ACTIVE LEARNING TEMPLATE: Medication

STUDENT NAME Lyndsey

MEDICATION Milrinone REVIEW MODULE CHAPTER

CATEGORY CLASS Inotropics

PURPOSE OF MEDICATION

Expected Pharmacological Action

- Increases myocardial contractility.
- Decreases preload and afterload by a direct dilating effect on vascular smooth muscle tissue.

Therapeutic Use

Increased cardiac output.

Complications

- Ventricular arrhythmias (life-threatening)
- Angina pectoris
- Hypokalemia
- Skin rash
- Hypotension

Contraindications/Precautions

Contraindications:

- Hypersensitivity
- Severe aortic or pulmonic valvular heart disease
- Hypertrophic subaortic stenosis

Precautions:

- History of arrhythmias, electrolyte abnormalities, abnormal digoxin levels, or insertion of vascular catheters
- Renal impairment

Interactions

- No significant drug-drug interactions.

Evaluation of Medication Effectiveness

- Decrease in the signs and symptoms of HF.
- Improvement in hemodynamic parameters.

Medication Administration

IV Push:

- Diluent: loading dose may be administered undiluted. May also be diluted in 0.9% NaCl, or D5W for ease of administration.
- Concentration: 1 mg/mL
- Rate: administer loading dose over 10 minutes.

Continuous Infusion:

- Diluent: when drawn from vials, must be diluted.
- Admixed solutions stable for 72 hours at room temperature. Stability of premixed infusions based on manufacturer's expiration date. Do not use solutions that are discolored or contain particulate matter.
- Concentration: 200 mcg/mL

Nursing Interventions

Monitor heart rate and BP continuously during administration. Slow or discontinue if BP drops excessively.

Monitor intake and output and daily weight. Assess patient for resolution of signs and symptoms of HF and improvement in hemodynamic parameters. Correct effects of previous aggressive diuretic therapy to allow for optimal filling pressure.

Monitor ECG continuously during infusion. Arrhythmias are common and may be life threatening.

Monitor electrolytes and renal function frequently during administration. Correct hypokalemia prior to administration to decrease the risk of arrhythmias.

Monitor platelet count during therapy.

Overdose manifests as hypotension. Dose should be decreased or discontinued. Supportive measures may be necessary.

Client Education

Inform patient and family of reasons for administration. Milrinone is not a cure but is a temporary measure to control the symptoms of HF.

ACTIVE LEARNING TEMPLATE: Medication

STUDENT NAME Lyndsey

MEDICATION Nesiritide REVIEW MODULE CHAPTER

CATEGORY CLASS Vasodilators (human B-type natriuretic

PURPOSE OF MEDICATION

Expected Pharmacological Action

Binds to guanyl cyclase receptors in vascular smooth muscle and endothelial cells, producing increased intracellular guanosine 35-cyclic monophosphate (cGMP) and smooth muscle cell relaxation. cGMP acts as a "second messenger" to dilate veins and arteries.

Therapeutic Use

Dose-dependent reduction in pulmonary capillary wedge pressure (PCWP) and systemic arterial pressure in patients with heart failure with resultant decrease in dyspnea.

Complications

- Apnea (life-threatening)
- Allergic reactions (life-threatening)
- Hypotension
- Injection site reactions
- Dizziness, headache, hypotension (dose related), drowsiness
- Itching, rash, sweating

Contraindications/Precautions

Contraindications:

- Hypersensitivity
- Cardiogenic shock
- Systolic BP < 100 mmHg
- Low cardiac filling pressure, significant valvular stenosis, restrictive/subtractive cardiomyopathy, constrictive pericarditis/cardiac tamponade, or other conditions in which cardiac output is dependent on venous return

Precautions:

- HF where renal function is dependent on activity of the renin/angiotensin/aldosterone system
- Cardiogenic shock
- Geriatric: may have increased sensitivity to effects

Interactions

- No significant drug-drug interactions.

Evaluation of Medication Effectiveness

Improvement in dyspnea and reduction in mean PCWP in patients with decompensated HF.

Medication Administration

- Prime IV tubing with infusion of 25 mL prior to connecting to patient's vascular access port and prior to administering bolus or infusion. Flush catheter between administration of nesiritide and other medications.

IV Push:

- Diluent: Dilute with D5W, 0.9% NaCl, D5/0.45% NaCl, or D5/0.2% NaCl. Do not shake vial. Infusion stable for 24 hours.
- Concentration: 6 mcg/mL
- Rate: administer bolus over 60 seconds through a port in the IV tubing.

Intermittent Infusion:

- Diluent: Same guidelines as IV push, immediately follow bolus with infusion.
- Concentration: 6 mcg/mL
- Rate: based on patient's weight

Nursing Interventions

Monitor BP, pulse, ECG, respiratory rate, cardiac index, PCWP, and central venous pressure frequently during administration. May cause hypotension, especially in patients with a BP <100 mmHg. Reduce dose or discontinue drug if patient develops hypotension. Hypotension may cause renal compromise. Use IV fluids and changes in body position to support BP if symptomatic hypotension occurs. Nesiritide may be restarted at a dose reduced by 30% with no bolus administration once patient is stabilized. Hypotension may be prolonged for hours, requiring a period of monitoring prior to restarting administration.

Monitor intake and output and weigh daily. Assess for decrease in signs of HF.

Obtain history for reactions to recombinant peptides; may increase risk of allergic reaction. Observe patient for signs and symptoms of allergic reactions. Discontinue the drug and notify health care professional immediately if these occur. Keep epinephrine, IV fluids, pressure amines, and resuscitation equipment close by in the event of an anaphylactic reaction.

Monitor BUN and serum creatinine.

Client Education

- Explain purpose of nesiritide to patient and family.
- Advise patient to notify health care professional immediately if signs and symptoms of allergic reaction occurs

ACTIVE LEARNING TEMPLATE: # Medication

STUDENT NAME Lyndsey
MEDICATION Furosemide REVIEW MODULE CHAPTER
CATEGORY CLASS Diuretics, Loop Diuretics

PURPOSE OF MEDICATION

Expected Pharmacological Action

- Inhibits the reabsorption of sodium and chloride from the loop of Henle and distal renal tubule.
- Increases renal excretion of water, sodium, chloride, magnesium, potassium, and

Therapeutic Use

- Diuresis and subsequent mobilization of excess fluid (edema, pleural effusion).
- Decreased BP.

Complications

- Erythema multiforme (life-threatening)
- Stevens-Johnson Syndrome (life-threatening)
- Toxic epidermal necrolysis (life-threatening)
- Aplastic anemia (life-threatening)
- Agranulocytosis (life-threatening)
- Dehydration, metabolic alkalosis, hypovolemia
- Hypocalcemia, hypochloremia, hypokalemia, hypomagnesemia, hyponatremia

Contraindications/Precautions

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

Precautions:
- Severe hepatic impairment
- Electrolyte depletion
- Diabetes mellitus
- Hypoproteinemia
- Severe renal impairment
- Geriatrics: older adults may have increased risk of side effects at usual doses

Interactions

- Increased risk of hypotension with antihypertensives, nitrates, or acute ingestion of alcohol.
- Increased risk of hypokalemia with other diuretics, amphotericin B, stimulant laxatives, and corticosteroids.
- Decreases lithium excretion, may cause lithium toxicity.
- Increased risk of ototoxicity with aminoglycosides or cisplatin.
- Increased risk of nephrotoxicity with cisplatin.
- NSAIDs decrease effects of furosemide.
- May increase risk of methotrexate toxicity.
- Decreased effects when given at same time as sucralfate, cholestyramine, or colestipol.
- Increased risk of salicylate toxicity with use of high-dose salicylate therapy.
- Concurrent use with cyclosporine may increase risk of gouty arthritis.

Evaluation of Medication Effectiveness

- Decrease in edema.
- Decrease in abdominal girth and weight.
- Increase in urinary output.
- Decrease in BP.

Medication Administration

- If administering twice daily, give last dose no later than 5pm to minimize disruption of sleep cycle.

PO:
- May be taken with food/milk to minimize gastric irritation, Tablets may be crushed.

IV Push:
- Diluent: administer undiluted (larger doses may be diluted and administered as intermittent infusion).
- Concentration: 10 mg/mL
- Rate: 20 mg/minute

Intermittent Infusion:
- Diluent: dilute larger doses in 50 mL of D5W, D10W, D20W, D5/0.9% NaCl, D5/LR, 0.9% NaCl, 3% NaCl, or LR. Infusion stable for 24 hours at room temperature-do not refrigerate, protect from light.
- Concentration: 1 mg/mL
- Rate: not to exceed 4 mg/minute (for doses >120 mg)

Nursing Interventions

Assess fluid status. Monitor daily weight, intake and output ratios, amount and location of edema, lung sounds, skin turgor, and mucous membranes. Notify health care professional if thirst, dry mouth, lethargy, weakness, hypotension, or oliguria occurs.

Monitor BP and pulse before and during administration.

If patient is of geriatric age, assess falls risk and implement fall prevention strategies.

Assess for tinnitus and hearing loss.

Assess for allergy to sulfonamides.

Assess patient for skin rash frequently during therapy. Discontinue drug at first sign of rash, as it may be life-threatening.

Monitor electrolytes, renal and hepatic function, serum glucose, and uric acid

Client Education

- Take as directed- take missed doses as soon as possible, do not double doses.
- Change positions slowly to minimize orthostatic hypotension. Use of alcohol, exercise during hot weather, or standing for long periods during therapy may enhance orthostatic hypotension.
- Consult provider regarding a diet high in potassium.
- Contact provider if weight gain more than 3 pounds in one day.
- Notify provider of all Rx or OTC medications, vitamins, or herbal products being taken.
- Notify provider of medication regimen before treatment or surgery.
- Use sunscreen and protective clothing to prevent photosensitivity reactions.
- Contact provider immediately if rash, muscle weakness, cramps, nausea, dizziness, numbness, or tingling of extremities occurs.
- Advise diabetic patients to monitor blood glucose closely.
- Notify provider if pregnancy is planned/suspected or