

Dosage form: mg

How to administer: PO, PO – PA, PO – CC, PA, XL

Nursing Considerations:

- Monitor BP and pulse before therapy, during dose titration, and periodically during therapy. Monitor ECG periodically during prolonged therapy.
- Monitor intake and output ratios and daily weight. Assess for signs of HF (peripheral edema, rales/crackles, dyspnea, weight gain, jugular venous distention).
- Patients receiving digoxin concurrently with nifedipine should have routine tests of serum digoxin levels and be monitored for signs and symptoms of digoxin toxicity.
- Assess for rash periodically during therapy. May cause Stevens-Johnson syndrome. Discontinue therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis and/or eosinophilia.
- Angina: Assess location, duration, intensity, and precipitating factors of patient's anginal pain.
- Lab Test Considerations: Total serum calcium concentrations are not affected by calcium channel blockers.
- Monitor serum potassium periodically. Hypokalemia increases risk of arrhythmias; should be corrected.
- Monitor renal and hepatic functions periodically during long-term therapy. Several days of therapy may cause increase hepatic enzymes, which return to normal upon discontinuation of therapy.
- Nifedipine may cause positive ANA and direct Coombs' test results

Side effects: CNS: headache, abnormal dreams, anxiety, confusion, dizziness, drowsiness, jitteriness, nervousness, psychiatric disturbances, weakness. EENT: blurred vision, disturbed equilibrium, epistaxis, tinnitus. Resp: cough, dyspnea, shortness of breath. CV: ARRHYTHMIAS, HF, peripheral edema, bradycardia, chest pain, hypotension, palpitations, syncope, tachycardia.GI: increase liver enzymes, anorexia, constipation, diarrhea, dry mouth, dysgeusia, dyspepsia, GI obstruction, nausea, ulcer, vomiting. GU: dysuria, nocturia, polyuria, sexual dysfunction, urinary frequency. Derm: flushing, dermatitis, erythema multiforme, increase sweating, photosensitivity, pruritus/urticaria, rash. Endo: gynecomastia, hyperglycemia. Hemat: anemia, leukopenia, thrombocytopenia. Metab: weight gain. MS: joint stiffness, muscle cramps. Neuro: paresthesia, tremor. Misc: STEVENS-JOHNSON SYNDROME, gingival hyperplasia.

Contraindications: Hypersensitivity; Sick sinus syndrome; 2nd- or 3rd-degreeAV block (unless an artificial pacemaker is in place); Systolic BP 90 mm Hg; Coadministration with grapefruit juice, rifampin, rifabutin, phenobarbital, phenytoin, carbamazepine, or St. John’s wort.

Generic Name: enoxaparin

Drug Class: Therapeutic: anticoagulants

Pharmacologic: antithrombotic, heparins (low molecular weight)

Indication: Prevention of venous thromboembolism (VTE) (deep vein thrombosis (DVT) and/or pulmonary embolism (PE)) in surgical or medical patients. Treatment of DVT with or without PE (with warfarin). Prevention of ischemic complications (with aspirin) from unstable angina and non-ST-segment-elevation MI. Treatment of acute ST-segment-elevation MI (with thrombolytics or percutaneous coronary intervention).

Dosage form: mg, mg/kg

How to Administer: SQ

Nursing Considerations:

- Assess for signs of bleeding and hemorrhage (bleeding gums; nose-bleed; unusual bruising; black, tarry stools; hematuria; fall in hematocrit or BP; guaiac-positive stools); bleeding from surgical site. Notify healthcare professional if these occur.
- Assess patient for evidence of additional or increased thrombosis. Symptoms de-pend on area of involvement.
- Assess location, duration, intensity, and precipitating factors of anginal pain.
- Monitor patient for hypersensitivity reactions (chills, fever, urticaria). Report signs to health care professional.
- Monitor patients with epidural catheters frequently for signs and symptoms of neurologic impairment. Delay placement or removal of catheter for at least 12hours after administration of lower doses (30 mg once or twice daily or 40 mg once daily) and at least 24 hours after administration of higher doses (0.75 mg/kg twice daily, 1 mg/kg twice daily, or 1.5 mg/kg once daily) of enoxaparin. Monitor for signs and symptoms of neurological impairment (midline back pain, sensory and motor deficits [numbness or weakness in lower limbs], bowel and/or bladder dysfunction) frequently if epidural or spinal anesthesia or lumbar puncture is done during therapy.
- Subcut: Observe injection sites for hematomas, ecchymosis, or inflammation.
- Lab Test Considerations: Monitor CBC, platelet count, and stools for occult blood periodically during therapy. If thrombocytopenia occurs, monitor closely. If hematocrit decreases unexpectedly, assess patient for potential bleeding sites.
- Special monitoring of clotting times (aPTT) is not necessary in most patients. Monitoring of the aPTT may be considered in certain patient populations (such as obese patients or patients with renal insufficiency).
- Monitoring of Antifactor Xa levels may be necessary to titrate doses in pediatric patients' Therapeutic range 0.5 – 1 unit/mL.
- May cause increase in AST and ALT levels.
- May cause hyperkalemia.

- Toxicity and Overdose: For overdose, protamine sulfate 1 mg for each mg of enoxaparin should be administered by slow IV injection

Side Effects: CNS: dizziness, headache, insomnia. CV: edema. GI: constipation increase liver enzymes, nausea, vomiting. GU: urinary retention. Derm: alopecia, ecchymoses, pruritus, rash, urticaria. F and E: hyperkalemia. Hemat: bleeding, anemia, eosinophilia, thrombocytopenia. Local: erythema at injection site, hematoma, irritation, pain. MS: osteoporosis. Misc: fever.

Contraindication: Hypersensitivity; Hypersensitivity to benzyl alcohol (multi-dose vial); Positive in vitro test for antiplatelet antibody in the presence of enoxaparin; Active, major bleeding.

Generic Name: Pantoprazole

Drug Class: Therapeutic: antiulcer agents

Pharmacologic: proton-pump inhibitor

Indication: Erosive esophagitis associated with GERD. Decrease relapse rates of daytime and nighttime heartburn symptoms on patients with GERD. Pathologic gastric hypersecretory conditions. Unlabeled Use: Adjunctive treatment of duodenal ulcers associated with Helicobacter pylori

Dosage form: mg

How to administer: PO, IV

Nursing Considerations:

- Assess patient routinely for epigastric or abdominal pain and for frank or occult blood in stool, emesis, or gastric aspirate
- Lab Test Considerations: May cause abnormal liver function tests, including increase AST, ALT, alkaline phosphatase, and bilirubin.
- May cause hypomagnesemia. Monitor serum magnesium prior to and periodically during therapy

Side Effects: CNS: headache. GI: PSEUDOMEMBRANOUS COLITIS, abdominal pain, diarrhea, eructation, flatulence. Endo: hyperglycemia. F and E: hypomagnesemia (especially if treatment duration3 mo).MS: bone fracture

Contraindications: Hypersensitivity; OB: Should be used during pregnancy only if clearly needed; Lactation: Discontinue breast feeding due to potential for serious adverse reactions in infants.

Generic Name: Prednisone

Drug Class: Therapeutic: anti-inflammatories (steroidal) (intermediate acting), immune modifier

Indication: Used systemically and locally in a wide variety of chronic diseases including: Inflammatory, Allergic, Hematologic, Neoplastic, Autoimmune disorders. Suitable for alternate day dosing in the management of chronic illness. Unlabeled Use: Adjunctive therapy of hypercalcemia. Adjunctive management of nausea and vomiting from chemotherapy

Dosage Form: mg, mg/kg

How to administer: PO

Nursing Considerations:

- Indicated for many conditions. Assess involved systems before and periodically during therapy.
- Assess patient for signs of adrenal insufficiency (hypotension, weight loss, weak-ness, 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.
- Pedi: 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 courses of therapy should routinely have hematologic values, serum electrolytes, and serum and urine glucose evaluated. May decrease WBC counts. May decrease serum potassium and calcium and increase serum sodium concentrations.
- Guaiac test stools. Promptly report presence of guaiac-positive stools.
- May increase serum cholesterol and lipid values. May decrease uptake of thyroid 123I or 131I.
- Suppress 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: CNS: depression, euphoria, headache, increase intracranial pressure (children only), personality changes, psychoses, restlessness. EENT: cataracts, increase intraocular pressure. CV: hypertension. GI: PEPTIC ULCERATION, anorexia, nausea, vomiting. Derm: acne, decrease wound 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), increase susceptibility to infection

Contraindications: Active untreated infections (may be used in patients being treated for tuberculous meningitis); Some products contain alcohol and should be avoided in patients with known intolerance; Lactation: Avoid chronic use

Generic Name: Levothyroxine

Drug Class: Therapeutic: hormones

Pharmacologic: thyroid preparations

Indication: Thyroid supplementation in hypothyroidism. Treatment or suppression of euthyroid goiters. Adjunctive treatment for thyrotropin-dependent thyroid cancer

Dosage Form: mcg, mcg/kg

How to administer: PO, IV

Nursing Considerations:

- Assess apical pulse and BP prior to and periodically during therapy. Assess for tachyarrhythmias and chest pain.
- Children: Monitor height, weight, and psychomotor development.
- Lab Test Considerations: Monitor thyroid function studies prior to and during therapy. Monitor thyroid-stimulating hormone serum levels in adults 8 – 12 wks after changing from one brand to another.
- Monitor blood and urine glucose in diabetic patients. Insulin or oral hypoglycemic dose may need to be increased.
- Toxicity and Overdose: Overdose is manifested as hyperthyroidism (tachycardia, chest pain, nervousness, insomnia, diaphoresis, tremors, weight loss). Usual treatment is to withhold dose for 2 – 6 days then resume at a lower dose. Acute overdose is treated by induction of emesis or gastric lavage, followed by activated charcoal. Sympathetic overstimulation may be controlled by antiadrenergic drugs (beta blockers), such as propranolol. Oxygen and supportive measures to control symptoms are also used.

Side Effects: CNS: headache, insomnia, irritability. CV: angina pectoris, arrhythmias, tachycardia. GI: abdominal cramps, diarrhea vomiting. Derm: sweating. Endo: hyperthyroidism, menstrual irregularities. Metab: heat intolerance, weight loss. MS: accelerated bone maturation in children

Contraindications: Hypersensitivity; Recent MI; Hyperthyroidism

Generic Name: Levetiracetam

Drug Class: Therapeutic: anticonvulsants

Pharmacologic: pyrrolidine

Indication: Partial onset seizures (adjunct). Primary generalized tonic-clonic seizures (adjunct) (immediate-release and injection only). Myoclonic seizures in patients with juvenile myoclonic epilepsy (adjunct) (immediate-release and injection only)

Dosage Form: mg, mg/kg

How to Administer: PO, IV

Nursing Considerations:

- Assess location, duration, and characteristics of seizure activity.
- Assess patient for CNS adverse effects throughout therapy. These adverse effects are categorized as somnolence and fatigue (asthenia), coordination difficulties(ataxia, abnormal gait, or incoordination), and behavioral abnormalities (agita-tion, hostility, anxiety, apathy, emotional lability, depersonalization, depression)and usually occur during the first 4 wk of therapy.
- Monitor mood changes. Assess for suicidal tendencies, especially during early therapy. Restrict amount of drug available to patient.
- Assess for rash periodically during therapy. May cause Stevens-Johnson syndrome. Discontinue therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis and/or eosinophilia.
- Lab Test Considerations: May cause decrease RBC and WBC and abnormal liver function tests

Side Effects: CNS: SUICIDAL THOUGHTS, aggression, agitation, anger, anxiety, apathy, depersonalization, depression, dizziness, hostility, irritability, personality disorder, weakness, drowsiness, dyskinesia, fatigue. Neuro: coordination difficulties (adults only). Derm: STEVENS-JOHNSON SYNDROME, TOXIC EPIDERMAL NECROLYSIS.

Contraindication: Hypersensitivity; Lactation: Lactation